Farming for Natura 2000

Guidance on how to support Natura 2000 farming systems to achieve conservation objectives, based on Member States good practice experiences

ANNEXES

ANNEX A KEY HABITAT TYPES OF COMMUNITY INTEREST THAT ARE DEPENDENT ON AGRICULTURAL MANAGEMENT

This table describes the key Annex I habitat types that are dependent on agriculture and the degree of dependency for each, as well as their distribution, total extent, proportion of habitat within Natura 2000 designated sites, and current conservation status.

Key / Sources:

NB dunes with woody scrub (2160 dunes with *Hippophae rhamnoides* and 2170 dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) are not included, although they are usually dependent on periodic scrub clearance to prevent succession. Also not included although sometimes dependent on management: 7150 Depressions on peat substrates of the Rhynchosporion (habitat occurs in small patches within larger habitat mosaic and only requires occasional management); 7140 Transition mires and quaking bogs (require low intensity grazing if drained). Two grassland habitat types found only in Bulgaria, Romania and Greece are not included because of lack of information (62C0, 62D0).

*NB the total extent and proportion of habitat, % UFC and % XX does NOT include Romania (RO), Bulgaria (BG) or Croatia (HR); presence of habitat in Romania and Bulgaria follows ETC/BD Habitat check list.

Agri dep = dependency on agriculture from Halada et al (2011): f = Fully dependent on agricultural management, p = Partially dependent because management either prolongs the existence of the habitat by blocking succession, or enlarges/maintains an enlarged area of habitat distribution, p/n = Partially dependent only for some sub-types or over part of the distribution, or doubts remain concerning their dependence on agricultural management. Where Halada et al (2011) and Sipkova et al (2010) disagree, the Sipkova et al (2010) ranking is indicated in brackets.

Total extent sourced from Article 17 report database (ETC/BD, 2008). **Proportion of habitat that is protected within SACs** is according to the Appendix to Coverage of habitats and species by the Natura 2000 network in the Article 17 report (ETC/BD, 2008).

% UFC & % XX/XU: The proportion of habitat area with unfavourable conservation status was calculated by totalling the sum of each habitat assessment per Member State and biogeographical region that was classified as being in overall unfavourable conservation status in 2001-2006, and then dividing this by the total habitat area reported (ETC/BD 2008 Article 17 database). The proportion of habitat area with unknown conservation status was calculated in the same way (XU = unknown but very likely to be unfavourable). (NB: this assumes that all of the area within an unfavourably assessed habitat is in unfavourable status, whereas in the Article 17 reporting guidelines a certain proportion can still be in favourable status when the overall status is judged to be unfavourable).

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Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		COASTAL AND HALOPHYTIC HABITATS			
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Atlantic salt meadows or salt marshes develop when halophytic vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. This vegetation forms the middle and upper reaches of saltmarshes, where tidal inundation still occurs but with decreasing frequency and duration. The balance between erosion and accretion, which can be very local, plays a specific role in defining the extent of the habitat, and saltmarsh can cover large areas if it is not enclosed on the landward side. Salt meadows are characterized by salt tolerant vascular species, mostly in successional zones of differentiating salt tolerance with frequency and duration of tidal inundation. This habitat type is highly variable hosting a large plant and animal diversity occurring in different successional phases, ranging between pioneer marshes to habitat containing tree species on the upper tidal limits. Some salt marshes are historically ungrazed, but in historically grazed (and mown) areas continued grazing is significant in determining the structure and species composition of the habitat type and in determining its relative value for plants, for invertebrates and for wintering or breeding water birds. Characterised by *Aster tripolium*, *Puccinellia* spp., *Armeria maritima*, *Glaux maritima*, *Plantago maritima*, *Atriplex* spp., *Halimione* spp., *Artemisia maritima.* Habitat of *Bufo calamita* and *Bufo viridis* and breeding site for Annex I bird species. **Distribution**: found along the Atlantic, English Channel, North Sea, and Baltic shores.	p/n	1005 km^2 **% SAC**: 18-84%	**UFC:** 100% **XX:** 0%
1340	*Inland salt meadows	This rare inland habitat occurs where saline groundwater comes to the surface and the vegetation is formed by salt tolerant plants. Made up of different habitat types consisting of zones of seepage of saline water, running or stagnant saline water, with typical halophilous vegetation and of reed beds at the edge of brackish waters. Artificial or partly artificial sites are only included in specific cases where they harbour a species listed in Annex II of the Directive, or where there are no remaining natural (primary) examples of the habitat at regional or national level. Typical plants include *Atriplex hastata*, *Puccinellia distans*, *Juncus gerardii*, *Spergularia spp*., *Salicornia spp*. **Distribution:** mainly Continental; a few sites in the Alpine, Atlantic and Pannonic regions.	p	28 km^2 (+BG) **% SAC:** 48-100%	**UFC:** 100% **XX:** 0%
1530	*Pannonic salt steppes and salt marshes	Salt steppes result from hot, dry summers with high evaporation of groundwater which brings salt to the soil surface. Salt marshes form around highly alkaline lakes. There is a characteristic zonation of vegetation, resulting from the fluctuation in water level, with dominant salt-tolerant or salt-dependent xerophytic rushes and grasses (*Juncus gerardii*, *Festuca pseudovina*), and succulent herbs. Salt lakes and alkali marshes are important resting and roosting sites for many migratory birds, and host some typically coastal and wetland species, as well as large numbers of Great Bustard (*Otis tarda*). Primary	p/n	2,015 km^2 (+BG&RO) **% SAC:** 55-78%	**UFC:** 100% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		alkali *Artemisia* steppes are not dependent on management, but most habitats are *Achillea* steppes created by hydrological modification of wetlands, or drained primary steppes or meadows, that have traditionally been extensively grazed with locally adapted breeds of cattle and sheep. **Distribution:** typical of Pannonic region in Hungary; relatively small areas in Austria, Bulgaria and Romania (Continental and Black Sea and Steppic regions).			
1630	*Boreal Baltic coastal meadows	Coastal meadows influenced by flooding by the brackish water of the Baltic Sea. The species rich vegetation of halophytic plants mostly occurs in zones, with species tolerant of sea water closest to the sea. Long history of traditional management by grazing and mowing but now often abandoned. *Epidalea (Bufo) calamita* (natterjack toad) is a typical species. Salt marshes and coastal meadows are key habitats for several Annex I listed bird species as stopping off and overwintering sites and as breeding sites. The habitat has a number of stable states, and appropriate management will depend on conservation aims and management history. Where grazing rates have historically been high, the short sward can favour wading birds. **Distribution:** Widespread along the shores of the Baltic in Boreal and Continental regions.	p	229 km^2 **% SAC**: 70-82%	**UFC:** 100% **XX:** 0%
		COASTAL SAND DUNES AND INLAND DUNES			
2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	'Grey' dunes form the immobile, grassy part of a dune system behind the mobile dunes, forming part of the dynamic assemblage of dune habitats. High quality habitat has a fine grained mosaic of open sand, moss, lichen and low grass cover, often partly maintained by rabbit grazing. Grey dunes are part of the mosaic of habitats in dune systems and blend into decalcified dunes (2140), dune heaths (2150) and Mediterranean dune grasslands and juniper scrub (2210, 2220, 2230, 2240 and 2250), and merge with dune slacks (2170 and 2190). Management varies from 'stabilised' dunes that require continuous grazing, to more dynamic dunes influenced by sand drift, although long-term conservation will usually depend on maintenance of the dynamics of the whole dune system. The threats to the habitat come from over-stabilisation through techniques to prevent sand-drift, a lack of appropriate grazing levels, growth of native and non-native (introduced) scrub, afforestation and invasive alien species. Nutrient levels need to be kept low, and the most significant concern across the range of sites is the impact of atmospheric nutrient deposition on the more acid sites. **Distribution:** Atlantic, Macaronesian, Baltic and Black Sea coasts (and Steppic). In the Mediterranean basin, habitat 2250 occupies a similar position in the dune complex (although Italy has reported this habitat from the Adriatic).	p/n	855 km^2 (+BG&RO) **% SAC**: 42-79%	**UFC:** 95% **XX:** 1%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
2140	*Decalcified fixed dunes with *Empetrum nigrum*	Dunes with crowberry (*Empetrum nigrum*) form the most inland part of the dune complex in Northern Europe (see 2130 above). Characterised by a thin black humus layer on top of the sand. Most habitats were developed under a long history of grazing by livestock. Some subtypes are not dependent on management. **Distribution:** coasts of Atlantic and Baltic in northern Europe (Atlantic, Boreal, Continental).	p/n	228 km^2 **% SAC**: 35-76%	**UFC:** 93% **XX:** 0%
2150	*Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	Dune heaths with heathers (*Calluna vulgaris*, *Erica* spp) and gorse (*Ulex spp*), often with sand sedge (*Carex arenaria*). They form the most inland part of the dune complex in Southern Europe. Usually grazed together with dune scrub habitats. Some subtypes are not dependent on management. **Distribution:** Atlantic coasts from Portugal north to Germany and the British Isles (a few sites in bordering Continental and Mediterranean regions).	p/n	56 km^2 **% SAC**: 28-66%	**UFC:** 28% **XX:** 72%
2190	Humid dune slacks	Humid dune slacks occur where the water table reaches the surface, forming flat valley wetlands in a dune complex including open water, fens and wet grasslands (see 2130 above). Slacks are rich with species that can survive the anaerobic conditions and fluctuating salinity. Primary dune slacks run parallel to a dune coastline and are formed when a developing sand ridge cuts off a portion of beach. Secondary dune slacks are formed by the landward movement of dune ridges over stable wet sand at the water table, leaving dips scoured out by wind. Sensitive to changes in water regime, and dependent for their continued long-term existence on regular disturbance through the dynamic action of tides, groundwater and sand blow-outs influencing the dune system. Management by mowing or grazing slows succession. Grazed by rabbits. **Distribution:** along coastlines throughout the European Union (Atlantic, Boreal, Continental, Black Sea and Steppic) although relatively rare in the Mediterranean.	p	200 km^2 (+BG&RO) **% SAC**: 30-87%	**UFC:** 93% **XX:** 6%
21A0	*Machairs	Machairs are cultural landscapes on windblown calcareous sand developed by centuries of low intensity grazing and cultivation. Traditional management (crofting) as winter grazing on the unfenced commonage, with summer grazing on surrounding uplands. Traditional rotational arable farming with stoking of hay, use of seaweed fertilizer and fallow. The habitat mosaic has traditionally maintained a high density and diversity of wild arable weeds, which in turn supports a wide range of birds and invertebrates. **Distribution:** Atlantic (western Ireland and Scotland).	f	28 km^2 **% SAC**: 27%	**UFC:** 100% **XX:** 0%
2250	*Coastal dunes with *Juniperus* spp.	Coastal dunes with various species of juniper (*Juniperus* spp) shaped by the wind. Associated with dune scrubs of *Corema album* in the Mediterranean. The habitat forms the succession to embryonic shifting dunes and white dunes, and is therefore dependent on a dynamic dune system for its long-term	p	183 km^2 **% SAC**: 7-	**UFC:** 76% **XX:**

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		survival as the habitat tends towards climax woodland. Where habitat status is good and not under any threat, the habitat does not require any management. However many sites require eradication of invasive plants, fire prevention, shrub clearance and controlled grazing. **Distribution:** around Atlantic coasts of the Iberian Peninsula and the Mediterranean and more locally around Denmark and the UK (Atlantic & Continental).		77%	24%
2310	Dry sandy heaths with *Calluna* and *Genista*	Inland dunes with heather (*Calluna vulgaris*) and species of *Genista* formed from sand that originated from glacial drift and outwash. The large dune systems still contain many specialised and localised species, but they have regressed considerably and the remaining examples are fragile and often threatened. The habitat types 2310, 2320, 2330 (inland dune grasslands) and 4030 (European dry heaths) may occur within the same area. Dry sandy heaths are often considered to be part of habitat 4030 European dry heaths but they differ in their geological history and characteristic vegetation. **Distribution:** on the plains of northern Europe in Atlantic and Continental regions (Belgium, Germany, Denmark and Netherlands).	p/n (or f)	174 km^2 **% SAC**: 65-72%	**UFC:** 100% **XX:** 0%
2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	Heaths on sandy soils that originated from glacial drift and outwash (NOT dunes - which differentiates it from habitat 2140). The heaths tend to occur in more humid locations than habitat 2310. With heather (*Calluna vulgaris*) and crowberry (*Empetrum nigrum*), and characteristic mosses and lichens in open patches. Dry sandy heaths are often considered to be part of habitat 4030 European dry heaths but they differ in their geological history and characteristic vegetation. **Distribution:** on the coastal plains of northern Europe in Atlantic, Boreal and Continental regions.	p/n (or f)	47 km^2 **% SAC**: 29-65%	**UFC:** 99% **XX:** 1%
2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	Open sparsely vegetated acidic grasslands on inland dunes formed by wind action. Often species poor but with many annual plants (eg *Spergula morisonii*), grasses (*Agrostis* spp. and *Corynephorus canescens)*, and carpets of fruticose lichens. **Distribution:** mainly plains of northern Europe (Atlantic, Boreal) but also reported from some parts of the Mediterranean (Romania) and from the Pannonian region (eg Czech Republic).	p/n (or f)	319 km^2 (+RO) **% SAC**: 14-55%	**UFC:** 98% **XX:** 2%
2340	*Pannonic inland dunes	Mosaic of different inland dune habitats - open sand, dune lichen communities (*Cladonia* spp.), pioneer swards with many therophytes (*Thymus serpyllum*), open and closed swards. (NB Steppe grassland on stabilised sand or sandy soils NOT associated with dune complexes is part of habitat 6260). Formerly widely distributed as a result of hay harvesting and grazing. **Distribution:** Pannonic plain and small areas in bordering Continental and Mediterranean (Austria, Bulgaria, Hungary, Romania, Slovakia).	f	12 km^2 (+BG&RO) **% SAC**: 22-100%	**UFC:** 100% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		TEMPERATE HEATH AND SCRUB			
4010	Northern Atlantic wet heaths with *Erica tetralix*	Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage and relatively high rainfall. The vegetation is typically dominated by mixtures of *Erica tetralix*, *Calluna vulgaris*, grasses, sedges and *Sphagnum* bog-mosses. It is often found as a transitional community between dry heath and blanket mire within complex habitat mosaics. The degree of waterlogging is crucial in the formation and maintenance of this community. Although some wet heath is a naturally occurring community, most is secondary habitat in which increasing human influence over the last 6000 years, in the form of grazing, burning and cutting, has removed the woodland component of the heathland mosaic and led to the development of the now characteristic open habitat of the modern era. Large areas have been lost to afforestation and agricultural intensification. **Distribution**: Atlantic fringe of Europe from Norway to France (Normandy). A high proportion of the EU resource occurs in the UK and Ireland.	f (or p/n)	4,846 km^2 **% SAC**: 35-80%	**UFC:** 100% **XX:** 0%
4020	*Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	Wet heaths with Dorset heath (*Erica ciliaris*) are a priority form of Northern Atlantic wet heaths with *Erica tetralix*. **Distribution:** mostly along the Atlantic coast from Portugal to south-western England but also in the Pyrenees (Alpine & Continental) and Mediterranean parts of Spain and France.	f	1,528 km^2 **% SAC**: 8-96%	**UFC:** 16% **XX:** 84%
4030	European dry heaths	European dry heaths typically occur on freely-draining, acidic to circumneutral (siliceous, podsolic) soils with generally low nutrient content in moist Atlantic and sub-Atlantic climates. Ericaceous dwarf-shrubs dominate the vegetation. The most common is *Calluna vulgaris*, which often occurs in combination with *Ulex* spp., *Vaccinium* spp. or *Erica cinerea*, though other dwarf-shrubs are important locally. Nearly all dry heath is semi-natural, being derived from woodland through a long history of grazing and burning. Most dry heaths are managed as extensive grazing for livestock and/or, in upland areas, for deer or as grouse moors. NB dry heath vegetation that has developed on deep peat as a result of drainage is regarded as degraded bog. **Distribution:** plains and low mountains of Western, Central and Northern Europe, especially in Spain, Ireland and the UK (found in most biogeographic regions).	f	28,823 km^2 **% SAC:** 13-68%	**UFC:** 52% **XX:** 47%
4040	*Dry Atlantic coastal heaths with *Erica vagans*	Dry heaths with Cornish heath (*Erica vagans*). **Distribution:** along the Atlantic coast of northern Spain and rarely in western France and south west England.	f	16 km^2 **% SAC**: 33%	**UFC:** 63% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
4060	Alpine and Boreal heaths	Heaths of the sub-alpine and alpine zones; includes a wide range of variation linked to soil type and geography with 11 subtypes. Traditionally grazed in summer in south and central Europe, based on traditional 'transhumance' regime. Where the habitat occurs at lower altitudes, and in more northerly regions including UK, grazing is year round. In the Boreal region the habitat is usually grazed by reindeer. Some subtypes are not dependent on management. **Distribution:** subtypes typical of Alpine and Boreal regions. Subtypes also occur on mountains in other regions.	p/n	33,719 km^2 (+BG&RO) **% SAC**: 59-100%	**UFC:** 22% **XX:** 4%
4090	Endemic oro-Mediterranean heaths with gorse	Dry heaths with low, cushion-forming, often spiny shrubs, such as *Acantholimon, Astragalus, Erinacea, Vella, Bupleurum, Ptilotrichum, Genista, Echinospartum, Anthyllis* and various composites and labiates. There is much variation and fifteen subtypes are defined, so conservation recommendations vary. Habitat of the Annex IV invertebrate *Baetica ustulata.* **Distribution:** typical of high mountains in Mediterranean and Macaronesian regions (Canary Islands, Azores and Madeira – Spain and Portugal) and adjacent areas (Atlantic, Continental).	p	23,592 km^2 (+BG) **% SAC**: 53-100%	**UFC:** 2% **XX:** 91%
		SCLEROPHYLLOUS SCRUB (MATORRAL)			
5120	Mountain *Cytisus purgans* formations	Scrub dominated by Provence broom (*Cytisus purgans*, also known as *Genista purgans* and sometimes divided into four species), often in association with habitat types 4060 and 4090. Some subtypes are not dependent on management. **Distribution:** higher mountains of southwest Europe (over 80% in Mediterranean) but also occurs in the Pyrenees (Alpine) and Continental regions.	p/n	3,409 km^2 **% SAC**: 49-94%	**UFC:** 0% **XX:** 92%
5130	*Juniperus communis* formations on heaths or calcareous grasslands	Juniper (*Juniperus communis*) scrub often in association with grasslands (such as 6210) or heaths (eg 4030). Succession community to calcareous grassland (6210) or *Calluna* heath so expansion may be at the expense of these Annex 1 habitats. **Distribution:** widespread across much of central and western Europe in all biogeographic regions except Macaronesian. In the Mediterranean region juniper scrub is defined as habitat type 5210.	p	1,440 km^2 (+BG&RO) **% SAC**: 24-62%	**UFC:** 47% **XX:** 7%
5210	Arborescent matorral with *Juniperus* spp.	Matorral (evergreen scrub) with juniper trees such as *Juniperus oxycedrus*, *Juniperus phoenicea* and *Juniperus thurifera*. Primary matorral does not require active management. **Distribution:** widespread around Mediterranean and Black Sea basins, and adjacent parts of Alpine, Atlantic & Continental regions.	p/n	9,867 km^2 (+BG) **% SAC**: 57-100%	**UFC:** 0% **XX:** 86%
5330	Thermo-Mediterranean and pre-desert scrub	This habitat type includes a wide variety of scrub formations for the most part indifferent to the siliceous or calcareous nature of the substrate, characteristic of the thermo-Mediterranean zone. Habitat covers a wide area and is very variable in composition and structure. There are 3 main subtypes	p/n	12,154 km^2	**UFC:** 15% **XX:**

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		which require different management. Some subtypes are not dependent on management. **Distribution:** hotter, more arid parts of Mediterranean and Macaronesian regions (Canary Islands), together with an adjacent part of the Continental region in Italy.		**% SAC**: 69-100%	77%
5420	*Sarcopoterium spinosum* phryganas	Low, thorny cushion forming shrubs, often summer deciduous, characterised by *Sarcopoterium spinosum*. Maintained by extensive grazing by goats and sheep. **Distribution**: coast and islands of eastern Mediterranean from Malta to Greece and Cyprus. This habitat is much more widespread and diverse than habitat type 5410 clifftop phryganas from the western Mediterranean (extremely local and isolated habitats, not considered dependent on agricultural activity).	p	2,520 km^2 **% SAC**: 85%	**UFC:** 0% **XX:** 6%
5430	Endemic phryganas of the *Euphorbio-Verbascion*	Low, thorny cushion forming shrubs, often summer deciduous. A number of different subtypes with much regional variation in species composition and dominant species (eg *Euphorbia, Hypericum, Genista, Helichrysum, Launaea*). Maintained by extensive grazing by goats and sheep. **Distribution:** locally, but widely, distributed on islands in the Mediterranean from the Balearic Islands (Spain) to Crete (Greece) with a few sites on the mainland coast in Greece and Italy.	p	451 km^2 **% SAC**: 79%	**UFC:** 0% **XX:** 7%
		NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS			
6110	*Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	Open xerothermophile pioneer grasslands with many annual and succulent plants such as stonecrops (*Sedum* spp.) growing on skeletal base-rich or calcareous soils. Usually this habitat occurs in small patches and estimates of area are difficult. Some subtypes not dependent on management. **Distribution:** Most widespread in central Europe (Continental, Pannonian, Alpine) but also occurs in Boreal, Atlantic, Mediterranean and Black Sea regions.	p/n	1,434 km^2 (+BG&RO) **% SAC**: 39-76%	**UFC:** 12% **XX:** 78%
6120	*Xeric sand calcareous grasslands	Dry open grasslands on well-drained, calcareous sandy soils, sometimes associated with inland dune systems. Remaining areas are very small and so reliant on management of the wider landscape. Habitat of the endemic Annex II plant *Dianthus arenarius* ssp. *arenarius* in Scania, southern Sweden. **Distribution:** typical of plains of northern Europe from France to Latvia, including southern Sweden (Atlantic, Boreal, and parts of Continental, Mediterranean and Pannonic).	p	153 km^2 (+RO) **% SAC**: 16-100%	**UFC:** 99% **XX:** 1%
6140	Siliceous Pyrenean *Festuca eskia* grasslands	Subalpine and alpine grasslands on acidic, north facing slopes with the endemic grass *Festuca eskia*. Dependent on continuation of pastoral use; grazing and trampling are critical to maintaining the species and characteristics of the habitat and it can withstand relatively heavy sheep grazing. **Distribution:** Pyrenees and Cantabrian mountains in Spain and France (Alpine, Atlantic). Acidic alpine grasslands elsewhere in Europe are habitat type 6150.	p	921 km^2 **% SAC**: 89-92%	**UFC:** 64% **XX:** 11%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
6150	Siliceous alpine and boreal grasslands	Acidic grasslands of the higher summits of mountains in the Alps and Scandinavia with outliers elsewhere such as the Carpathians, with *Juncus trifidus*, *Carex bigelowii*, mosses and lichens. Also included are associated snowbed communities. **Distribution:** mountains in the Alps, Carpathians and Scandinavia together with higher mountains elsewhere in northern Europe such as in the north of the British Isles (Alpine, Atlantic, Boreal, Continental). Similar vegetation in the Pyrenees and northern Spain is habitat type 6140.	p	8,390 km^2 (+BG&RO) **% SAC**: 52-82%	**UFC:** 10% **XX:** 0%
6160	Oro-Iberian *Festuca indigesta* grasslands	Open grasslands of the upper slopes and summits of high mountains with the grass *Festuca indigesta*, often as stripes and garlands of vegetation together with gorse heaths (habitat 4090). Habitat of the Annex IV invertebrate spp *Baetica ustulata* and *Plebicula golgus*. Traditional extensive sheep grazing. **Distribution:** Iberian Peninsula (Atlantic / Mediterranean).	p	4,176 km^2 **% SAC**: 63-90%	**UFC:** 0% **XX:** 100%
6170	Alpine and subalpine calcareous grasslands	Calcareous grasslands of the alpine and subalpine zones on base-rich soils. Harsh climatic conditions (i.e. low temperatures, prolonged frost, heavy snow accumulation) limit the vegetative period to a few months. Alpine calcareous grasslands are highly diverse, with abundant endemic and rare species, incl. Lepidoptera. Includes much regional variation and five subtypes have been defined, with many plant communities, mainly in *the Elyno-Seslerietea* and *Ononidetalia striatae* phytosociological classes. Typical species include *Dryas octopetala*, *Gentiana* spp., *Oxytropis* spp., *Kobresia* grass, *Carex rupestris*, *Festuca gautieri*. Many of these grassland communities are stable, but very sensitive to disturbances. When the vegetative cover is altered or there is significant loss of soil, it is almost impossible to restore the original habitat. Given the high structural complexity and fragility of the habitat, the best management practice is to leave it alone. **Distribution:** Alps, Pyrenees, Carpathians, Cantabrian & Scandinavian mountains; very locally in the Abruzzi and the Balkan peninsula mountains (Alpine, Atlantic, Continental, Mediterranean).	p	9,967 km^2 (+BG&RO) **% SAC**: 53-68%	**UFC:** 26% **XX:** 31%
6180	Macaronesian mesophile grasslands	Secondary grasslands of the highest hills typically with endemic grasses *Festuca jubata* and *Deschampsia foliosa* and with large herbaceous plants. Usually in small patches mixed with Macaronesian forest and scrub types (Macaronesian Laurel Forest 9360, Macaronesian Heaths 4050, Macaronesian Juniper Forests 9560). **Distribution:** Azores and Madeira in Macaronesian region (Portugal).	p	141 km^2 **% SAC**: 100%	**UFC:** 100% **XX:** 0%
6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	Open pioneer grasslands on shallow soils on rock or steep, well-drained slopes of limestone or dolomitic mountains. Hosts many Annex II and IV species such as *Dianthus plumarius* ssp. *regis-stephani (Dianthus lumnitzeri).* **Distribution:** Pannonian region and adjacent areas of the Alpine and Continental regions in Hungary,	f	26 km^2 (+RO) **% SAC**: 22-	**UFC:** 63% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		Slovakia and Czech Republic.		57%	
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	Dry to semi-dry grasslands on chalk or limestone; where the habitat is orchid rich it is considered to be 'priority' habitat. Steppic or subcontinental (*Festuca valesiaca*) and more oceanic and sub-Mediterranean types (*Bromus erectus, Festuca ovina, Brachypodium pinnatum, Sesleria albicans*). Often in association with Juniper scrub (habitat 5130), Pannonic scrub (habitat 40A0), thermophile forests (eg habitats 91F0, 91H0). Requires low intensity or extensive management by grazing or mowing – grazing is usually preferable for invertebrates but management must be adapted to site history. Abandonment results in thermophile fringe vegetation (*Trifolio-Geranietea*) and then thermophile scrub. **Distribution:** typical of much of Europe, found in all biogeographical regions except Macaronesian and Steppic.	f (or p/n)	9,164 km^2 (+BG&RO) **% SAC**: 34-72%	**UFC:** 49% **XX:** 23%
6220	*Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	Includes a variety of xeric, thermophilic and mostly open Mediterranean perennial and annual grassland types, on nutrient poor but base-rich soils. Three major subtypes: perennial basophile rather hard short-grass communities, included in *Lygeo-Stipetalia*; very dense and short but highly productive perennial summer drying swards, created by intense and continuous livestock activity, included in *Poetalia bulbosae*; and pioneer and ephemeral basophilous annual grasslands, included in *Brachypodietalia (Trachynietalia) distachyae*. The diversity of plant, invertebrate and vertebrate communities is usually high. The habitat usually occurs in a mosaic pattern with a wide variety of related habitats, traditionally managed by extensive shepherded grazing. **Distribution:** typical of Mediterranean basin (99% of area), but also found on Black Sea, and in adjacent parts of Alpine, Atlantic and Continental regions.	f	14,702 km^2 (+BG) **% SAC**: 24-71%	**UFC:** 3% **XX:** 82%
6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe)	This is one of the most widespread semi-natural grasslands, with distinct upland and lowland subtypes. It occurs on dry or mesophile oligotrophic soils on siliceous substrates (and more rarely on washed out calcareous soils) and is sensitive to eutrophication through high livestock loads, fertilisation, and airborne pollution. Hosts *Phengaris (Maculinea)* butterfly species, grasshoppers, and high-altitude bird communities. Whilst some types (eg alpine) can be considered as climax vegetation not requiring active management, the long-term existence of the habitat is closely associated with extensive pastoral traditions. A combination of mowing and grazing is traditional in many parts of Europe. The definition of this habitat has caused problems as several countries have large areas of species poor grassland dominated by *Nardus stricta* as a result of long periods of overgrazing of little interest for nature conservation - such grasslands should not be included in this habitat. **Distribution:** widespread across much of the European Union in most biogeographic regions, with most	f	3,525 km^2 (+BG&RO) **% SAC**: 17-64%	**UFC:** 80% **XX:** 2%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		in the Alpine region.			
6240	*Sub-pannonic steppic grasslands	Steppe-like grasslands dominated by tussocky feather grasses such as *Stipa capillata* and *Stipa joannis.* These xerothermic communities are developed on southern exposed slopes with rocky and gravelly soils. They are partially of natural, partially of anthropogenic origin. **Distribution:** typical of central Europe where it is most widespread in Pannonic region in Bulgaria, Hungary, Czech Republic, Slovakia, Romania (some 75% of total area), but also occurs locally in French Alps (where the microclimate of the Durance valley gives similar conditions).	p (p/n)	275 km^2 (+BG&RO) **% SAC**: 64-85%	**UFC:** 100% **XX:** 0%
6250	*Pannonic loess steppic grasslands	Grasslands rich in perennial grasses on loess (windblown) deposits. Originally covered wide areas, now restricted to specific land forms like loess ridges formed by fluviatile erosion and accumulation. Characterised by *Festuca rupicola*, *Astragalus* spp., *Crambe tataria*, etc. **Distribution:** typical of Pannonian basin in Bulgaria, Hungary, Czech Republic, Slovakia (more than 95% of total area) but also occur in adjacent parts of Alpine and Continental regions (Austria).	f	207 km^2 (+BG&RO) **% SAC**: 6-64%	**UFC:** 99% **XX:** 1%
6260	*Pannonic sand steppes	Open grassy steppes created by wind erosion on base-rich sandy soils, dominated by tussock forming grasses such as *Festuca vaginata*, *Stipa borysthenica*, *Stipa capilla* and *Stipa pulcherrima,* with many endemic steppe species. Grasslands occur in a mosaic with bare ground surfaces, and vegetation covers no more than 50–60% of the area, which dries out in mid or late summer. Closed sand steppe types with over 50% cover are typified by *Festuca wagneri* and *Festuca rupicola*. Most of the dune systems have been stabilized, and traditionally managed with low intensity extensive grazing of sheep, cattle or goats. However, in areas where natural dune dynamics remain, active management is not necessary. **Distribution:** Almost all of area in Pannonian region (Czech Republic, Hungary, Slovakia), plus an adjacent part of the Continental region in Austria and Black Sea and Steppic regions in Romania.	f	486 km^2 (+BG&RO) **% SAC**: 32-75%	**UFC:** 100% **XX:** 0%
6270	*Fennoscandian lowland species-rich dry to mesic grasslands	Neutral to acidic nutrient-poor grasslands on dry to semi-dry soils of the Fennoscandian lowlands resulting from grazing and/or mowing over many years leading to species-rich plant communities. Does not tolerate any fertilization. Species composition varies in different geographical areas, on different soils and moisture regimes and different management regimes. Typical species include *Arnica montana*, *Botrychium lunaria*, *Filipendula vulgaris*, *Leontodon hispidus*, and *Pulsatilla vulgaris*. Requires low intensity or extensive management by grazing or mowing – grazing is usually preferable for invertebrates but management must be adapted to site history. Abandonment results in succession to forest vegetation. **Distribution:** occurs in Boreal region (Sweden, Finland, Baltic countries) and the adjacent part of the Continental region in southern Sweden.	f	449 km^2 **% SAC**: 22%	**UFC:** 100% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
6280	*Nordic alvar and precambrian calcareous flatrocks	Flat, calcareous rocks with sparse, patchy vegetation influenced by exposure to winds, causing dryness in summer, and the impact of frost and freezing in winter. The soils, where present, are a product of weathering and are very shallow. Specialist bryophyte and plant species, including *Androsace septentrionalis*, *Asperula tinctoria*, *Carlina vulgaris*, *Helianthemum oelandicum*, and the Annex II species *Sisymbrium supinum, Senecio jacobea ssp. gotlandica,* and *Artemisia oelandica*. Calcareous flatrocks mostly occur in a mosaic with related habitats, such as semi-natural dry grasslands (6210), rupicolous calcareous or basophilic grasslands (6110) and limestone pavements (8240), and a holistic management approach is advisable. Low density grazing by cattle, sheep or horses is a basic requisite to prevent scrub invasion. **Distribution:** very limited distribution in Boreal western Estonia and southern Sweden, primarily the islands of Gotland and Öland, with minor areas in southwest Finland.	f	349 km^2 **% SAC**: 53-93%	**UFC:** 53% **XX:** 0%
62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	Dry grasslands similar to habitat type 6210 but with a greater number of plants typical of the Mediterranean basin including Annex II and IV plant species such as *Genista holopetala* and *Euphrasia marchesettii*. **Distribution:** Balkan peninsula in north-eastern Italy, Slovenia, Bulgaria and Greece (Mediterranean and bordering Alpine, Continental and Black Sea).	f	909 km^2 (+BG) **% SAC**: 94-100%	**UFC:** 91% **XX:** 0%
6310	Dehesas with evergreen *Quercus* spp.	Dehesas are wood pastures or mattoral forming a typical cultural landscape of the Iberian Peninsula with evergreen oaks such as cork oak (*Quercus suber*) growing as a fairly closed to very open canopy. Pigs and sheep are grazed under the trees. Some areas are still used for cork production or extensive agriculture. Other uses include hunting and beekeeping. Oak mortality and lack of regeneration of trees is the biggest problem. Key habitat of raptors, crane (*Grus grus*), of large insects and their predators and of Iberian lynx (*Lynx pardinus*). **Distribution:** typical of Mediterranean Spain and Portugal (where this habitat is known as montado), also found locally in France and Italy.	f	15,674 km^2 **% SAC**: 65%	**UFC:** 0% **XX:** 98%
6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	Meadows with purple moorgrass (*Molinia caerulea*) on wet, infertile soils resulting from long periods of traditional management such as late mowing. Species-poor *Molinia* meadows created as a result of draining peat bogs or fens are not included in this habitat. **Distribution:** widespread across central, northern and western Europe (Atlantic, Continental, Boreal). Occurs more rarely in the Mediterranean region, and in the Black Sea and Steppic regions in Romania.	f	1,535 km^2 (+BG&RO) **% SAC:** 25-59%	**UFC:** 94% **XX:** 4%
6420	Mediterranean tall humid grasslands of the *Molinio-*	Mediterranean humid grasslands formed by tall grasses and rushes, often associated with coastal dunes. Sensitive to changes in groundwater levels. Typical species include *Scirpus holoschoenus,*	p	2,471 km^2 (+BG&RO)	**UFC:** 3%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
	Holoschoenion	*Schoenus nigricans, Molinia caerulea, Cyperus longus, Lysimachia ephemerum*. *Microtus cabrerae* is characteristic mammal species. **Distribution:** throughout the Mediterranean basin, on the Canary Islands (Spain) (Macaronesian), and around the Black Sea (and Steppic region) in Bulgaria and Romania.		**% SAC**: 42-100%	**XX:** 95%
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	The habitat includes two main subtypes. Subtype 1 includes wet and nitrophilous tall herb edge communities, along water courses and woodland borders belonging to the *Glechometalia hederaceae* and the *Convolvuletalia sepium* orders (*Senecion fluviatilis*, *Aegopodion podagrarieae*, *Convolvulion sepium*, *Filipendulion*). Subtype 1 is often affected by yearly flooding and thereby obtains nutrients as well as silt and clay. The vegetation communities are very varied, eg France registers 12 variants within these two subtypes. Many of the species in the habitat are dispersed by stream water. Subtype 2 includes hydrophilous perennial tall herb communities of mountain to alpine levels of the Betulo-Adenostyletea class. The habitat occurs on humid, relatively nutrient-rich soils and is dependent on regular disturbance to prevent succession. Disturbance factors vary, including regular flooding, avalanches and landslides in mountainous areas, in some cases extensive mowing or grazing. In areas with cold climate, the presence of ice has a striking impact on the vegetation; plants, bushes, even trees may be torn away by melting ice and running water during spring flooding. In Scandinavia, the habitat has sometimes been maintained by mowing, and such meadows with long management continuity can have a species-rich composition dependent on recurring management. If abandoned, such areas normally turn into closed forest. Historically unmanaged habitats should not be grazed. **Distribution**: widespread in the Atlantic, Continental, Boreal and Alpine regions.	p/n	2334 km^2 (+BG&RO) **% SAC**: 16-58%	**UFC:** 77% **XU:** 23%
6440	Alluvial meadows of river valleys of the *Cnidion dubii*	These alluvial meadows along large continental rivers result from a combination of regular (short) winter flooding and mowing for hay in summer when they dry out. This continental summer dryness differentiates them from *Calthion palustris* meadows, and the mineral soil with a good supply of nutrients from flooding differentiates them from *Molinion* meadows (6410). This is a transition habitat between wet and dry meadows and covers small areas. Meadows were traditionally mown once or twice a year, depending on weather and floods, and only grazed lightly once the soils have dried out, or after hay cutting. Vegetation is strongly affected by flood regime (timing and longevity), and habitat is divided into 1) wet *Cnidion* meadows with high groundwater table even in summer, 2) summer dry continental *Cnidion* meadows, regularly briefly flooded in spring but dry in summer and mown, with typical continental species, 3) suboceanic *Cnidion* meadows, only briefly or not flooded but do not dry out in summer, 4) mesophytic, continental *Cnidion* meadows in higher locations with vegetation	f	639 km^2 (+BG&RO) **% SAC**: 71-92%	**UFC:** 100% **XX:** 0%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		transitional to hay meadows, mown once a year. The area of this habitat has been greatly reduced by river regulation and intensification. Large-scale restoration of natural floodplain dynamics has a strong positive effect on habitat status. **Distribution:** typical of central Continental Europe (Hungary, Poland, Slovakia, Czech Republic, Germany, Austria), also in Atlantic (Rhine), Pannonic, and Black Sea & Steppic regions (Romania).			
6450	Northern Boreal alluvial meadows	Meadows on flood sediments along rivers which freeze in winter and flood in spring - following the spring thaw. The species composition varies depending on the water regime, most characteristic are *Calamagrostis* spp., *Carex* spp., *Deschampsia cespitosa,* or *Phalaris arundinacea*. Typical species also include *Bartsia alpina*, *Carex heleonastes*, *Equisetum fluviatile*, *Pedicularis palustris*, and *Succisa pratensis*. The habitat may be kept open by the disturbance effects of floods, ice etc, but traditionally these have also often been managed as productive hay meadows, scythed by hand. This management increased the areas of open meadows, and contributed to their biodiversity value. Sometimes they have also been used for grazing after the hay harvest. Silt transported by river water is the main nutrient source with no additional fertilization applied. Techniques to regulate or dam the river flow in order to increase the inundated area or the length of the period of flooding were developed. The meadows are important bird habitats, but as mowing has largely been abandoned they are becoming overgrown with scrub and trees. In some cases large-scale regulation of rivers for hydroelectric power has destroyed the natural flood regime which is indispensable for the maintenance of this habitat. **Distribution:** northern European Boreal region in Sweden, Finland and Baltic States (plus a few sites in Swedish alpine region).	f	454 km^2 **% SAC**: 18-71%	**UFC:** 100% **XX:** 0%
6510	Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)	Species-rich hay meadows at low to submontane altitudes belonging to the *Arrhenatherion* and the *Brachypodio-Centaureion nemoralis* alliances. They are mown after most of the plants have flowered. Some lowland hay meadows are mesotrophic communities which can tolerate a low input of fertilization, but the majority of them are negatively influenced by any addition of fertilizers. These meadows are important for a wide range of invertebrates as well as plants. **Distribution:** widespread in central and northern Europe in all biogeographic regions, more rarely in the Mediterranean region but not reported from Macaronesia.	f	14,737 km^2 (+BG&RO) **% SAC**: 24-66%	**UFC:** 89% **XX:** 6%
6520	Mountain hay meadows	Species-rich hay meadows at higher altitudes (usually 600m or higher), often in mountain valleys. These meadows are traditionally managed for hay production and are often very species-rich. **Distribution:** most widespread in the hills and mountains of central Europe; also occurs in other mountain ranges such as the Pyrenees, Massif Central and the hills of the UK and Fenno-Scandanavia.	f	2,257 km^2 (+BG&RO) **% SAC**: 15-	**UFC:** 99% **XX:** 1%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
				68%	
6530	*Fennoscandian wooded meadows	This habitat typically consists of a mosaic of deciduous trees, bushes such as hazel (*Corylus avellana*) and more or less open glades with grass. The species composition varies depending on the region. The field layer includes many species which are dependent on regular mowing, eg *Scorzonera humilis*. Other typical species are *Dactylorhiza maculata* ssp.*fuchsii*, *Orchis mascula*, *Primula veris*, *Saussurea alpina*. The habitat is rich in insect species and important for some rare plant species such as *Euphrasia stricta* var. *suecica*. Traditionally these meadows with small copses of deciduous trees and scrub were managed by mowing, and the hay harvest was often followed by grazing. Pollarding was a common practice, and the leaves and twigs normally harvested for animal feed every few years. In spring the meadow was cleared of dead leaves, fallen branches etc. The tree layer (especially alder) and pollarding practices had a fertilising function and benefited the hay production, but today overgrowth and excessive nutrient levels are common problems, and the habitat is not considered to tolerate any fertilisation. **Distribution:** restricted to Boreal region, especially the area surrounding the Baltic proper, together with adjacent parts of the Continental region in southern Sweden. Similar meadows with a rich content of pollarded trees have however been present in other parts of Europe as well, especially in mountainous areas, and remnants can still be found eg in the Carpathian mountains.	f	53 km^2 **% SAC**: 54-60%	**UFC:** 100% **XX:** 0%
6540	Sub-Mediterranean grasslands of the *Molinio-Hordeion secalini*	Humid grasslands of the alliance *Molinio-Hordeion secalini* found alongside karstic rivers and in karstic fields (poljes) in the Dinaric Alps. These humid meadows were traditionally used as extensive pastures and hay meadows and are flooded or very wet in winter and spring, gradually drying throughout the summer. Because of the extreme differences in soil moisture, there is a mix of hygrophilous plants and plants more typical of dry habitats growing together. These wet grasslands occur within a usually dry Mediterranean landscape and often host endemic species. **Distribution:** Dinaric Alps (Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo, Albania and Macedonia).	f	n/a	n/a
		RAISED BOGS AND MIRES AND FENS			
7210	*Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	Great fen sedge (*Cladium mariscus*) beds on the emergent-plant zones of lakes, or as a result of succession on fallow land or extensively farmed wet meadows, often in association with other wetland habitats such as reed beds, fens and humid grasslands. Typical species are *Schoenus nigricans* and species of *the Caricon davallianae* community. Dependence on grazing or mowing varies from region to region. Abandonment leads to *Phragmites* and *Cladium* fallows, colonized by *Salix* shrubs.	p/n	359 km^2 (+BG&RO) **% SAC**: 20-58%	**UFC:** 71% **XX:** 2%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		Distribution: widespread, but local, throughout Europe although absent from the north of Fenno-scandinavia and from Macaronesia.			
7230	Alkaline fens	Alkaline fens are mires dominated by peat- or tufa-producing small sedge (*Carex* spp., particularly *Carex davalliana*) and brown moss communities developed on soils permanently waterlogged by base-rich ground water or surface water at or just below the surface, with minimal water level fluctuation. In Central Europe calcium-tolerant *Sphagnum* mosses are dominant. The dividing line between rich fen with peat-forming mosses and peaty fen meadow with sedges is unclear, and the two often occur alongside each other. Usually found associated with calcareous fens (7210), *Molinia* meadows (6410) or *Calthion palustris* wet hay meadows (also known as fen meadows), reed beds, transition mires or spring-fed fens. The vegetation is rich in Annex II and IV species. Important for rare invertebrates e.g. butterflies (*Phengaris*/*Maculinea* spp., *Coenonympha oedippus, Lycaena dispar*), dragonflies, *Vertigo* snails. Breeding habitat of the very rare Aquatic Warbler (*Acrocephalus paludicola*). Very sensitive to changes in hydrology/hydrochemistry and land-use in surrounding area, plus airborne pollutants. Almost all fens have been slightly drained and traditional uses as meadows for bedding or low quality forage, or as extensive summer pastures, have prevented succession. Fens are sensitive to trampling and heavy machinery. **Distribution:** alkaline fens occur where the groundwater is suitable throughout Europe but are rare in the south. Sites for Romania and Bulgaria have not yet been designated.	p	9,941 km^2 (+BG&RO) **% SAC**: 23-72%	**UFC:** 97% **XX:** 0%
		ROCKY HABITATS			
8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	Pioneer communities of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii* alliances, colonising superficial soils of siliceous rock surfaces. The soil on the relatively flat or slightly inclining rocks is normally very thin with poor water storage capacity. As a consequence, the habitat is often subjected to severe drought during much of the vegetation period. The sparse low vegetation is characterised by mosses, lichens, succulent and annual plant species. Includes both natural and secondary habitats, typically in mosaic with other habitats. Secondary habitats were created & are maintained by sheep or goat grazing as small patches in pastures. **Distribution**: patchy distribution in most of the biogeographic regions.	p/n	2,797 km^2 (+BG&RO) **% SAC**: 21-92%	**UFC:** 9% **XX/XU:** 82%
8240	*Limestone pavements	Limestone pavements have more or less horizontal outcrops of stone which are broken by cracks of varying width and depth in which vegetation can develop. Often this vegetation is related to that found in woodlands although often the trees are absent. Overall, there is usually considerably less than 50% soil cover, but some are now very wooded over. Often needs either grazing or coppicing to keep the	p	1,466 km^2 **% SAC**: 39-68%	**UFC:** 27% **XX:** 37%

Code	Habitat name & priority status (*)	Description / distribution	Agri dep	Extent (km2)* % within SACs*	% UFC % XX
		habitat open. **Distribution:** found in areas of karst across Europe in most of the biogeographic regions.			
		FORESTS			
9070	Fennoscandian wooded pastures	The major ecological factor determining this type of habitat is the occurrence of old trees and continuous use as pasture. These are the wooded part of the traditional outfield pastures, and vary greatly in dominant tree species, tree density, and dominant ground vegetation. The practice of grazing forests was widespread until the early 20th century. An unbroken continuity of trees over a long time period is characteristic, but the habitat can also have a younger tree layer – as in the subtype with birch pastures that developed after slash-and-burn cultivation, or the habitat may have originated as a meadow. The habitat is composed of a mosaic of grazed forest, copses, sparse trees and patches of open grassland. Wooded pastures are usually dominated by birch (*Betula* spp), pine (*Pinus sylvestris*), alder (*Alnus incana*) or spruce (*Picea abies*); in the hemi-boreal zones there are also subtypes dominated by oak (*Quercus robur*), ash (*Fraxinus excelsior*), other broad-leaved trees, or hazel (*Corylus avellana*). Typical grassland species are *Ajuga pyramidalis*, *Dactylorhiza viridis*, *Danthonia decumbens*, *Lathyrus linifolius*, and *Primula veris*. The habitat is rich in dead and decaying wood and maintains threatened invertebrate and fungal species. **Distribution:** Boreal region and adjacent Continental and Alpine areas in Sweden, Finland, and Baltic States. One of the three subtypes, maintained in central and eastern Finland by slash and burn techniques, is now very rare (only 300 ha remain). A subtype dominated by old and large oak trees is especially species rich, and mainly occurs in south-eastern parts of the Boreal region and adjacent parts of the Continental region in Sweden.	f	508 km^2 **% SAC**: 16-48%	**UFC:** 100% **XX:** 0%

ANNEX B. KEY SPECIES OF COMMUNITY INTEREST ASSOCIATED WITH FARMLAND

This table shows the species of Community interest from Annex II of the Habitats Directive and bird species from Annex I of the Birds Directive that are associated with agricultural habitats. It lists their agricultural habitat use, their priority status, their current conservation status, and some references giving information about status and pressures.

PLANTS, INVERTEBRATES, AMPHIBIANS, REPTILES, MAMMALS:

The species list follows the 2013 Annex II list (Council Directive 2013/17/EU) and Appendix III of the Biodiversity Baseline report (EEA, 2010). NB 7 plant species that are listed as dependent on grassland ecosystems, but that occur only on the Azores or Madeira, are excluded from the analysis (*Chaerophyllum azoricum*, *Deschampsia maderensis*, *Euphrasia azorica*, *Euphrasia grandiflora*, *Lactuca watsoniana*, *Myosotis azorica*, *Scabiosa nitens*). One species with particularly unresolved taxonomy in the Czech Republic is also excluded (*Poa riphaea*/ *Poa laxa*).
Priority species = identified as priority species in Annex II of the Habitats Directive (species in need of special measures such as the preparation of species actions plans)
Conservation Status = ETC/BD biogeographical assessment for EU-25 for 2001-2006. FV = Favourable Status; U1 = Unfavourable-Inadequate; U2 = Unfavourable-Bad; XX = unknown; XXn = not assessed because recently added to Habitats Directive (mainly for Romania and/or Bulgaria or Croatia). If two or more status assessments are listed, these are because the assessments differ in different biogeographical zones.
EU red list status according to IUCN (2012). CR = critically threatened. EN = endangered. VU = vulnerable. NT = near threatened. LC = least concern. DD = data deficient. n/a = not applicable (eg subspecies has no separate status assigned). Some invertebrate groups have not yet been evaluated.
Member States = presence in EU-27 Member States as reported under Article 17 for 2001-2006, or in checklist for RO and BG or by IUCN (brackets = EU25 MS which did not report on the species under Article 17 but in which other references report presence)
Grass use = is the species present on grassland? Appendix III of the Biodiversity Baseline report (EEA, 2010)
Agri use = is the species present on arable land? Appendix III of the Biodiversity Baseline report (EEA, 2010)

Sources:

ETC/BD (2008) Article 17 species summaries. http://bd.eionet.europa.eu/article17/speciessummary/
EEA (2010) EU 2010 Biodiversity Baseline. EEA Technical Report No 12/2010, European Environment Agency, Copenhagen.
IUCN (2012) IUCN European Red List of Threatened Species. Version 2012.2. http://www.iucnredlist.org/initiatives/europe
ETC/BD (2012) Species check list. http://bd.eionet.europa.eu/article17/reference_portal
Council Directive 2013/17/EU of 13 May 2013 adapting certain directives in the field of environment, by reason of the accession of the Republic of Croatia

Species name (alternative or old name) (* priority species) (#= taxonomy unresolved)	Common name	Conser-vation Status	EU-27 red list status	Member States	Grass use	Agri-use	References
PLANTS							
**Aconitum corsicum (Aconitum napellus ssp. corsicum)*	L'aconit corse	U1	VU	FR	Y		(INPN, 2011)
Adonis distorta	Apennine pheasants eye	FV	DD	IT	Y		(ANPA, 2001)
Anacamptis urvilleana (Anacamptis pyramidalis)[#]	Maltese Pyramidal Orchid	XX	LC	EL, MT	Y		
Angelica palustris	Marsh Angelica	U1/U2/XXn	DD	BG, EE, HU, LV, PL, CZ, DE, SK	Y		(BfN, 2011; Cerovský et al, 1999; Rybka et al, 2005) LIFE02/NAT/H/8630
**Artemisia granatensis*	Manzanilla de Sierra Nevada	XX	EN	ES	Y		(IUCN, 2011; Ministerio de Medio Ambiente y Medio Rural y Marino, 2011a; Peñas et al, 2011; VV.AA, 2009)
**Artemisia laciniata*	Schlitzblättriger Beifuß	U2	CR	AT	Y	Y	
Artemisia oelandica	Alvarmalört	U2/FV	NT	SE	Y		(European Commission, 2013; Naturvardsverket, 2011a)
**Artemisia pancicii*	Palina Pančičova	U2	VU	AT, CZ	Y		(Calaciura and Spinelli, 2008a; Cerovský et al, 1999)
**Aster pyrenaeus*	Aster des	U1/XX	EN	ES, FR	Y		(Ministerio de Medio Ambiente y Medio Rural y

Species name (alternative or old name) (* priority species) (#= taxonomy unresolved)	Common name	Conser-vation Status	EU-27 red list status	Member States	Grass use	Agri-use	References
	Pyrenées						Marino, 2011a)
**Aster sorrentinii*	L'astro di Sorrentino	FV	EN	IT	Y		(San Miguel, 2008)
**Astragalus algarbiensis*		XX	DD	PT (ES)	Y	Y	(ICNB, 2006)
**Astragalus aquilanus*	Astragalo dell'Aquila	XX	DD	IT	Y		(Calaciura & Spinelli, 2008a)
Astragalus centralpinus (Astragalus alopecurus)[#]		U1/U2/XXn	DD	FR, IT, BG	Y	Y	(Cremene, 2011)
Astragalus peterfii		XXn	DD	RO	Y		(Ivorra Jímenez and García Torres, 2011; VV.AA, 2009)
Astragalus tremolsianus	Astrágalo de Gádor	XX	CR	ES	Y		(San Miguel, 2008)
**Astragalus verrucosus*	Astragalo Verrucoso	U1	CR	IT	Y		(Cremene, 2011)
**Biscutella neustriaca*	Lunetière de Neustrie	U2	VU	FR	Y		(INPN, 2011)
Braya linearis	Fjällkrasse	FV	VU	SE	Y		(Naturvardsverket, 2011a; Swedish Environmental Protection Agency, 2003)
Bromus grossus	Brome Épais, Spelz-Trespe	U2/XX	DD	BE, DE, IT (AT, LU)		Y	(BfN, 2011; Observatoire de la Faune, de la Flore et des Habitats, 2011)

Species name (alternative or old name) (* priority species) (#= taxonomy unresolved)	Common name	Conser-vation Status	EU-27 red list status	Member States	Grass use	Agri-use	References
**Campanula bohemica*	Zvonek Český	U1	NT	CZ, PL	Y		(AOPK CR, 2007; Rybka et al, 2005; Skálová et al, 1999)
**Campanula gelida (Campanula bohemica ssp gelida)*	Zvonek Jesenický	U2	CR	CZ	Y		(Cerovský et al, 1999)
Campanula romanica	Romanian /Dobruja Bellflower / Clopoțelul Dobrogean	XXn	DD	RO	Y		
**Campanula serrata*		U1/XXn	LC	PL, SK, RO	Y		(Goliášová et al, 2008)
**Carduus myriacanthus*	Cardo Costero	XX	EN	ES	Y		(VV.AA, 2009)
Carex holostoma	Kolstarr	FV	LC	FI, SE	Y		(Naturvardsverket, 2011a)
Carlina onopordifolia	Dziewięćsił Popłocholistny	U1	VU	PL	Y		
Centaurea jankae		XXn	VU	RO, BG	Y		(Basnou et al, 2009; Sarbu et al, 2004; Sarbu, 2004)
**Centaurea lactiflora*		XX	NT	EL	Y		
Centaurea micrantha ssp. herminii		XX	LC	PT	Y		(Birdlife International, 2011; ICNB, 2006)
Centaurea pontica		XXn	DD	RO	Y		

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Centaurea rothmalerana		XX	DD	PT	Y		
**Cerastium alsinifolium*		U1	DD	CZ	Y		(AOPK CR, 2007; Cerovský et al, 1999; Rybka et al, 2005)
Colchicum arenarium	Sand Saffron	U1	LC	HU, SK	Y		(Šefferová et al, 2008a)
Corydalis gotlandica	Gotlandsnunneört	FV	NT	SE	Y		(Naturvardsverket, 2011a)
Crambe tataria	Katrán Tatarský	U1	LC	SK, CZ, IT, HU	Y		(Cerovský et al, 1999; European Commission, 2013; Illyés and Csatho, 2007; Rybka et al, 2005)
Dactylorhiza kalopissii		XXn	EN	EL	Y		
**Daphne arbuscula*		FV	DD	SK	Y		(Cerovský et al, 1999; Sundseth, 2009a)
**Dianthus arenarius ssp bohemicus*#		U2	DD	CZ	Y		(Cerovský et al, 1999; Rybka et al, 2005)
**Dianthus diutinus*	Tartós Szegfű	U2	EN	HU	Y		(Šefferová et al, 2008a)
Dianthus marizii		XX	LC	PT	Y		(ICNB, 2006)
**Dianthus moravicus*	Moravian Pink	U1/U2	DD	CZ	Y		(Cerovský et al, 1999; Rybka et al, 2005)
**Dianthus nitidus*	Carpathian Glossy Pink	U1	NT	SK	Y		(European Commission, 2013; Ministry of the Environment of the Slovak Republic, 1998; Polák and Saxa, 2005)
Dianthus plumarius ssp. regis-stephani#		U1	LC	HU (SK, AT, CZ)	Y		(CEEweb, 2011)

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Diplotaxis ibicensis	Ravanell, Jaramago	XX	LC	ES	Y		
Dracocephalum austriacum	Oesterreichischer Drachenkopf	U1/FV	DD	IT, FR, SK, HU, AT, ES, SK, CZ	Y		(Halada and Baca, 2013; Illyés & Csatho, 2007; INPN, 2011; Šuvada, 2011)
Echium russicum	Piros Kígyószisz	U2/FV	LC	CZ, PL, SK, HU (AT)	Y		(Baranska et al, 2009; Cerovský et al, 1999)
Eryngium alpinum	Alpen-Mannstreu	U1	NT	AT, FR, IT, SI	Y		(Gaudeul and Till-Bottraud, 2004; Halada & Baca, 2013; INPN, 2011)
**Euphrasia genargentea*		U1	LC	FR, IT	Y		
**Ferula sadleriana*		U1/XXn	EN	HU, SK, RO	Y		(Cerovský et al, 1999; Polák & Saxa, 2005)
Festuca duriotagana		U1	DD	PT	Y		(ICNB, 2006)
Festuca elegans		XX	LC	PT, ES	Y		(ICNB, 2006; VV.AA, 2009)
Festuca henriquesii		XX	LC	PT	Y		(ICNB, 2006)
Festuca summilusitana		XX/U1	LC	PT, ES	Y		(ICNB, 2006; VV.AA, 2009)
Galium cracoviense		XX	VU	PL	Y		(Cieslak and Szelag, 2009)
Galium moldavicum		XXn	DD	RO	Y		(Hady Land Association, 2008)

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**Galium sudeticum*		U1/XXn	VU	CZ, PL, RO	Y		(Cerovský et al, 1999)
Gentiana ligustica		FV	LC	FR, IT	Y		(INPN, 2011)
Gentianella anglica[#]	Early Gentian	U1	DD	UK	Y	Y	(Calaciura & Spinelli, 2008a)
**Gentianella bohemica*	Boehmischer Enzian	U2	VU	CZ, DE, PL (AT)	Y		(BfN, 2011; Cerovský et al, 1999; JNCC, 2013a; Rybka et al, 2005)
Gladiolus palustris	Marsh Gladiolus	U1/U1/ U2/FV	DD	CZ, DE, FR, HU, IT, PL, SI, SK	Y		(BfN, 2011; Cerovský et al, 1999)
Gymnigritella runei (Gymnadenia runei)	Brudkulla	FV	NT	SE	Y		(Naturvardsverket, 2011a)
**Gypsophila papillosa*		FV	EN	IT	Y		
Herniaria maritima		XX	LC	PT	Y		(ICNB, 2006)
Hladnikia pastinacifolia		FV	DD	SI	Y		(European Commission, 2013)
Holcus setiglumis ssp duriensis		XX	DD	PT, ES	Y		(ICNB, 2006; VV.AA, 2009)
Iberis procumbens ssp microcarpa		XX	DD	PT	Y		(ICNB, 2006; VV.AA, 2009)
Jonopsidium savianum (Ionopsidium savianum)	Bivonea di Savi	XX	NT	ES, IT	Y		

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Iris aphylla ssp hungarica		U1	DD	HU, SK	Y		(European Commission, 2013; Polák & Saxa, 2005)
Iris humilis ssp arenaria		U1	DD	CZ, HU, SK	Y		(CEEweb, 2011; Cerovský et al, 1999; European Commission, 2013; Rybka et al, 2005)
**Jurinea cyanoides*	Sand-Silberscharte	U1/U2	LC	CZ, DE	Y		(BfN, 2011; Rybka et al, 2005)
**Lamyropsis microcephala*		U1	CR	IT	Y		(ANPA, 2001; Bacchetta et al, 2007)
Leontodon microcephalus	Leontodon de los Borreguiles	XX	VU	ES	Y		(Blanca et al, 2000; VV.AA, 2009)
**Leontodon siculus*		FV	NT	IT	Y		(ANPA, 2001; Regione Siciliana, 2011)
**Linaria ricardoi*		XX	NT	PT		Y	(ICNB, 2006)
**Linum dolomiticum*		FV	DD	HU	Y		(European Commission, 2013)
**Linum muelleri*		FV	VU	IT	Y		(McCorry and Ryle, 2009)
**Lythrum flexuosum*	Jopillo	XX	NT	ES	Y		(Ministerio de Medio Ambiente y Medio Rural y Marino, 2011b; VV.AA, 2009)
**Minuartia smejkali*[#]		U2	DD	CZ	Y		(Cerovský et al, 1999)
Moehringia jankae		XXn	DD	RO	Y		(European Commission, 2013; Sundseth, 2009b)
Narcissus asturiensis	Narciso de Asturias	XX/U2	LC	ES, PT	Y		(ICNB, 2006)

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**Narcissus nevadensis*	Narciso de Sierra Nevada	U2	EN	ES	Y		(Ministerio de Medio Ambiente y Medio Rural y Marino, 2011a)
Narcissus pseudonarcissus ssp nobilis	Narciso Trompón	XX	LC	ES, PT	Y		(ICNB, 2006)
Narcissus viridiflorus	Narciso Verde	XX	DD	ES	Y		(ICNB, 2006; Lozano et al, 1996)
Notothylas orbicularis	Kugel-Hornmoos	U2	n/a	DE, AT (CZ)		Y	(BfN, 2011; Koval, 2011)
**Ononis hackelii (Ononis maweana)*		XX	NT	PT	Y		(ICNB, 2006)
**Onosma tornensis*[#]		U1	EN	SK, HU	Y		(Cerovský et al, 1999; Ministry of the Environment of the Slovak Republic, 1998; Šeffer et al, 2002)
**Ophrys kotschyi*		FV	NT	CY	Y		(Fuller et al, 2010a; Fuller et al, 2010b; Fuller et al, 2011)
Papaver radicatum ssp hyperboreum (Papaver laestadianum)[#]	Lappvallmo	FV	NT	SE	Y		(Naturvardsverket, 2011a)
Pinguicula nevadensis	Estrella de las Nieves	XX	EN	ES	Y		(Blanca, 2001; VV.AA, 2009)
Platanthera obtusata ssp oligantha	Lappfela	FV	EN	SE	Y		(Naturvardsverket, 2011b)

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Potentilla delphinensis	Potentille du Dauphin	U1	VU	FR	Y		(INPN, 2011)
Potentilla emilii-popii	Buruiană cu Cinci Degete	XXn	DD	BG, RO	Y		(EEA, 2006; Sundseth, 2009b)
Primula scandinavica	Fjällviva	FV	VU	SE	Y		(Naturvardsverket, 2011b; Ronningen et al, 2005; Wehn, 2008)
Puccinellia phryganodes	Rönysorsimo	U2	CR	FI	Y		(Doody, 2008; European Commission, 2013)
Puccinellia pungens		U1	VU	ES	Y		(Ministerio de Medio Ambiente y Medio Rural y Marino, 2011a)
Pulsatilla grandis	Large Pasque Flower	U1	LC	CZ, HU, SK, SI (AT, DE)	Y		(Calaciura & Spinelli, 2008a; European Commission, 2013; Kaligaric et al, 2006; Rybka et al, 2005; Turis and Galvánek, 2003)
Pulsatilla patens	Eastern Pasque Flower	U1/U2/XXn	DD	CZ, DE, EE, FI, HU, LT, LV, PL, RO, SE, SK	Y		(Cerovský et al, 1999; Eriksson and Rosén, 2008; European Commission, 2013; Naturvardsverket, 2011a)
**Pulsatilla pratensis ssp hungarica*	Hungarian Small Pasque Flower	U2	DD	HU, SK	Y		(Cerovský et al, 1999; Šefferová et al, 2008a)
**Pulsatilla slavica*	Haller's Pasque Flower	U1	DD	PL, SK	Y		(Calaciura & Spinelli, 2008a; European Commission, 2013; Polák & Saxa, 2005)

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**Pulsatilla subslavica*	Poniklec prostredný	U1/XX	DD	SK	Y		(Turis & Galvánek, 2003; Various, 2010)
**Ranunculus weyleri*	Weyler's Buttercup	XX	VU	ES	Y		(Cursach and Rita, 2012; Ministerio de Medio Ambiente y Medio Rural y Marino, 2011c)
Santolina semidentata		XX	LC	PT, ES	Y		(ICNB, 2006)
Scilla litardierei	Dalmatian Scilla	U1	CR	SI	Y	Y	(Kazakova and Stefanova, 2010)
**Senecio elodes*	Cineraria de Sierra Nevada	XX	EN	ES	Y		(Blanca, 2001; Ministerio de Medio Ambiente y Medio Rural y Marino, 2011a)
**Serratula lycopodifolia (Klasea lycopodifolia)*		U1/U2	DD	CZ, FR, HU, PL, SI, SK	Y		(Polák & Saxa, 2005)
Seseli leucospermum		FV	NT	HU	Y		(European Commission, 2013; Fábián and Iványi, 2010)
**Stipa austroitalica*		FV	LC	IT	Y		
**Stipa bavarica*	Bayerisches Federgras	FV	VU	DE	Y		(BfN, 2011)
Stipa danubialis		XXn	DD	RO	Y		(WWF, 2008)
**Stipa styriaca*	Steirisches Federgras	U1	EN	AT	Y		
**Stipa zalesskii*		U1	VU	CZ	Y		(AOPK CR, 2007; European Commission, 2010;

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							Rybka et al, 2005)
Tephroseris longifolia ssp moravica		U1/U2	VU	CZ, SK	Y		(Cerovský et al, 1999; Rybka et al, 2005)
Thlaspi jankae (Noccaea jankae) #		U1/FV/XXn	NT	HU, RO, SK	Y		(Illyés & Csatho, 2007)
Tulipa hungarica	Hungarian Tulip, Sárga Tulipán	XXn	NT	RO	Y		(WWF, 2008)
Vincetoxicum pannonicum		U1	VU	HU (SK?, CZ?)	Y		(EEA, 2008; European Commission, 2013)
INVERTEBRATES							
Baetica ustulata	(grasshopper)	XX		ES	Y		(VV.AA, 2009)
Bolbelasmus unicornis	(scarab beetle)	U2/XX		FR, SI, SK, EL, CZ, HU	Y		
Brachytrupes megacephalus	(grasshopper)	U2		MT	Y		
Carabus hungaricus	Magyar Futrinka	U2/FV		CZ, HU, SK	Y		(AOPK CR, 2007; Šefferová et al, 2008a)
Carabus zawadszkii	Zempléni Futrinka	U1/XX /FV/XXn		PL, SK, HU, RO	Y		

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Caseolus calculus	Madeiran Land Snail	XX	VU	PT	Y		(ICNB, 2008; ICNB, 2009)
Caseolus sphaerula (subcalliferus)	Madeiran Land Snail	U2	CR	PT	Y		(ICNB, 2008)
Catopta (Paracossulus) thrips	(carpenter moth Cossoidea)	U1/XX /XXn		HU, RO, BG, EL (SK)	Y		(Šefferová et al, 2008b)
Chondrosoma fiduciarium	(geometrid moth)	U2		HU	Y		
Clossiana improba (Boloria improba)	Dusky-winged Fritillary /Dvärgpärlemorfjäril	U2	EN	SE, FI	Y		(Butterfly Conservation Europe, 2010; Naturvardsverket, 2011a; van Swaay et al, 2010b)
Coenonympha oedippus	False Ringlet	U2/U1	EN	AT, IT, FR, SI, HU, PL	Y		(Halada & Baca, 2013; INPN, 2011; Šefferová et al, 2008c; van Swaay et al, 2006; van Swaay et al, 2010b)
Colias myrmidone	Danube Clouded Yellow	U2/U1	EN	HU, SI, SK, PL, CZ	Y	Y	(Marhoul and Olek, 2010; van Swaay et al, 2010a; van Swaay et al, 2010b)
Cucullia mixta	(noctuid moth)	U2		HU	Y		
Discula tabellata	Madeiran Land Snail	XX	CR	PT	Y		(ICNB, 2008)
Dorcadion fulvum cervae (Carinatodorcadion fulvum	(longhorn beetle)	FV	n/a	HU	Y		(Andras and Otto, 2005)

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cervae)							
Elona quimperiana	Escargot de Quimper	XX	LC	FR, ES	Y		(INPN, 2011)
Erebia calcaria	Lorkovic's Brassy Ringlet	U1	LC	IT, SI, AT	Y		(van Swaay et al, 2010a; van Swaay et al, 2010b)
Erebia christi	Raetzer's Ringlet	U2	VU	IT	Y		(van Swaay et al, 2010a; van Swaay et al, 2010b)
Erebia medusa polaris	Arctic Woodland Ringlet	U1	LC	FI	Y		(van Swaay et al, 2010b)
Euphydryas aurinia (Eurodryas aurinia, Hypodryas aurinia)	Marsh Fritillary	U2/U1 /XX	LC	AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, PL, PT, SE, SI, SK, UK	Y		(Halada & Baca, 2013; INPN, 2011; JNCC, 2013a; Pihl et al, 2001; van Swaay et al, 2006; Zimmermann et al, 2011)
Glyphipterix loricatella	(moth of the Glyphipterigidae)	U2/XXn		HU, RO	Y		(Goruip, 2008; Mihut and Dinca, 2006)
Gortyna borelii lunata	Fisher's Estuarine Moth	U2/U1/ FV/XX		DE, FR, HU, UK	Y		(Šefferová et al, 2008b)

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**Helicopsis striata austriaca*	(snail)	U2	LC (CR in AT)	AT	Y	Y	(European Commission, 2013; Šefferová et al, 2008b)
Hesperia comma catena	Silver-spotted Skipper (Fjällsilversmygare)	U2	n/a	SE, FI	Y		(Naturvardsverket, 2011a; van Swaay et al, 2010b)
Isophya costata[#]	(cricket)	U1	DD	HU	Y		
Isophya harzi[#]	(cricket)	XXn	DD	HU	Y		
Isophya stysi[#]	(cricket)	U1	DD	HU, SK	Y		
Lignyoptera fumidaria	(geometrid moth)	U1	DD	HU	Y		
Lycaena dispar	Large Copper	U1/FV/XX	LC	AT, BE, CZ, DE, EE, EL, FR, FI, IT, LT, LV, LU, NL, PL, SI, SK	Y	Y	(European Commission, 2013; INPN, 2011; Pihl et al, 2001; Šefferová et al, 2008b; van Swaay et al, 2010b)
Lycaena helle	Violet Copper	U2	EN	BE, DE, FI, FR, LT, PL, SE	Y		(BfN, 2011; van Swaay et al, 2006; van Swaay et al, 2010b)
Maculinea (Phengaris) nausithous	Dusky Large Blue	U1/U2	NT	AT, CZ, DE, ES, FR, HU, NL, PL,	Y	Y	(INPN, 2011; van Swaay et al, 2006; van Swaay et al, 2010b)

Species name (alternative or old name) (* priority species) (#= taxonomy unresolved)	Common name	Conser-vation Status	EU-27 red list status	Member States	Grass use	Agri-use	References
				SI, SK			
Maculinea (Phengaris) teleius	Scarce Large Blue	U2/U1/FV	VU	AT, CZ, DE, FR, HU, IT, NL, LT, LV, PL, SI, SK	Y	Y	(INPN, 2011; van Swaay et al, 2006; van Swaay et al, 2010b)
Melanargia arge	Italian Marbled White	FV/U1	LC	IT	Y		(van Swaay et al, 2010a; van Swaay et al, 2010b)
Myrmecophilus baronii	(cricket)	U1		MT	Y		
Paracaloptenus caloptenoides	(cricket)	XX/U1		EL, HU, SK	Y	Y	
Phyllometra culminaria	(geometrid moth)	U1		HU	Y		
Pilemia tigrina	(longhorn beetle)	U1		HU	Y		(Illyés & Csatho, 2007)
Plebicula golgus (Polyommatus golgus)	Sierra Nevada Blue	XX	VU	ES	Y		(van Swaay et al, 2010a; van Swaay et al, 2010b; VV.AA, 2009)
Polymixis rufocincta isolata	(noctuid moth)	U1		HU	Y		
Polyommatus eroides (Polyommatus eros)	Eros Blue	U2/XX/XXn	NT	EL, PL, BG, (HU)	Y		
Probaticus subrugosus	(tenebrid beetle)	XX		EL, HU, SK (SI)	Y		

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Proterebia afra dalmata	Dalmatian Ringlet	XX		HR	Y		(Koren and Lauš, 2013; Koren and Trkov, 2013; Mihoci and Šašic, 2007)
Pseudophilotes bavius	Bavius Blue	XX/XXn	LC	RO, EL	Y		(van Swaay et al, 2010b)
Stenobothrus (Stenobothrodes) eurasius#	(grasshopper)	U1/XX	DD	HU, CZ, SK, EL	Y		
Vertigo angustior	Narrow-mouthed Whorl Snail	U2/U1/ FV/XX	VU	AT, BE, CZ, DE, DK, EE, EL, FI, FR, HU, IE, IT, LT, LV, NL, PL, SE, SI, SK, UK	Y		(Doody, 2008; INPN, 2011; JNCC, 2013a; Moorkens and Killeen, 2011; Šefferová et al, 2008c)
Vertigo genesii	Round-mouthed Whorl Snail	U2/FV/XX	LC	EE, FI, LV, SE, UK	Y		(JNCC, 2013a; Moorkens & Killeen, 2011; Pihl et al, 2001)
Vertigo geyeri	Geyer's Whorl Snail	U1/U2	LC	AT, CZ, DE, DK, EE, FI, IE, LT, LV, PL, SE, SI, SK, UK	Y		(JNCC, 2013a; National Parks and Wildlife Service, 2008; Pihl et al, 2001; Šefferová et al, 2008c)
Vertigo moulinsiana	Desmoulin's Whorl Snail	U2/U1/ XX/FV	VU	AT, BE, CZ, DE, DK, ES, EL, FR,	Y		(INPN, 2011; JNCC, 2013a; Moorkens & Killeen, 2011; Pihl et al, 2001; Šefferová et al, 2008c)

Species name (alternative or old name) (* priority species) (#= taxonomy unresolved)	Common name	Conser-vation Status	EU-27 red list status	Member States	Grass use	Agri-use	References
				HU, IE, IT, LT, LV, NL, PL, SE, SK, UK			
AMPHIBIANS							
**Alytes muletensis*	Mallorcan Midwife Toad	U1	VU	ES	Y		(Temple and Cox, 2009a)
**Pelobates fuscus insubricus*	Common Spadefoot toad - Po Valley subspecies	U2	n/a	IT	Y		(Temple & Cox, 2009a)
**Salamandra aurorae (Salamandra atra aurorae)*[#]	Golden Alpine Salamander	U1	n/a	IT	Y		(Temple & Cox, 2009a)
Triturus cristatus (4 species/subspecies: T carnifex, T cristatus, T dobrogicus, T karelinii)	Crested Newt: Italian, Northern, Danube, Southern	U2/U1	LC	AT, BE, CZ, DE, DK, EE, FI, FR, HU, LT, LV, LU, NL, PL, SE, SK, UK	Y		(Natural England, 2007; Pihl et al, 2001; Temple & Cox, 2009a)

REPTILES							
**Coluber cypriensis (Hierophis cypriensis)*	Cyprus Whip Snake	XX	EN	CY	Y		(Temple and Cox, 2009b)
Elaphe quatuorlineata (Coluber quatuorlineata)	Four-lined Snake	U1	NT	EL, IT, SI	Y		(Temple & Cox, 2009b)
Elaphe situla (Zamenis situla)	European Ratsnake	XX	LC	EL, IT, MT	Y		(Temple & Cox, 2009b)
Lacerta bonnali (Lacerta monticola, Iberolacerta bonnali)	Pyrenean Rock Lizard	U2	NT	ES, FR	Y		(Temple & Cox, 2009b)
Lacerta schreiberi	Schreiber's Green Lizard	XX	NT	ES, PT	Y		(ICNB, 2006; Rödder and Schulte, 2010; Temple & Cox, 2009b)
**Macrovipera schweizeri (Vipera lebetina schweizeri)*	Cyclades Blunt-nosed Viper	U1	EN	EL	Y		(Temple & Cox, 2009b)
Vipera ursinii (5 subspecies)	Orsini's Viper	U1/U2	VU	EL, FR, IT	Y		(Orbicon, Écosphère, ATECMA, Ecosystems LTD, 2009; Temple & Cox, 2009b)
**Vipera ursinii macrops*		XX	n/a	HR			
**Vipera ursinii rakosiensis*	Rákosi Vipera (Hungarian Meadow Viper)	U2	n/a	HU	Y		(Temple & Cox, 2009b)

MAMMALS							
**Bison bonasus*	European Bison	U1/U2	VU	PL, SK (LT)	Y		(Deinet et al, 2013; Temple and Terry, 2007)
Capra aegragus (natural populations)[#]	wild mountain goat	U1	LC	EL, IT	Y		(Temple & Terry, 2007)
**Capra pyrenaica pyrenaica*	Spanish Ibex	U2	EX	ES (extinct)	Y		(ICNB, 2005; Temple & Terry, 2007)
**Cervus elaphus corsicanus*	Corsican Red Deer	FV	n/a	IT, FR	Y		(European Commission, 2013; San Miguel, 2008)
**Marmota marmota latirostris*	Tatra Alpine Marmot	U2	n/a	SK, PL (ES)	Y		(Temple & Terry, 2007)
Mesocricetus newtoni	Romanian Hamster	XXn	NT	BG, RO	Y		(Temple & Terry, 2007)
Microtus cabrerae	Cabrera's Vole	XX	NT	ES, PT	Y	Y	(Temple & Terry, 2007; VV.AA, 2009)
**Microtus oeconomus arenicola*	Tundra Vole - Netherlands subspecies (Noordse woelmuis)	U2	n/a	NL	Y		(Ministerie van Economische Zaken, Landbouw en Innovatie, 2012; Temple & Terry, 2007)
**Microtus oeconomus mehelyi*	Central European Tundra Vole	U1/U2	n/a	AT, HU, SK	Y		(European Commission, 2013; Šefferová et al, 2008b)
Mustela eversmannii	Steppe Polecat	U2/XX	LC	CZ, HU, PL, SK	Y		(Šefferová et al, 2008b)

Myotis blythii	Lesser Mouse-Eared Myotis bat	U2/U1	NT	AT, CZ, CY, EL, ES, FR, HU, IT, MT, PT, SI, SK	Y		(Temple & Terry, 2007)
Myotis emarginatus	Geoffroy's Myotis bat	U2/U1/ FV/XX	LC	AT, BE, CZ, DE, ES, EL, FR, HU, IT, LU, NL, PL, PT, SI, SK	Y		(Temple & Terry, 2007)
Ovis orientalis ophion (Ovis gmelini ophion)[#]	wild sheep	U2	LC	CY	Y		(Temple & Terry, 2007)
Rhinolophus ferrumequinum	Greater Horseshoe bat	U2/U1/XX	NT	AT, BE, CY, DE, EL, ES, FR, HU, IT, LU, PT, SI, SK, UK (extinct in CZ, NL, PL?)	Y	Y	(Temple & Terry, 2007)
**Rupicapra pyrenaica ornata (Rupicapra rupicapra ornata)*	Apennine Chamois	U1	VU	IT	Y		(Deinet et al, 2013; Temple & Terry, 2007)
Rupicapra rupicapra balcanica	Balkan Chamois	U2	n/a	BG, EL (SI)	Y		(Deinet et al, 2013; Temple & Terry, 2007)

**Rupicapra rupicapra tatrica*	Tatra Chamois	U2	n/a	SK, PL	Y		(Deinet et al, 2013; Temple & Terry, 2007)
Sicista subtilis	Severtzov's Birch Mouse	XX	NT	HU, PL, SK	Y	Y	(Šefferová et al, 2008b; Temple & Terry, 2007)
Spermophilus citellus (Citellus citellus)	European Souslik	U2/U1/XXn	VU	AT, CZ, EL, HU, PL, SK, BG, RO	Y	Y	(European Commission, 2013; Šefferová et al, 2008b; Zingstra et al, 2010)
**Spermophilus suslicus (Citellus suslicus)*	Speckled Ground Squirrel, Spotted Souslik	U2	NT	PL	Y	Y	(Temple & Terry, 2007)
Vormela peregusna	European Marbled Polecat	XXn	VU	RO, BG, EL	Y		(Temple & Terry, 2007)

BIRDS:

Proportion of population of the species using each agricultural habitat as assessed by Birdlife International (Tucker and Evans, 1997). **2** = >75% of European breeding or wintering population uses the habitat. **1** = 10-75% of European breeding or wintering population uses the habitat. Key: **Moor** = grazed moorland and tundra; **Med** = grazed Mediterranean shrublands; **AIG** = arable and improved grasslands; **SG** = steppe grasslands; **MG** = montane grasslands; **WG** = wet grasslands; **PC** = permanent crops; **PW** = pastoral woodlands.

Priority status = on list of 51 species and subspecies agreed by the Ornis Committee (which advises the Commission on the implementation of the Directive) that are considered as priority for the purpose of LIFE Nature funding and the development of action plans. These priority species include all globally threatened species that regularly occur in the EU, as well as other some other species that are particularly threatened are a result of their rarity and/or rapidly declining populations.
Dispersed = degree of dispersion in the wider environment (as a measure of the degree to which the species will benefit from measures that are targeted towards Natura sites). **-1** = dispersed species.
EU UFC = latest assessment of conservation status of the whole EU population by Birdlife International (Birdlife International, 2004). **1**= unfavourable status.

Sources:

Birdlife International (2004) Birds in the European Union: a Status Assessment. Birdlife International, Wageningen, Netherlands.
Tucker, G M and Evans, M (1997) Habitats for Birds in Europe: a Conservation Strategy for the Wider Environment. BirdLife International, Cambridge.

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
Acrocephalus paludicola	Aquatic Warbler						2			1		1	(Flade and Lachmann, 2008; Flor, 2011; Morkvenas, 2012; Prieksa, 2005; Tucker and Evans, 1997; Zadrag et al, 2012)
Aegypius monachus	Cinereous Vulture								1	1		1	(Deinet et al, 2013; Heredia, 1996a; Tucker & Evans, 1997)
Alectoris barbara	Barbary Partridge		2							0	-1	1	(Tucker & Evans, 1997)
Alectoris graeca	Rock Partridge		1			1				1	-1	1	(Tucker & Evans, 1997)
Anser albifrons flavirostris	Greenland White-			1			1			1		1	(Fox et al, 2005; Tucker & Evans,

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
	fronted Goose												1997)
Anser erythropus	Lesser White-fronted Goose				2		2			1		1	(Jones et al, 2008; Tucker & Evans, 1997)
Anthus campestris	Tawny Pipit		1		1					0	-1	1	(Delgado and Moreira, 2000; Tucker & Evans, 1997)
Aquila adalberti	Spanish Imperial Eagle		2						2	1		1	(Deinet et al, 2013; Sánchez et al, 2008; Tucker & Evans, 1997)
Aquila chrysaetos	Golden Eagle		1			1				0		1	(Tucker & Evans, 1997)
Aquila clanga	Greater Spotted Eagle						1			1		1	(Meyburg et al, 1997a; Tucker & Evans, 1997)
Aquila heliaca	Imperial Eagle			1	2					1		1	(Deinet et al, 2013; Heredia, 1996b; Tucker & Evans, 1997)
Aquila pomarina	Lesser Spotted Eagle			1			1			1	-1	1	(Latvian Fund for Nature, 2008; Meyburg et al, 1997b; Tucker & Evans, 1997)
Asio flammeus	Short-eared Owl	2			1		1			0	-1	1	(Tucker & Evans, 1997)
Branta leucopsis	Barnacle Goose			2						0			(Deinet et al, 2013; Tucker & Evans, 1997)
Burhinus oedicnemus	Eurasian Thick-knee (Stone Curlew)			1	2					0	-1	1	(Bota et al, 2005; Evans and Green, 2007; Tucker & Evans, 1997)

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
Buteo rufinus	Long-legged Buzzard		1	1	2					0	-1		(Tucker & Evans, 1997)
Calandrella brachydactyla	Greater Short-toed Lark			2						0	-1	1	(Robledano et al, 2010; Tucker & Evans, 1997)
Chersophilus duponti	Dupont's Lark				2					0		1	(Tucker & Evans, 1997) (Bota et al, 2005; Iñigo et al, 2008b)
Chlamydotis undulata	Houbara Bustard				2					1		1	(Tucker & Evans, 1997)
Ciconia ciconia	White Stork			1	1		1		1	0	-1	1	(Deinet et al, 2013; Delgado & Moreira, 2000; Tucker & Evans, 1997)
Ciconia nigra	Black Stork		1						1	0		1	(Tucker & Evans, 1997)
Circaetus gallicus	Short-toed Snake-eagle		2		1				1	0	-1		(Tucker & Evans, 1997)
Circus cyaneus	Northern Harrier	2		1	1		1			0	-1	1	(Amar et al, 2011; Tucker & Evans, 1997)
Circus macrourus	Pallid Harrier			2						0		1	(Tucker & Evans, 1997)
Circus pygargus	Montagu's Harrier			2	1					0	-1		(Macedo-Sousa et al, 2009; Tucker & Evans, 1997) (Bota et al, 2005)
Coracias garrulus	European Roller		1		1			1	1	0	-1	1	(Tucker & Evans, 1997)
Crex crex	Corncrake			1			1			1	-1	1	(Boatman et al, 2008; Crockford et al, 1997; Latvian Fund for Nature, 2008; Orbicon, Écosphère, ATECMA, Ecosystems

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
													LTD, 2009; Tucker & Evans, 1997)
Cygnus bewickii (C columbianus bewickii)	Tundra Swan / Bewick's Swan / Whistling Swan						1			0		1	(Tucker & Evans, 1997)
Cygnus cygnus	Whooper Swan						1			0			(Deinet et al, 2013; Tucker & Evans, 1997)
Elanus caeruleus	Black-winged Kite			1					1	0		1	(Tucker & Evans, 1997)
Emberiza cineracea	Cinereous Bunting		2							0	-1	1	(Tucker & Evans, 1997)
Emberiza hortulana	Ortolan Bunting		1	2					1	0	-1	1	(Orbicon, Écosphère, ATECMA, Ecosystems LTD, 2009; Tucker & Evans, 1997)
Falco biarmicus	Lanner Falcon		2		2					1	-1	1	(Gustin et al, 1999; Tucker & Evans, 1997)
Falco cherrug	Saker Falcon			1	2					1		1	(Deinet et al, 2013; Tucker & Evans, 1997)
Falco naumanni	Lesser Kestrel				2					1		1	(Bota et al, 2005; Catry et al, 2012; Deinet et al, 2013; Iñigo and Barov, 2011a; Macedo-Sousa et al, 2009; Tucker & Evans, 1997; Ursúa et al, 2005)
Falco vespertinus	Red-footed Falcon			1	1					1	-1	1	(Palatitz et al, 2010; Tucker & Evans, 1997)

Species (#= taxonomy unresolved)	English name	Mo or	Me d	AIG	SG	MG	WG	PC	PW	Priority status	Dispe -rsed	EU UFC	References
Galerida theklae	Thekla Lark		2		1			1	1	0	-1	1	(Tucker & Evans, 1997)
Gallinago media	Great Snipe						2			0		1	(Latvian Fund for Nature, 2008; Tucker & Evans, 1997)
Glareola pratincola	Collared Pratincole			1	1					0	-1	1	(Tucker & Evans, 1997)
Grus grus	Common Crane			1	1		1			0		1	(Deinet et al, 2013; Tucker & Evans, 1997)
Gypaetus barbatus	Lammergeier					2				1		1	(Deinet et al, 2013; Fundación para la Conservación del Quebrantahuesos, 2010; Heredia and Heredia, 1997; Tucker & Evans, 1997)
Gyps fulvus	Eurasian Griffon				1	1				0			(Deinet et al, 2013; Ministry of Agriculture, Natural Resources and Environment, 2011; Tucker & Evans, 1997)
Hieraaetus fasciatus	Bonelli's Eagle		2							1		1	(Arroyo and Ferreiro, 1997; Tucker & Evans, 1997)
Hieraaetus pennatus	Booted Eagle		2							0	-1	1	(Tucker & Evans, 1997)
Hippolais olivetorum	Olive-tree Warbler		2					1		0	-1	1	(Tucker & Evans, 1997)
Lanius collurio	Red-backed Shrike			2						0	-1	1	(Tucker & Evans, 1997)
Lanius minor	Lesser Grey Shrike			1	1					0	-1	1	(Tucker & Evans, 1997)

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
Lanius nubicus	Masked Shrike		2					1		0		1	(Tucker & Evans, 1997)
Lullula arborea	Wood Lark		1	1				1	1	0	-1	1	(Tucker & Evans, 1997)
Melanocorypha calandra	Calandra Lark			1	1					0	-1	1	(Delgado & Moreira, 2000; Robledano et al, 2010; Tucker & Evans, 1997)
Milvus milvus	Red Kite		1	1	1				1	0	-1	1	(Deinet et al, 2013; Knott et al, 2009; Tucker & Evans, 1997)
Milvus migrans	Black Kite			1	1				1	0	-1		(Tucker & Evans, 1997)
Neophron percnopterus	Egyptian Vulture		1		1	1				0		1	(Iñigo et al, 2008a; Tucker & Evans, 1997)
Otis tarda	Great Bustard			1	2					1		1	(Bota et al, 2005; Lemus et al, 2011; Macedo-Sousa et al, 2009; Nagy, 2010; Orbicon, Écosphère, ATECMA, Ecosystems LTD, 2009; Tucker & Evans, 1997)
Perdix perdix hispaniensis	Pyrenean Grey Partridge			2	1					0	-1	1	(Tucker & Evans, 1997)
Perdix perdix italica	Italian Grey Partridge			2	1					1	-1	1	(Palumbo and Gallo-Orsi, 1999; Tucker & Evans, 1997)
Pluvialis apricaria	Eurasian Golden-plover	2		1	1					0	-1	1	(Delgado & Moreira, 2000; Tucker & Evans, 1997)
Pterocles alchata	Pin-tailed Sandgrouse			2						0		1	(Tucker & Evans, 1997) (Bota et

Species (#= taxonomy unresolved)	English name	Moor	Med	AIG	SG	MG	WG	PC	PW	Priority status	Dispe-rsed	EU UFC	References
													al, 2005)
Pterocles orientalis	Black-bellied Sandgrouse			2						0		1	(Tucker & Evans, 1997) (Bota et al, 2005)
Pyrrhocorax pyrrhocorax	Red-billed Chough		1	1		1				0	-1	1	(Laiolo et al, 2004; Tucker & Evans, 1997)
Tadorna ferruginea	Ruddy Shelduck				1					0		1	(Tucker & Evans, 1997)
Tetrax tetrax	Little Bustard			1	2					1		1	(Barmière et al, 2011; Delgado et al, 2009; Tucker & Evans, 1997) (Bota et al, 2005; Iñigo and Barov, 2011b)

ANNEX C. MAIN HABITATS OF COMMUNITY INTEREST DEPENDENT ON AGRICULTURE IN EACH MEMBER STATE

This table shows the area of agricultural habitats of Community interest in those Member States that contain 10% or more of the total area of a habitat within any given biogeographical region. This highlights to Member States the habitats for which they have an important responsibility. However, it should be regarded as indicative due to the variable data quality and data gaps. It should also be noted that the excluded habitat areas are important at the national level (for example lowland hay meadows in southern Sweden). The dependence of the habitat types on farming activities varies, and also depends on their location, so some of the listed habitats in some Member States do not need agricultural management.

Key/Sources

% of total per BGR = proportion of total area of a habitat within any given biogeographical region. Only habitats that are present as 10% or more of the total area of a habitat within any given biogeographical region are included in the table. ALP = Alpine, ATL = Atlantic, BLS = Black Sea, BOR = Boreal, CON = Continental, MAC = Macaronesian, MED = Mediterranean, PAN = Pannonic, STP = Steppic

Status = conservation status reported under Article 17 in 2007. FV = favourable, U1 = unfavourable, U2 = unfavourable-bad, + = improving trend, - = deteriorating trend.

The table does not list habitats for Cyprus, Luxembourg, and Malta.

The information comes from the Article 17 database for the 2001-2006 period. The habitats in Romania and Bulgaria are listed according to the habitats check list, but no area or status data are available.

EEA (2008) Habitats Directive Article 17 database. http://www.eea.europa.eu/data-and-maps/data/article-17-database-habitats-directive-92-43-eec

ETC/BD (2012) Habitats check list. http://bd.eionet.europa.eu/article17/reference_portal

MS	BioGeo Region	Habitat Code	Habitat	% of total per BGR	Area (ha)	Status
Austria (missing data for 4030 and 6430)						
AT	CON	1530	* Pannonic salt steppes and salt marshes	100	15,000	U2
AT	CON	2340	* Pannonic inland dunes	100	80	U2+
AT	ALP	4060	Alpine and Boreal heaths	20	6,042,000	FV

AT	ALP	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	60	205,000	U2
AT	CON	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	14	99,000	U2
AT	ALP	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	43	50,000	U1
AT	CON	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	23	18,000	U1
AT	ALP	6150	Siliceous alpine and boreal grasslands	48	3,700,000	FV
AT	ALP	6170	Macaronesian mesophile grasslands	32	2,000,000	U1
AT	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	11	200,000	U1
AT	ALP	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	55	1,334,000	U1
AT	CON	6240	* Sub-pannonic steppic grassland	77	35,000	U1
AT	CON	6250	* Pannonic loess steppic grasslands	100	200	U2+
AT	CON	6260	* Pannonic sand steppes	100	1,500	U2+
AT	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	14	30,000	U1
AT	CON	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	10	9,000	U2
AT	ALP	8240	* Limestone pavements	63	300,000	FV
Belgium						
BE	ATL	2310	Dry sandy heaths with *Calluna* and *Genista*	15	20,000	U2
BE	ATL	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	11	12,800	U2
BE	CON	4010	Northern Atlantic wet heaths with *Erica tetralix*	41	20,000	U2
BE	ATL	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	11	49,000	U2
BE	ATL	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	13	74,000	U2
Bulgaria						
BG	CON	1530	*Pannonic salt steppes and salt marshes	N/A	N/A	N/A

BG	BLS	2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	N/A	N/A	N/A
BG	CON	2340	Pannonic inland dunes	N/A	N/A	N/A
BG	ALP	4060	Alpine and Boreal heaths	N/A	N/A	N/A
BG	CON	4060	Alpine and Boreal heaths	N/A	N/A	N/A
BG	ALP	4090	Endemic oro-Mediterranean heaths with gorse	N/A	N/A	N/A
BG	BLS	4090	Endemic oro-Mediterranean heaths with gorse	N/A	N/A	N/A
BG	CON	4090	Endemic oro-Mediterranean heaths with gorse	N/A	N/A	N/A
BG	ALP	5130	*Juniperus communis* formations on heaths or calcareous grasslands	N/A	N/A	N/A
BG	CON	5130	*Juniperus communis* formations on heaths or calcareous grasslands	N/A	N/A	N/A
BG	ALP	5210	Arborescent matorral with *Juniperus* spp.	N/A	N/A	N/A
BG	BLS	5210	Arborescent matorral with *Juniperus* spp.	N/A	N/A	N/A
BG	CON	5210	Arborescent matorral with *Juniperus* spp.	N/A	N/A	N/A
BG	ALP	6110	*Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	N/A	N/A	N/A
BG	BLS	6110	*Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	N/A	N/A	N/A
BG	CON	6110	*Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	N/A	N/A	N/A
BG	CON	6170	*Alpine and subalpine calcareous grasslands	N/A	N/A	N/A
BG	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)	N/A	N/A	N/A
BG	BLS	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)	N/A	N/A	N/A
BG	CON	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)	N/A	N/A	N/A
BG	ALP	6220	*Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	N/A	N/A	N/A
BG	BLS	6220	*Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	N/A	N/A	N/A
BG	CON	6220	*Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	N/A	N/A	N/A

BG	ALP	6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	N/A	N/A	N/A
BG	CON	6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	N/A	N/A	N/A
BG	ALP	6240	*Sub-pannonic steppic grassland	N/A	N/A	N/A
BG	BLS	6240	*Sub-pannonic steppic grassland	N/A	N/A	N/A
BG	CON	6240	*Sub-pannonic steppic grassland	N/A	N/A	N/A
BG	CON	6250	*Pannonic loess steppic grasslands	N/A	N/A	N/A
BG	ALP	62A0	*Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	N/A	N/A	N/A
BG	BLS	62A0	*Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	N/A	N/A	N/A
BG	CON	62A0	*Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	N/A	N/A	N/A
BG	ALP	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	N/A	N/A	N/A
BG	CON	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	N/A	N/A	N/A
BG	ALP	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
BG	BLS	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
BG	CON	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
BG	ALP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	N/A	N/A	N/A
BG	BLS	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	N/A	N/A	N/A
BG	CON	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	N/A	N/A	N/A
BG	ALP	6520	Mountain hay meadows	N/A	N/A	N/A
BG	CON	6520	Mountain hay meadows	N/A	N/A	N/A
BG	ALP	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A
BG	BLS	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A

BG	CON	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A
Czech Republic						
CZ	PAN	1340	* Inland salt meadows	10	290	U2
CZ	PAN	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	100	1,000	U2
CZ	CON	6150	Siliceous alpine and boreal grasslands	97	11,000	FV
CZ	CON	6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	100	4,000	U1
CZ	CON	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	35	184,000	U2
CZ	CON	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	17	86,000	U2
CZ	CON	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	25	171,000	U2
CZ	CON	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	18	2,030,000	U2
CZ	CON	6520	Mountain hay meadows	12	198,000	U2
CZ	PAN	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	26	230	FV
Germany						
DE	CON	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	14	39,290	U1
DE	ATL	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	26	188,850	U1
DE	CON	1340	* Inland salt meadows	25	6,370	U1
DE	ATL	1340	* Inland salt meadows	99	390	U2
DE	ATL	2150	* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	17	2,470	U2
DE	CON	2150	* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	100	1,350	U2
DE	ATL	2310	Dry sandy heaths with *Calluna* and *Genista*	14	18,620	U2
DE	CON	2310	Dry sandy heaths with *Calluna* and *Genista*	87	32,400	U1
DE	ATL	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	27	5,100	U2

DE	ATL	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	11	12,850	U1
DE	CON	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	44	77,510	U1
DE	CON	4030	European dry heaths	34	335,380	U2
DE	CON	6120	* Xeric sand calcareous grasslands	42	39,480	U1
DE	CON	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	17	359,620	U1
DE	CON	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	19	97,310	U1
DE	CON	6240	* Sub-pannonic steppic grassland	18	8,000	U1
DE	ATL	6240	* Sub-pannonic steppic grassland	100	160	U1
DE	CON	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	20	100,160	U2
DE	CON	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	35	233,870	FV
DE	ATL	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	25	114,010	U1
DE	CON	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	52	44,420	U2
DE	ATL	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	100	140	U2
DE	CON	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	13	1,460,040	U1
DE	ATL	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	12	69,630	U2
DE	CON	6520	Mountain hay meadows	13	208,350	U1
DE	CON	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	22	15,690	U1
DE	CON	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	15	8,450	FV
Denmark						
DK	CON	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	77	218,000	U2
DK	ATL	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	19	139,000	U2
DK	CON	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	42	61,000	U2

DK	ATL	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	10	62,000	U1
DK	CON	2140	* Decalcified fixed dunes with *Empetrum nigrum*	93	50,000	U1
DK	ATL	2140	* Decalcified fixed dunes with *Empetrum nigrum*	81	138,000	U1
DK	ATL	2190	Machairs (* in Ireland)	27	36,000	U1
DK	CON	2190	Humid dune slacks	71	22,000	U2
DK	CON	2250	* Coastal dunes with *Juniperus* spp.	43	3,000	U1
DK	CON	2310	Dry sandy heaths with *Calluna* and *Genista*	13	5,000	U2
DK	ATL	2310	Dry sandy heaths with *Calluna* and *Genista*	13	17,500	U2
DK	ATL	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	21	4,000	U2
DK	CON	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	67	10,000	U2
DK	CON	4010	Northern Atlantic wet heaths with *Erica tetralix*	31	15,000	U2
DK	CON	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	15	81,000	U2
DK	ATL	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	12	21,000	U2
Estonia						
EE	BOR	1630	* Boreal Baltic coastal meadows	56	120,000	U1-
EE	BOR	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	13	5,500	FV
EE	BOR	2140	* Decalcified fixed dunes with *Empetrum nigrum*	13	400	XX
EE	BOR	2190	Humid dune slacks	45	3,300	FV
EE	BOR	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	11	3,000	U1
EE	BOR	5130	*Juniperus communis* formations on heaths or calcareous grasslands	53	53,000	FV
EE	BOR	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	22	50,000	U1-
EE	BOR	6270	* Fennoscandian lowland species-rich dry to mesic grasslands	13	52,000	U1-

EE	BOR	6280	* Nordic alvar and precambrian calcareous flatrocks	54	100,000	U1-
EE	BOR	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	14	35,000	FV
EE	BOR	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	15	20,000	FV
EE	BOR	6450	Northern boreal alluvial meadows	44	190,000	U1-
EE	BOR	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	17	33,000	FV
EE	BOR	6530	* Fennoscandian wooded meadows	70	37,000	U1
EE	BOR	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	32	36,000	U2-
EE	BOR	7230	Alkaline fens	15	239,000	U2
EE	BOR	8240	* Limestone pavements	26	2,000	U1
Greece						
EL	MED	2190	Humid dune slacks	10	2,560	U1
EL	MED	4060	Alpine and Boreal heaths	12	157,080	FV
EL	MED	5420	*Sarcopoterium spinosum* phryganas	93	2,358,000	FV
EL	MED	5430	Endemic phryganas of the *Euphorbio-Verbascion*	56	254,300	FV
EL	MED	6170	Alpine and subalpine calcareous grasslands	10	362,000	FV
EL	MED	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	38	141,800	FV
EL	MED	62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	100	227,100	U1
Spain (missing data for 1330, 2190, 4010, 4040)						
ES	MAC	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	98	40,000	U1
ES	MED	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	100	6,460	XX
ES	MED	2150	* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	100	40,300	XX
ES	MED	2250	* Coastal dunes with *Juniperus* spp.	25	43,980	XX
ES	MED	4020	* Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	100	1,278,000	XX

ES	MED	4030	European dry heaths	97	6,025,000	XX
ES	ALP	4030	European dry heaths	32	51,090	U1
ES	ATL	4030	European dry heaths	35	7,535,710	XX
ES	ATL	4060	Alpine and Boreal heaths	39	357,790	XX
ES	MED	4060	Alpine and Boreal heaths	81	1,049,000	XX
ES	ATL	4090	Endemic oro-Mediterranean heaths with gorse	100	3,402,000	XX
ES	MAC	4090	Endemic oro-Mediterranean heaths with gorse	100	290,000	U1
ES	ALP	4090	Endemic oro-Mediterranean heaths with gorse	85	208,790	XX
ES	MED	4090	Endemic oro-Mediterranean heaths with gorse	91	17,935,000	XX
ES	MED	5120	Mountain *Cytisus purgans* formations	96	2,799,000	XX
ES	ALP	5120	Mountain *Cytisus purgans* formations	69	227,080	XX
ES	ATL	5120	Mountain *Cytisus purgans* formations	100	119,000	XX
ES	ALP	5210	Arborescent matorral with *Juniperus* spp.	22	14,990	XX
ES	MED	5210	Arborescent matorral with *Juniperus* spp.	87	8,497,000	XX
ES	MED	5330	Thermo-Mediterranean and pre-desert scrub	90	9,299,550	XX
ES	MAC	5330	Thermo-Mediterranean and pre-desert scrub	94	1,660,000	U1
ES	MED	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	91	1,108,700	XX
ES	ALP	6140	Siliceous Pyrenean *Festuca eskia* grasslands	72	590,070	U2+
ES	ATL	6140	Siliceous Pyrenean *Festuca eskia* grasslands	100	105,780	XX
ES	ATL	6160	Oro-Iberian *Festuca indigesta* grasslands	100	1,985,000	XX
ES	MED	6160	Oro-Iberian *Festuca indigesta* grasslands	100	2,190,690	XX
ES	MED	6170	Alpine and subalpine calcareous grasslands	76	2,707,700	XX
ES	MED	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	22	577,440	XX

ES	ATL	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	41	940,350	XX
ES	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	29	541,350	XX
ES	MED	6220	* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	82	11,953,390	XX
ES	MED	6310	Dehesas with evergreen *Quercus* spp.	98	15,316,200	XX
ES	MED	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	60	51,720	XX
ES	MED	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	95	2,337,260	XX
ES	MAC	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	100	50	U2
ES	MED	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	79	420,190	XX
ES	ALP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	19	308,750	XX
ES	MED	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	65	577,610	XX
ES	MED	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	22	6,000	XX
ES	MED	7230	Alkaline fens	23	8,000	XX
ES	MED	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	99	2,264,000	XX
Finland						
FI	BOR	1630	* Boreal Baltic coastal meadows	20	42,000	U2
FI	BOR	2140	* Decalcified fixed dunes with *Empetrum nigrum*	33	1,000	U1
FI	BOR	2190	Humid dune slacks	14	1,000	U1
FI	BOR	4030	European dry heaths	10	10,000	U2-
FI	BOR	4060	Alpine and Boreal heaths	100	1,100,000	U1-
FI	ALP	4060	Alpine and Boreal heaths	18	5,600,000	U1-
FI	BOR	6150	Siliceous alpine and boreal grasslands	60	3,000	FV
FI	BOR	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	31	40,000	U1

FI	BOR	6520	Mountain hay meadows	52	1,500	U2-
FI	ALP	7230	Alkaline fens	24	98,000	FV
FI	BOR	7230	Alkaline fens	37	600,000	U1-
FI	BOR	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	75	150,000	FV
France						
FR	ATL	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	37	264,000	U1
FR	CON	1340	* Inland salt meadows	24	6,000	U2
FR	ATL	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	20	124,000	U2
FR	ATL	2150	* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	14	2,000	U2
FR	ATL	2190	Humid dune slacks	45	61,000	U2
FR	MED	2190	Humid dune slacks	44	11,250	XX
FR	MED	2250	* Coastal dunes with *Juniperus* spp.	13	22,000	U1
FR	MED	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	100	2,000	XX
FR	ATL	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	61	68,000	U2
FR	CON	4010	Northern Atlantic wet heaths with *Erica tetralix*	12	6,000	U2
FR	ALP	4020	* Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	100	22,000	U2
FR	ATL	4020	* Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	98	222,000	U2
FR	CON	4020	* Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	100	2,000	U1
FR	CON	4030	European dry heaths	22	217,000	U2
FR	ALP	4030	European dry heaths	66	104,000	U1
FR	ATL	4040	* Dry Atlantic coastal heaths with *Erica vagans*	63	10,000	U1
FR	CON	4060	Alpine and Boreal heaths	21	15,000	U1
FR	ALP	4090	Endemic oro-Mediterranean heaths with gorse	14	34,000	U1

FR	CON	5120	Mountain *Cytisus purgans* formations	100	38,000	FV
FR	ALP	5120	Mountain *Cytisus purgans* formations	31	101,000	FV
FR	ALP	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	18	61,000	FV
FR	MED	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	43	60,000	U1
FR	CON	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	10	71,000	U2
FR	ATL	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	90	122,000	U1
FR	ALP	5210	Arborescent matorral with *Juniperus* spp.	43	30,000	FV
FR	ATL	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	100	18,000	U1
FR	CON	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	24	19,000	U1
FR	ALP	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	38	44,000	U1
FR	ATL	6120	* Xeric sand calcareous grasslands	97	46,000	U2
FR	MED	6120	* Xeric sand calcareous grasslands	100	2,000	XX
FR	ALP	6140	Siliceous Pyrenean *Festuca eskia* grasslands	28	225,000	FV
FR	ALP	6170	Alpine and subalpine calcareous grasslands	12	772,000	FV
FR	CON	6170	Alpine and subalpine calcareous grasslands	32	49,000	U1
FR	MED	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	16	402,000	U1
FR	CON	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	16	335,000	U2
FR	ATL	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	14	323,000	U2
FR	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	16	289,000	U1
FR	ATL	6220	* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	100	7,000	XX
FR	ALP	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-	10	237,000	U1

			mountain areas, in continental Europe)			
FR	MED	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	19	71,000	U1
FR	ATL	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	47	84,000	U2
FR	CON	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	15	78,000	U2
FR	ALP	6240	* Sub-pannonic steppic grassland	63	14,000	U1
FR	ATL	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	33	129,000	U2
FR	CON	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	24	123,000	U2
FR	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	24	52,000	U1
FR	MED	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	35	30,000	U1
FR	ATL	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	100	300	U2
FR	ATL	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	61	275,000	U2
FR	MED	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	11	59,000	U1
FR	ALP	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	18	98,000	FV
FR	CON	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	15	102,000	U1
FR	MED	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	24	215,000	U2
FR	ATL	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	72	418,000	U2
FR	ALP	6520	Mountain hay meadows	25	136,000	U2
FR	MED	6520	Mountain hay meadows	100	50,000	U2
FR	ATL	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	83	103,000	U1
FR	CON	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	37	26,000	U1
FR	MED	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	48	13,000	U1

FR	ALP	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	83	11,000	U1
FR	MED	7230	Alkaline fens	52	18,000	U2
FR	ALP	7230	Alkaline fens	19	76,000	U1
FR	ATL	7230	Alkaline fens	54	89,000	U2
FR	CON	7230	Alkaline fens	98	7,556,000	U2
FR	ALP	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	18	36,000	U1
FR	ATL	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	100	33,000	U1
FR	CON	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	37	21,000	FV
FR	CON	8240	* Limestone pavements	99	540,000	XX
FR	MED	8240	* Limestone pavements	18	8,000	FV
Hungary						
HU	PAN	1530	* Pannonic salt steppes and salt marshes	100	2,000,000	U2
HU	PAN	2340	* Pannonic inland dunes	42	5,000	U2
HU	PAN	4030	European dry heaths	11	700	U2
HU	PAN	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	92	15,000	U1
HU	PAN	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	79	500	XX
HU	PAN	6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	93	12,000	U1
HU	PAN	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	60	80,000	U2
HU	PAN	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	100	500	U2
HU	PAN	6240	* Sub-pannonic steppic grassland	94	195,000	U2

HU	PAN	6250	* Pannonic loess steppic grasslands	98	200,000	U2
HU	PAN	6260	* Pannonic sand steppes	99	480,000	U2
HU	PAN	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	97	80,000	U2
HU	PAN	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	80	15,000	U2
HU	PAN	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	90	500,000	U2
HU	PAN	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	78	252,000	U2
HU	PAN	6520	Mountain hay meadows	100	8,000	U2
HU	PAN	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	100	10,000	U1
HU	PAN	7230	Alkaline fens	100	13,000	U2
HU	PAN	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	68	600	FV
Ireland (missing data for 4010)						
IE	ATL	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	11	70,610	U2
IE	ATL	21A0	Machairs (* in Ireland)	17	27,530	U2
IE	ATL	4030	European dry heaths	32	6,807,000	U1
IE	ATL	4060	Alpine and Boreal heaths	14	128,000	U1
IE	ATL	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	23	531,000	U2
IE	ATL	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	51	200,000	U2
IE	ATL	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	12	14,680	U2
IE	ATL	7230	Alkaline fens	41	68,400	U2
IE	ATL	8240	* Limestone pavements	93	363,000	U1
Italy						
IT	MED	2190	Humid dune slacks	46	12,000	U1

IT	CON	2190	Humid dune slacks	16	5,000	U1
IT	CON	2250	* Coastal dunes with *Juniperus* spp.	57	4,000	U2
IT	MED	2250	* Coastal dunes with *Juniperus* spp.	55	97,000	U1
IT	CON	4060	Alpine and Boreal heaths	73	53,000	FV
IT	CON	4090	Endemic oro-Mediterranean heaths with gorse	100	4,000	FV
IT	MED	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	57	81,000	FV
IT	CON	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	16	114,000	FV
IT	ALP	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	12	42,000	FV
IT	CON	5210	Arborescent matorral with *Juniperus* spp.	100	18,000	FV
IT	ALP	5210	Arborescent matorral with *Juniperus* spp.	35	24,000	FV
IT	CON	5330	Thermo-Mediterranean and pre-desert scrub	100	4,000	U1
IT	MED	5430	Endemic phryganas of the *Euphorbio-Verbascion*	37	167,000	FV
IT	CON	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	28	22,000	FV
IT	ALP	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	18	21,000	FV
IT	ALP	6170	Alpine and subalpine calcareous grasslands	17	1,084,000	FV
IT	CON	6170	Alpine and subalpine calcareous grasslands	65	99,000	FV
IT	MED	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	62	1,588,000	FV
IT	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	24	436,000	FV
IT	CON	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	27	565,000	FV
IT	ALP	6220	* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	100	15,000	FV
IT	MED	6220	* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	14	2,101,000	FV
IT	CON	6220	* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	100	28,000	FV

IT	ALP	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	18	431,000	FV
IT	CON	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	13	68,000	FV
IT	ALP	6240	* Sub-pannonic steppic grassland	13	3,000	U1
IT	CON	62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	10	45,000	FV
IT	ALP	62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	16	37,000	FV
IT	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	18	38,000	U1
IT	CON	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	100	13,000	XX
IT	ALP	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	93	2,000	XX
IT	ALP	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	42	226,000	FV
IT	CON	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	11	74,000	FV
IT	MED	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	10	90,000	FV
IT	ALP	6520	Mountain hay meadows	26	142,000	U1
IT	MED	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	30	8,000	FV
IT	CON	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	18	13,000	FV
IT	MED	7230	Alkaline fens	20	7,000	FV
IT	CON	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	42	24,000	FV
IT	ALP	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	76	151,000	FV
IT	MED	8240	* Limestone pavements	82	37,000	FV
IT	ALP	8240	* Limestone pavements	24	116,000	FV
Lithuania						
LT	BOR	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	27	11,000	U1-

LT	BOR	2140	* Decalcified fixed dunes with *Empetrum nigrum*	20	600	U2
LT	BOR	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	16	2,100	U2
LT	BOR	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	87	23,000	U2-
LT	BOR	4030	European dry heaths	21	20,000	XX
LT	BOR	6120	* Xeric sand calcareous grasslands	93	10,000	U2-
LT	BOR	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	18	40,000	U2-
LT	BOR	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	14	5,000	U2-
LT	BOR	6270	* Fennoscandian lowland species-rich dry to mesic grasslands	13	52,000	U1-
LT	BOR	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	34	44,000	U1
LT	BOR	6450	Northern boreal alluvial meadows	20	86,000	U1
LT	BOR	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	61	120,000	U1
Latvia						
LV	BOR	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	31	12,800	U1
LV	BOR	2190	Humid dune slacks	12	910	U1
LV	BOR	4010	Northern Atlantic wet heaths with *Erica tetralix*	29	2,000	XX
LV	BOR	4030	European dry heaths	12	12,000	U1
LV	BOR	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	12	16,000	FV
LV	BOR	6450	Northern boreal alluvial meadows	16	70,000	U2
LV	BOR	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	13	25,000	U1
The Netherlands						
NL	ATL	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	13	93,000	U1
NL	ATL	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	16	100,000	U2

NL	ATL	2310	Dry sandy heaths with *Calluna* and *Genista*	59	80,000	U2
NL	ATL	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	52	10,000	U1
NL	ATL	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	13	15,000	U2
Poland (missing data for 6410)						
PL	CON	1340	* Inland salt meadows	42	10,600	U2
PL	CON	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	42	60,000	U2
PL	CON	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	25	45,000	U2
PL	CON	4030	European dry heaths	20	200,000	U2
PL	CON	6120	* Xeric sand calcareous grasslands	54	50,000	U2
PL	CON	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	36	31,100	U1
PL	ALP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	25	400,000	U1
PL	CON	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	60	6,654,000	U1
PL	CON	6520	Mountain hay meadows	67	1,100,000	U1
PL	ALP	6520	Mountain hay meadows	18	100,000	U2
PL	CON	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	17	12,000	U1
Portugal (missing data for 18 habitat types)						
PT	MED	4010	Northern Atlantic wet heaths with *Erica tetralix*	100	12,600	U1
PT	MAC	4060	Alpine and Boreal heaths	100	19,000	FV
PT	MAC	6180	Macaronesian mesophile grasslands	100	141,390	U1
PT	MED	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	35	129,600	U1
PT	MAC	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	100	29,900	FV

Romania						
RO	BLS	1530	*Pannonic salt steppes and salt marshes	N/A	N/A	N/A
RO	CON	1530	*Pannonic salt steppes and salt marshes	N/A	N/A	N/A
RO	STP	1530	*Pannonic salt steppes and salt marshes	N/A	N/A	N/A
RO	BLS	2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	N/A	N/A	N/A
RO	STP	2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	N/A	N/A	N/A
RO	BLS	2190	Humid dune slacks	N/A	N/A	N/A
RO	MED	2190	Humid dune slacks	N/A	N/A	N/A
RO	STP	2190	Humid dune slacks	N/A	N/A	N/A
RO	MED	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	N/A	N/A	N/A
RO	MED	2340	*Pannonic inland dunes	N/A	N/A	N/A
RO	ALP	4060	Alpine and Boreal heaths	N/A	N/A	N/A
RO	CON	4060	Alpine and Boreal heaths	N/A	N/A	N/A
RO	ALP	5130	*Juniperus communis* formations on heaths or calcareous grasslands	N/A	N/A	N/A
RO	CON	5130	*Juniperus communis* formations on heaths or calcareous grasslands	N/A	N/A	N/A
RO	CON	6110	*Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	N/A	N/A	N/A
RO	ALP	6150	Siliceous alpine and boreal grasslands	N/A	N/A	N/A
RO	CON	6150	Siliceous alpine and boreal grasslands	N/A	N/A	N/A
RO	CON	6170	Alpine and subalpine calcareous grasslands	N/A	N/A	N/A
RO	ALP	6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	N/A	N/A	N/A
RO	CON	6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	N/A	N/A	N/A
RO	ALP	6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	N/A	N/A	N/A
RO	CON	6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-	N/A	N/A	N/A

			mountain areas, in continental Europe)			
RO	CON	6240	*Sub-pannonic steppic grassland	N/A	N/A	N/A
RO	BLS	6260	*Pannonic sand steppes	N/A	N/A	N/A
RO	CON	6260	*Pannonic sand steppes	N/A	N/A	N/A
RO	STP	6260	*Pannonic sand steppes	N/A	N/A	N/A
RO	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	N/A	N/A	N/A
RO	BLS	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	N/A	N/A	N/A
RO	CON	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	N/A	N/A	N/A
RO	STP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	N/A	N/A	N/A
RO	BLS	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	N/A	N/A	N/A
RO	STP	6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	N/A	N/A	N/A
RO	ALP	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
RO	BLS	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
RO	CON	6430	Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels	N/A	N/A	N/A
RO	ALP	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	N/A	N/A	N/A
RO	BLS	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	N/A	N/A	N/A
RO	CON	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	N/A	N/A	N/A
RO	STP	6440	Alluvial meadows of river valleys of the *Cnidion dubii*	N/A	N/A	N/A
RO	BLS	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	N/A	N/A	N/A
RO	STP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	N/A	N/A	N/A
RO	ALP	6520	Mountain hay meadows	N/A	N/A	N/A
RO	CON	6520	Mountain hay meadows	N/A	N/A	N/A
RO	BLS	7210	*Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	N/A	N/A	N/A
RO	STP	7210	*Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	N/A	N/A	N/A

RO	ALP	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A
RO	BLS	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A
RO	CON	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	N/A	N/A	N/A
Sweden						
SE	BOR	1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	100	8,000	U2
SE	BOR	1630	* Boreal Baltic coastal meadows	23	50,000	U2
SE	CON	1630	* Boreal Baltic coastal meadows	100	15,000	U2+
SE	BOR	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	22	9,000	U2-
SE	BOR	2140	* Decalcified fixed dunes with *Empetrum nigrum*	33	1,000	FV
SE	BOR	2190	Humid dune slacks	27	2,000	U2
SE	BOR	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	76	10,000	U2
SE	CON	2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	27	4,000	U2
SE	CON	2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	14	25,000	U2
SE	BOR	4010	Northern Atlantic wet heaths with *Erica tetralix*	71	5,000	U2-
SE	BOR	4030	European dry heaths	52	51,000	U2-
SE	ALP	4060	Alpine and Boreal heaths	57	17,300,000	FV
SE	BOR	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	43	43,000	XX
SE	BOR	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	98	1,600	U2-
SE	ALP	6150	Siliceous alpine and boreal grasslands	40	3,100,000	FV
SE	BOR	6150	Siliceous alpine and boreal grasslands	40	2,000	FV
SE	ALP	6170	Alpine and subalpine calcareous grasslands	25	1,550,000	FV

SE	BOR	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	55	126,000	U2-
SE	BOR	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	77	28,000	U2-
SE	BOR	6270	* Fennoscandian lowland species-rich dry to mesic grasslands	67	270,000	U2-
SE	CON	6270	* Fennoscandian lowland species-rich dry to mesic grasslands	100	43,000	U2-
SE	BOR	6280	* Nordic alvar and precambrian calcareous flatrocks	45	83,000	U2-
SE	CON	6280	* Nordic alvar and precambrian calcareous flatrocks	100	165,000	FV
SE	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	12	26,000	U2-
SE	BOR	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	78	200,000	U2-
SE	CON	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	18	90,000	U2-
SE	ALP	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	13	70,000	FV
SE	ALP	6450	Northern boreal alluvial meadows	100	27,000	U2-
SE	BOR	6450	Northern boreal alluvial meadows	14	61,000	U2-
SE	BOR	6520	Mountain hay meadows	48	1,400	U2-
SE	BOR	6530	* Fennoscandian wooded meadows	14	7,600	U2-
SE	CON	6530	* Fennoscandian wooded meadows	100	200	U2-
SE	BOR	7210	Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae*	66	75,000	FV
SE	ALP	7230	Alkaline fens	34	136,000	FV
SE	BOR	7230	Alkaline fens	45	718,000	U1-
SE	BOR	8230	Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*	25	50,000	U1-
SE	BOR	8240	* Limestone pavements	74	5,800	U1
SE	ALP	9070	Fennoscandian wooded pastures	100	13,000	U2-
SE	BOR	9070	Fennoscandian wooded pastures	85	395,000	U2-

SE	CON	9070	Fennoscandian wooded pastures	100	30,000	U2-
Slovenia (missing data for 6010)						
SI	CON	5130	*Juniperus communi*s formations on heaths or calcareous grasslands	40	280,000	FV
SI	CON	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	19	400,000	U2
SI	ALP	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	11	200,000	U2
SI	ALP	62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	84	200,000	U2
SI	CON	62A0	Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*)	90	400,000	U2
SI	ALP	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	23	50,000	U2
SI	ALP	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	11	60,000	U1
SI	ALP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	12	200,000	U2
SI	ALP	6520	Mountain hay meadows	18	100,000	U1
Slovakia						
SK	ALP	1340	* Inland salt meadows	98	250	U2
SK	PAN	1340	* Inland salt meadows	90	2,500	U2
SK	PAN	2340	* Pannonic inland dunes	58	6,850	U1
SK	PAN	4030	European dry heaths	84	5,400	FV
SK	PAN	6110	* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	19	120	U1
SK	PAN	6120	* Xeric sand calcareous grasslands	100	150	U2-
SK	ALP	6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	100	9,110	FV
SK	PAN	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	33	43,660	XX
SK	ALP	6240	* Sub-pannonic steppic grassland	22	5,000	U1
SK	ALP	6250	* Pannonic loess steppic grasslands	100	2,350	XX

SK	PAN	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	19	3,580	U1
SK	ALP	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	35	563,200	FV
SK	PAN	6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	19	62,400	U1
The United Kingdom (missing data for 1330, 5130, 7230)						
UK	ATL	2130	* Fixed coastal dunes with herbaceous vegetation (grey dunes)	36	223,000	U2-
UK	ATL	2150	* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	62	9,000	U2-
UK	ATL	2190	Humid dune slacks	13	18,120	U2-
UK	ATL	21A0	Machairs	83	133,000	U2-
UK	ATL	2250	* Coastal dunes with *Juniperus* spp.	91	200	U2
UK	ATL	4010	Northern Atlantic wet heaths with *Erica tetralix*	*97*	4,620,000	U2-
UK	ATL	4030	European dry heaths	28	6,080,220	U2-
UK	ATL	4040	* Dry Atlantic coastal heaths with *Erica vagans*	37	5,990	FV
UK	ATL	4060	Alpine and Boreal heaths	46	421,000	U2
UK	ATL	6150	Siliceous alpine and boreal grasslands	100	700,000	U2
UK	ATL	6170	Alpine and subalpine calcareous grasslands	100	6,800	U2+
UK	ATL	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	22	513,000	U2+
UK	ATL	6230	* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	24	41,940	U2
UK	ATL	6410	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	10	38,500	U2-
UK	ATL	6520	Mountain hay meadows	100	11,000	U2+

ANNEX D. MANAGEMENT RECOMMENDATIONS FOR EACH ANNEX I HABITAT TYPE DEPENDENT ON AGRICULTURAL MANAGEMENT

This table shows examples of recommendations for the management of each key Annex I habitat type dependent on agricultural management. Recommendations are *not* prescriptive and management should be adapted to the local conditions, using the best available local knowledge. Experts for each habitat are available in many Member States and should be part of the design process. This table should be used in conjunction with the table describing the key habitat types dependent on agricultural management in Annex A. References are listed for each habitat type, with full details below.

Agri dep = dependency on agriculture from Halada et al (2011): **f** = Fully dependent on agricultural management, **p** = Partially dependent because management either prolongs the existence of the habitat by blocking succession, or enlarges/maintains an enlarged area of habitat distribution, **p/n** = Partially dependent only for some sub-types or over part of the distribution, or doubts remain concerning their dependence on agricultural management. Where Halada et al (2011) and Sipkova et al (2010) disagree, the Sipkova et al (2010) ranking is indicated in brackets. **NB** dunes with woody scrub (2160 dunes with *Hippophae rhamnoides* and 2170 dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) are not included, although they are often dependent on periodic scrub clearance to prevent succession. Also not included although sometimes dependent on management: 7150 Depressions on peat substrates of the *Rhynchosporion* (habitat occurs in small patches within larger habitat mosaic and only requires occasional management); 7140 Transition mires and quaking bogs (require low intensity grazing if drained).

References: Halada, L, Evans, D, Romão, C and Petersen, J-E (2011) Which habitats of European importance depend on agricultural practices? *Biodiversity and Conservation*, No 20, (11) pp2365-2378. Sipkova,Z., Balzer,S., Evans,D. & Ssymanek,A. (2010) Assessing the conservation status of European Union habitats - results of the Community report with a case study of the German National Report. *Annali di Botanica*.
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Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
COASTAL AND HALOPHYTIC HABITATS					
1330 Atlantic salt meadows **p/n**	Introduction of grazing on historically ungrazed areas is detrimental, but on historically heavily grazed salt marshes and coastal meadows reduction or cessation of	**Scrub**: Control invasive shrubs including *Baccharis halimifolia.* Shrubs and trees are detrimental to breeding birds because they provide viewpoints for predators.	Regular flooding by brackish sea water should be maintained or restored by removal of barriers such as	Only secondary habitat areas that were historically grazed or mown require management. Restoration or management measures may be necessary to balance erosion or accretion of	(Bensettiti and Trouvilliez, 2009; BfN, 2011; Delbaere et al, 2012; Durant et al, 2008; JNCC, 2013b; Laffaile et al, 2000;

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	grazing results in a dense overgrown, species-poor sward unsuitable for grazing and breeding birds. So management depends on conservation objectives. **Intensity:** vegetation is sensitive to changes in grazing, which could have knock-on effects for other species eg fish. Hence species dependent management prescriptions can be very specific based on country and tidal zone. Habitat usually occurs together with 1310 '*Salicornia* and other annuals colonising mud and sand' which may be grazed with saltmarsh. **Stock type**: hardy cattle or horses preferred. **Seasonality:** No winter grazing	**Cuttings**: should be removed Mowing may be alternative to grazing in particular sites **Fertiliser:** no fertilisation	sea walls. Habitat usually occurs together with 1310 '*Salicornia* and other annuals colonising mud and sand' which is also regularly flooded.	sediment. Regulated tidal exchange or de-embankment through managed re-alignment of coastal defences can restore saltwater influence on degraded saltmarsh. Good water quality is an important influencing factor.	McCorry & Ryle, 2009; Ministerie van Economische Zaken, Landbouw en Innovatie, 2012; National Parks and Wildlife Service, 2013)
1340 Inland salt meadows* **p**	**Intensity:** extensive, approx. 1LU/ha or less. Grazing intensity must be adapted to the site, **Seasonality:** July to October. No winter grazing. **Folding:** inappropriate.	Cutting can be alternative to grazing. Cutting and/or grazing should be sufficiently intensive to prevent *Phragmites* expansion. **Seasonality:** In Slovakia mowing before summer is recommended *except* in areas important for nesting	Seepage or periodic flooding by saline groundwater must be maintained. No drainage permitted.	Only secondary habitat areas that were historically grazed or mown require management. Protection from conversion to arable is a high priority.	(Muller, 2002) and references therein (BfN, 2011; INPN, 2011; SOPSR, 2012)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
		birds, which should be mown only after mid-June/mid-July. In France a late cut is recommended. **Fertiliser:** may tolerate low input of manure (<30kg N/ha per year). **Treatment of cuttings:** should be removed. **Scrub:** occasional winter removal with hand mower if necessary.			
1530 Pannonic salt steppes and salt marshes* **p/n**	**Intensity:** extensive. On Solonetz soils: 1 bovine/horse or 5–6 sheep/ha. On Solonchak soils, half this. **Seasonality:** grazing period should be based on precipitation in previous and current year (delayed if dry spring, earlier in wet spring with early vegetation growth). Winter grazing should be prohibited. **Stock type:** traditional indigenous breeds of sheep, cattle, goats, horses or buffalo. Geese suitable in some areas. Stock type should be tailored to site.	Mowing to eliminate weeds and expansive species (eg *Phragmites australis*) on pastures. **Seasonality:** before summer *except* in areas important for nesting birds, which should be mown only after end of breeding bird nesting season. **Method:** machinery appropriate only on dry soils. **Treatment of cuttings:** should be removed as soon as possible. **Fertiliser:** manure or fertiliser inappropriate.	Dams, canals and ditches should be removed (where no threat to settlements) to restore hydrological regime.	The rare primary (undrained and ungrazed) alkali *Artemisia* steppes are not dependent on management. Protection from conversion to arable is high priority. **Burning** may be suitable.	(Šefferová et al, 2008b) (Valachovic et al, 2007) (SOPSR, 2012) (Batáry et al, 2007a) (Batáry et al, 2007b)
1630 Boreal Baltic	Habitat has a number of stable states and appropriate	Mowing should be continued in any areas that were	Regular flooding by brackish sea water	**Mosaic burning** in early spring on frozen ground can be used to	(Doody, 2008; Lotman, 2004; N2K

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
coastal meadows* **p**	management varies according to conservation aims and management history. **General recommendations:** Create a diverse sward supporting a range of taxa. **Intensity:** generally moderate grazing (5–6 sheep or 1–1.5 young cattle/ha). In Estonia, low intensity of 0.4 and 1.3 livestock units per hectare (lu/ha) recommended. **Tailored management:** Moderate grazing intensity during breeding season is important for nesting water birds to leave longer vegetation clumps as protection for nests and to avoid trampling many eggs. Grazing should start early in the spring (timing depending on the latitude). Grazing management history should guide management, together with observations and current knowledge about needs of breeding bird species. **Abandoned areas** may require initial intense grazing followed by moderate grazing. **Seasonality:** April–October	traditionally mowed. Can be used to manage expansive species (eg *Spartina*). Can be used to supplement low grazing rates. Traditional mowing followed by grazing is optimal regime for plants and invertebrates. **Seasonality:** as late as possible, after breeding bird nesting season. **Treatment of cuttings:** should be removed as soon as possible. **Scrub and reed**: brush-cutting in late summer (after end of breeding bird nesting season) to restore abandoned meadows, with stump removal on mown meadows. Or reed cutting and removal in winter when ground is frozen. **Fertiliser**: application of manure or fertiliser is inappropriate.	should be maintained or restored by removal of barriers such as sea walls. Habitat usually occurs together with 1310 '*Salicornia* and other annuals colonising mud and sand' which is also regularly flooded.	remove dense vegetation ("foggage") from abandoned coastal meadows. **Dig shallow open ponds** for *Bufo calamita* and *Bufo viridis* breeding, and erect **fencing** that encourages cattle to trample in and around ponds to keep them open and create minimally vegetated ground for the toads to hunt.	Group, 2012; Pakanen et al, 2011) See (Rannap et al, 2004) for specific prescriptions.

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	(May in Scandinavia), or year round when intensity low (0.6 cattle/ha). **Regime:** grazing can be constant, adjusted constant (lower stocking rate in late summer) or rotational. A mosaic regime may be used during restoration, including early season grazing to control *Phragmites* and *Typhus* Invasion. **Stock type**: a mix of stock types (beef cattle, horses, sheep and/or goats) is recommended. **Supplementary feeding:** should be avoided. **Fencing**: Ideally, fences should go right into water so that livestock graze all vegetation, with removal in winter before ice comes. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates.				
COASTAL SAND DUNES AND INLAND DUNES					
2130 Fixed coastal dunes with herbaceous vegetation ("grey	Depends on management history, vegetation trends, current land use, and nitrogen deposition. Some grey dunes	Mowing occasionally used, but inferior to grazing. May be necessary to clear dense scrub prior to grazing.	The habitat relies on the natural dynamics of the dune system caused	**Fencing and path management** to limit erosion due to trampling by visitors and vehicle damage (but some small-scale erosion may be	(INPN, 2011) (VV.AA, 2009) (Houston, 2008a) and references within

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
dunes")* **p/n**	should be left alone. **<u>General recommendations:</u>** Maintenance of a fine grained mosaic of open-sand, moss-, lichen- and low grass cover. **Intensity:** extensive, but enough to control scrub invasion and to maintain low level erosion dynamics. **Seasonality:** moderate stocking rates in summer, higher in autumn and winter. Either year round low intensity or seasonal higher intensity. **Stock type:** mix of species including sheep and horses; traditional/rare breeds often most effective. Rabbit grazing is an important influence, but reintroduction is often difficult. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates.	**Treatment of cuttings:** should be removed as soon as possible. **Fertiliser:** strictly no additional fertilisation (nutrient levels must be kept low). Measures to control impacts of eutrophication on vegetation may be necessary, such as turf removal / sod cutting of tall grasses, small-scale ploughing. **Scrub:** site-specific management. Mechanical or manual clearance with removal of cuttings, stumps and topsoil. Important to remove **invasive species** e.g. *Pinus spp*., *Acacia* sp. pl., *Cortaderia selloana*, *Carpobrotus edulis*, *Prunus serotina*, *Rosa rugosa*	by sand drift from wave and wind action, which requires modification of fixed coastal protection structures such as sea walls, and integrated management of the whole dune system.	beneficial). **Restoration** may involve removal of forestry plantations and/or artificial large-scale destabilisation. Protect reptile habitats when undertaking restoration measures (keep them careful & small-scale to maintain refuges). Open patches will also benefit *Bufo calamita*.	(Søgaard et al, 2007) (Tahmasebi Kohyani et al, 2008) (BfN, 2011) (Delbaere et al, 2012)
2140 Decalcified fixed dunes with *Empetrum nigrum**	**Intensity:** light, but sufficient to suppress scrub encroachment and maintain crowberry and some open patches for mosses, lichens,	**Fertiliser:** strictly no additional fertilisation (nutrient levels must be kept low). Measures to control impacts of eutrophication on	Some subtypes require influx of groundwater.	Control of **invasive species** may be necessary.	(Pihl et al, 2001) (Søgaard et al, 2007) (VV.AA, 2009) (BfN, 2011; Ministerie van Economische

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
p/n	herbs etc. **Supplementary feeding**: should be avoided. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates.	vegetation may be necessary, such as turf removal / sod cutting, small-scale ploughing. **Scrub:** cutting may be required where abandonment has led to tree and shrub encroachment.			Zaken, Landbouw en Innovatie, 2012)
2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* **p/n**	**Intensity:** light, sufficient to suppress scrub encroachment and maintain variety of ages of *Calluna*.	**Scrub:** cutting may be required where abandonment has led to tree and shrub encroachment. **Fertiliser:** strictly no additional fertilisation (nutrient levels must be kept low). Measures to control impacts of eutrophication on vegetation may be necessary, such as turf removal / sod cutting, small-scale ploughing.		Control of **invasive species** may be necessary. Removal of forestry plantations. Some habitat creation through natural succession from habitat type 2130 “grey dunes”.	(INPN, 2011) (VV.AA, 2009) (Halada et al, 2011) (ICNB, 2006) (JNCC, 2013b; National Parks and Wildlife Service, 2013) (Ministerie van Economische Zaken, Landbouw en Innovatie, 2012) (BfN, 2011; Søgaard et al, 2007)
2190 Humid dune slacks **p**	Intact dune slacks do not need management. **Intensity:** extensive. **Stock type:** sheep ideal, but cattle or horses preferred in wetter areas. Hardy breeds should be used eg Devon red cattle, Herdwick sheep. Rabbits should be encouraged with artificial burrows and access strips.	**Seasonality:** frequency and timing will depend on the habitat and conservation aims. **Scrub:** removal may be necessary where invasion has occurred. Can be by hand or using chainsaws, brush-cutters and tractors with specialised rakes. Stumps should be treated with herbicide. Must be	Drainage canals should be blocked and water levels raised, eg using ‘infiltration water’ drawn from rivers. Coastal tidal and flood regime should be maintained.	Regular **‘sand blow-out’** should be maintained. **Sodcutting** may be appropriate to reduce impacts of eutrophication and control succession.	(BfN, 2011; Delbaere et al, 2012; Grootjans et al, 2002; Houston, 2008b; INPN, 2011; Šefferová et al, 2008b; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	Regime: typically, a single stock species is used seasonally at a set density.	carefully planned and controlled. Must be followed with mowing or grazing.			
21A0 Machairs (* in IE) **f**	**Intensity:** extensive. Stocking rates and ratio of sheep to cattle are critical. **Seasonality:** summer grazing on mountains surrounding Machairs, and wintering on the commonage. **Regime:** removal of fences and return to open grazing *or* rotational grazing.	**Seasonality:** cutting should be for hay not silage, as cut will be later in year, allowing plants to set seed. **Fertiliser**: limited use of fertiliser, no herbicide use.		Machair has a **traditional rotating cropping pattern** of grazing and small areas of extensive arable crops for winter fodder. The arable habitat is in the more critical condition because of earlier harvesting.	(National Parks and Wildlife Service, 2013) (JNCC, 2013b) (RSPB, 2012)
2250 Coastal dunes with *Juniperus* species* **p**	Essential to support juniper regeneration. **Intensity:** extensive. **Stock type:** preferably sheep, but sometimes cattle	**Scrub:** scrub and tree removal may be necessary. Should be followed by grazing.		Control of **invasive species** may be necessary. **Fire prevention** measures necessary.	(INPN, 2011) (VV.AA, 2009) (Picchi, 2008) (Fuller et al, 2010b)
2310 Dry sandy heaths with *Calluna* and *Genista* **p/n** **(or f)**	**Intensity**: extensive grazing – needs careful control of stocking levels and intensity to restore and maintain desired vegetation. **Stocking type**: mixed grazing of cattle and sheep is recommended to reduce *Molinia*, however cattle should be removed as soon as there is evidence the heather is being eaten. Stocking levels need to take into account breed and age as well as	**Fertiliser:** strictly no additional fertilisation (nutrient levels must be kept low). Measures to control impacts of eutrophication on vegetation may be necessary, such as turf removal / sod cutting (plaggen), small-scale ploughing (heaths were traditionally subject to peat cutting and heath harvesting, which removed nutrients). **Scrub:** scrub and tree		Small-scale burning of *Molinia* grass may be useful to help restore *Calluna* cover. Habitat is highly fragmented – area expansion and habitat creation would be very beneficial for long-term conservation. In some countries fully dependent on management.	(BfN, 2011; Ministerie van Economische Zaken, Landbouw en Innovatie, 2012; Søgaard et al, 2007)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	species mix. **Regime**: rotational grazing with variation of both presence of grazing and single stock with mixed stock is recommended to produce heterogeneous habitat that can benefit both plants and invertebrates. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock should be avoided.	removal may be necessary, including control of woody invasive species.			
2320 Dry sandy heaths with *Calluna* and *Empetrum nigrum* **p/n** **(or f)**	Same as for 2310	Same as for 2310		Same as for 2310 It is important to create areas with open sand in the habitat. Animal grazing is often not enough and thus other ways of regular disturbance is needed. Many high nature value areas are used or have been used for military training which has created the necessary mosaic sand structures. Burning may be beneficial for some species in this habitat.	(BfN, 2011; Ministerie van Economische Zaken, Landbouw en Innovatie, 2012; Søgaard et al, 2007)
2330 Inland dunes with open *Corynephorus* and *Agrostis*	**Intensity:** very extensive, sufficient to suppress scrub and tree encroachment and maintain dynamics of open	Regular cutting necessary to prevent succession to scrub or heath.		Control/limit **sand quarrying** actions and infrastructure development. Problems with invasive moss	(INPN, 2011) (Ministerie van Economische Zaken, Landbouw en

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
grassland **p/n** **(or f)**	sand. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.			species *Campylopus introflexus*. It is important to create areas with open sand in the habitat. Animal grazing is often not enough and thus other ways of regular disturbance is needed. Many high nature value areas are used or have been used for military training which has created the necessary mosaic sand structures.	Innovatie, 2012) (AOPK CR, 2007; Riksen et al, 2006) (BfN, 2011)
2340 Pannonic inland dunes* **f**	**Intensity:** more intensive during first few years of restoration, then at level sufficient to provide disturbance. **Regime and stock type**: variation in grazing pressure in order to maintain mosaic of open and closed swards.	**Scrub:** mechanical removal of scrub and trees may be necessary. **Fertiliser:** no fertiliser input; humus layer may be removed to prevent nutrient enrichment.		In some circumstances carefully managed winter **burning** may be suitable.	(Valachovic et al, 2007) (SOPSR, 2012)
TEMPERATE HEATH AND SCRUB					
4010 Northern Atlantic wet heaths with *Erica tetralix* **f (or p/n)**	Undisturbed wet heath areas do not require management. However most heaths are now threatened by eutrophication and drainage. **Intensity:** extensive grazing that is sufficient to keep down trees and leggy heather, but not so intense that heather is reduced and replaced by grassland eg *Molinia*. If bare peat is exposed grazing should	**Scrub:** tree removal essential for restoration. Rotational heath cutting may be necessary but must avoid use of heavy machinery that causes serious compaction and erosion problems. **Fertiliser:** strictly no use of manure or fertiliser, prevent eutrophication from use of fertilisers on nearby land, create buffer zones.	Hydrology needs to be managed in the wider habitat complex. Where possible, block existing drainage channels. Prevent further drainage but also ensure the habitat is not flooded.	Habitat has historically been managed with controlled **burning** at interval of 2–20 years in the UK, but is not now recommended unless preceded by careful impact assessment, as it tends to damage peat and encourage *Molinia*. Stop peat cutting. Small-scale periodic **sod-cutting** can maintain open patches for pioneer vegetation and invertebrates and help control	(Backshall et al, 2001; García et al, 2012; Hampton, 2008; Harris et al, 2011; Newton et al, 2009; Tucker, 2003) (Delbaere et al, 2012; JNCC, 2013b; National Parks and Wildlife Service, 2013)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	be prevented. **Seasonality**: avoid winter grazing (graze when dry)			*Molinia*.	
4020 Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix** **f**	Not recommended in Spain but considered necessary in the UK. If grazing occurs, it should be very extensive with strictly controlled stocking rates to prevent eutrophication, excessive grazing of sensitive plant species, and trampling damage.	**Scrub:** tree removal where necessary, remove invasive species, with removal of all plant material. **Fertiliser:** strictly no use of manure or fertiliser, prevent eutrophication from use of fertilisers on nearby land, create buffer zones.	Where possible, block existing drainage channels. Prevent further drainage but also ensure the habitat is not flooded.	Carefully managed **burning** may be used in some areas at interval of 2–20 years in the UK, but not recommended in Spain unless preceded by careful impact assessment. Stop peat cutting.	(VV.AA, 2009) (ICNB, 2006) (JNCC, 2013b) (INPN, 2011) (Martín and Lopez, 2002) and references therein (Hampton, 2008) (Backshall et al, 2001; Tucker, 2003)
4030 European dry heaths **f**	**Intensity:** extensive. Avoid eutrophication and grazing and trampling of sensitive plants from excessive stocking levels, including impact of wild grazers (deer etc.) However grazing needs to be sufficient to prevent tree colonisation and accumulation of woody material that has a high fire risk. **Seasonality**: avoid winter grazing	**Scrub:** tree removal where necessary, with removal of all plant material. Control invasive species including *Pteridium aquilinum*, *Rhododendron ponticum*, *Ulex galii*, *Gaultheria shallon*. **Fertiliser:** strictly no use of manure or fertiliser, prevent eutrophication from use of fertilisers on nearby land, create buffer zones.		In some circumstances carefully managed **burning** may be appropriate with post-burn monitoring. Very sensitive to uncontrolled burning which produces large areas of even-aged vegetation and loss of plant and invertebrate species. Manage human pressures to avoid erosion from recreational activities, and wild fire risk.	(DARDNI, 2010; Delbaere et al, 2012; García et al, 2012; Harris et al, 2011; JNCC, 2013b; N2K Group, 2012; National Parks and Wildlife Service, 2013; Newton et al, 2009; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
4040 Dry Atlantic coastal heaths with *Erica vagans** **f**	Not recommended.	**Scrub:** tree removal where necessary, with removal of all plant material. **Fertiliser:** strictly no use of manure or fertiliser, prevent eutrophication from use of fertilisers on nearby land, create buffer zones.		Control of **invasive species** may be necessary.	(VV.AA, 2009) (JNCC, 2013b) (INPN, 2011) (Martín & Lopez, 2002) (Valachovic et al, 2007) and references therein
4060 Alpine and boreal heaths **p/n**	Only secondary habitat areas that were historically grazed require management. **Intensity:** extensive. Stocking rates must be tailored to type and age of vegetation and other local characteristics. Detailed grazing plans should be used. **Seasonality:** in south and central Europe, limited to summer (June–October) based on traditional 'transhumance' regime. At lower altitudes, and further north (eg UK) grazing is year round. **Stock type:** in Boreal regions, usually grazed by reindeer. In upland heathland in Scotland, mixed grazing by sheep with deer appears optimal.	Cutting should be carefully planned and monitored. **Method:** by hand or mechanical.		In some circumstances managed b**urning** may be appropriate, but this should be carefully planned and controlled, and used only when necessary, in balance with grazing.	(INPN, 2011) (VV.AA, 2009) (Zaghi, 2008) (DeGabriel et al, 2011) (Martín & Lopez, 2002) and references therein (Tucker, 2003) (Valachovic et al, 2007)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
4090 Endemic oro-Mediterranean heaths with gorse **p**	Habitat very variable and conservation recommendations will differ between sites. **Intensity:** extensive is optimum for many subtypes. **Livestock type:** sheep preferred.	**Scrub:** scrub clearance may be necessary and should be followed by extensive grazing.		Reintroducing traditional **burning** may be appropriate in some areas but should be based on management strategies and carried out carefully where there is low risk of creating wildfires.	(INPN, 2011) (VV.AA, 2009) (Beaufoy et al, 2011)
SCLEROPHYLLOUS SCRUB (MATORRAL)					
5120 Mountain *Cytisus purgans* formations **p/n**	**Intensity:** extensive/moderate density **Other:** can be used in combination with burning management			**Burning** may be appropriate in some areas but should be based on management strategies and carried out carefully where there is low risk of creating wildfires.	(INPN, 2011) (Halada et al, 2011) (VV.AA, 2009)
5130 *Juniperus communis* formations on heaths or calcareous grasslands **p**	*Juniperus* recruitment requires a carefully adjusted grazing regime to create and maintain the habitat mosaic. **Intensity:** grazing should be sufficient to maintain short sward and bare patches. Heavy grazing will prevent seed germination, but in some climates grazing needs to be moderately high to stop overgrowth of scrub and loss of grassland. **Seasonality:** intermittent grazing may be ideal eg with	**Scrub:** in the absence of grazing, scrub removal will be necessary.		Carefully managed **soil disturbance** and **weeding** may be beneficial. Burning is usually not an option because of high risk of fire getting out of control. Propagation of juniper seedlings in nursery may improve recruitment.	(INPN, 2011) (VV.AA, 2009) (BfN, 2011; Valachovic et al, 2007) (National Parks and Wildlife Service, 2013) (JNCC, 2013b) (Valachovic et al, 2007) (Beaufoy et al, 2011) (Lotman, 2004) (Ministerie van Economische Zaken, Landbouw en

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	removal period of 10 years. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation				Innovatie, 2012) (SOPSR, 2012) (Cooper et al, 2012)
5210 Arborescent matorral with *Juniperus* spp. **p/n**	**Intensity:** moderate. Should be controlled by detailed 'pasturage plans' based on accurate field surveys of habitat. Overgrazing can result in trampling of juniper seedlings. **Seasonality:** preferably limited to winter. **Livestock type:** sheep and goats are preferable to limit compaction and due to their grazing habits.	**Scrub:** invading scrub and trees should be cleared periodically. Older juniper should be pruned where this may encourage younger saplings.		**Fire prevention** may be necessary in high risk areas. Subtype 'primary matorral' does not require active management	(INPN, 2011) (VV.AA, 2009) (Calaciura and Spinelli, 2008b) (Beaufoy et al, 2011)
5330 Thermo-Mediterranean and pre-desert scrub **p/n**	**Intensity:** very extensive, adapted to degree of aridity. **Regime:** livestock should be free ranging. Various subtypes - some subtypes should receive no grazing.	**Scrub:** maintain clearings as openings for germination and young successional stages and as fire breaks. Clear away invasive trees.		**Fire protection** measures necessary. Control of **invasive species** may be necessary.	(INPN, 2011) (VV.AA, 2009) (Halada et al, 2011) and references therein
5420 *Sarcopoterium spinosum* phryganas **p**	**Intensity:** moderate to high stocking rates. Vegetation is relatively resistant to grazing pressure. Traditionally extensively grazed by goats and/or sheep.			**Burning**: role of fire in habitat maintenance unclear. *Sarcopoterium spinosum* is capable of regeneration after fire.	(Papanastasis et al, 2002) (Ramón Vallejo et al, 2012) (Papanikolaou et al, 2011)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
5430 Endemic phryganas of the Euphorbio-Verbascion **p**	**Intensity:** Vegetation is relatively resistant to grazing pressure. Traditionally extensively grazed by goats and/or sheep.			Control of **invasive species** may be necessary (eg *Carpobrotus, Pennisetum*). **Fire protection** measures necessary.	(VV.AA, 2009) (Papanikolaou et al, 2011)
NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS					
6110 Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi** **p/n**	Only secondary habitat areas that were historically grazed require management. **Intensity:** extensive. **Livestock type:** cattle. Grazing by rabbits is often crucial. **Regime:** grazing should be controlled; vegetation is favoured by a controlled level of trampling. A rotational regime may be suitable. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.			Habitat occurs in small patches so management must be integrated with **management of the wider landscape**.	(INPN, 2011) (VV.AA, 2009) (BfN, 2011)
6120 Xeric sand calcareous grasslands*	**Intensity:** extensive. **Livestock type:** in addition to livestock (type not defined), grazing by rabbits is crucial. **Other**: use of animal	**Seasonality:** mowing should be carried out only once a year maximum. Should be followed by grazing.	Habitat susceptible to drought, some areas are reliant on flooding; regimes should be	Remaining areas are very small and so reliant on **management of the wider landscape**. It is important to have sufficient disturbance to create areas with	(INPN, 2011) (Pihl et al, 2001) (Baranska et al, 2009; BfN, 2011)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
p	medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.		maintained	open sand and expose subsurface sand to maintain the necessary high pH. Due to leaching, the pH would otherwise with time be likely to fall to critical levels, at least at some sites. The disturbance from grazing animals is often not sufficient except on steep slopes.	
6140 Siliceous Pyrenean *Festuca eskia* grasslands **p**	Grazing and trampling are critical to maintaining the characteristic species in this habitat. **Intensity:** relatively high; approx. 6–7 sheep/ha **Livestock type:** preferably sheep. Some grazing by horses at the end of the summer may also be used. **Regime:** grazing by sheep in afternoon or early evening is recommended. Should be controlled by a shepherd.			In some circumstances carefully managed **Burning** may be used in combination with grazing.	(INPN, 2011) (VV.AA, 2009)
6150 Siliceous alpine and boreal grasslands **p**	**Intensity:** very low to extensive, depending on biogeographical region. A reduction or cessation of grazing can be required, although it varies greatly geographically. **Stock type:** cattle and ponies may be used as they graze	Cutting should only be used if grazing measures do not encourage a varied vegetation structure. **Fertiliser**: Strictly no liming or fertiliser.		Some grasslands are best left alone. Need protection from recreational impacts eg skiing, mountain biking, especially if winter snow cover is reduced.	(Hughes, 2008) (INPN, 2011) (Valachovic et al, 2007) (BfN, 2011) (SOPSR, 2012) (Valachovic et al, 2007)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	coarser vegetation than sheep. Goats should be avoided as they can access remote remaining patches of the habitat type. In the Scandinavian Alpine and Boreal regions the habitat quality is dependent on the influence of reindeer grazing. A too intensive reindeer grazing pressure can however have local negative effects. Grazing by cattle, sheep and goats has been part of traditional grazing regimes in the proximity of summer farms. **Folding:** inappropriate.				
6160 Oro-Iberian *Festuca indigesta* grasslands **p**	**Intensity:** extensive. **Stock type:** sheep. **Regime:** traditional regimes should be maintained.		Water courses should not be altered.	Carefully planned and managed burning together with grazing to help control wildfires is recommended in Portugal, but in Spain the habitat should be protected from fire.	(VV.AA, 2009) (ICNB, 2006)
6170 Alpine and subalpine calcareous grasslands **p**	Some alpine grasslands should be left ungrazed. **Intensity:** extensive to moderate grazing; utilisation rate of 20–30% of above-ground plant production – eg 0.4LU/ha/yr in UK. **Stock type:** foraging by wild	Some scrub species which may encroach are also of conservation value so balance between scrub and grassland depends on which species are prioritised.		Habitat is found over large range and is very variable so **management should be locally tailored**. When the vegetative cover is altered or there is significant loss of soil, it is almost impossible to restore the original habitat.	(INPN, 2011) (VV.AA, 2009) (García-González, 2008) (Valachovic et al, 2007) (Barbaro et al, 2001) (Poschlod and

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	ungulates may be sufficient to maintain the habitat; continuation of historic grazing by ibex and chamois will benefit alpine species. In the Scandinavian Alpine and Boreal regions the habitat quality is dependent on the influence of reindeer grazing. A too intensive reindeer grazing pressure can however have local negative effects. Grazing by cattle, sheep and goats has been part of traditional grazing regimes in the proximity of summer farms. **Folding:** inappropriate.				WallisDeVries, 2002) (WallisDeVries et al, 2002) (Willems, 2001)
6180 Macaronesian mesophile grasslands **p**	**Limited information available for this habitat type**			Habitat occurs in small patches with forest and scrub habitats.	(ICNB, 2008)
6190 Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*) **f**	**Intensity:** rates should be strictly controlled. **Stock type:** cattle, sheep and/or goats. **Folding:** inappropriate.	Mowing should be a maximum of once a year. Should be followed by grazing. **Fertiliser:** no fertilisation.	Restoration of hydrological regime.	**Goose farming** should be controlled.	(Valachovic et al, 2007) (SOPSR, 2012)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) **f (or p/n)**	**Intensity:** low/moderate extensive. Stocking rates vary depending on length of grazing period and rate of sward production in different regions. **Stock type:** cattle, horses, sheep or goats may be used. Should be tailored to site conditions. Alternating stock types at a site where this is not usual will have negative impacts. **Seasonality:** delaying grazing until end of growing season beneficial for biodiversity, except on sites dominated by bracken where it may help break up dense stands. Winter grazing may be more effective. In some areas, traditional transhumance grazing should continue. Characteristic plant species require bare patches in the sward to germinate, so a certain amount of sward erosion in winter is beneficial. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting	Grazing usually preferable for invertebrates, but where habitat was traditionally mown, or where grazing is not practicable, extensive mowing may be more appropriate (eg steep sub-alpine meadows). **Frequency:** usually single cut, but varies from every two years to twice a year, depending on productivity. **Seasonality:** late in the year, after bird breeding and plant seed-setting. Timing will vary depending on region and nature of wildlife interest, and will be earlier for fertilised meadows with greater yields. **Regime:** cutting should be staggered; ideally, 5–10% of area left uncut until following year and different area left each year. Cut to about 8–10cm. **Treatment of cuttings:** should be removed immediately. **Fertiliser:** no fertilisation **Method:** cutter-bar mowers are more desirable than		A combination of mowing and grazing is not desirable as it does not favour the characteristic species related to one or other of the practices. Control or eradication of **invasive species** *Robinia pseudoacacia*, which threatens *Artemisia pancicii* populations in the Czech Republic.	(Baranska et al, 2009; Beaufoy et al, 2011; BfN, 2011; Calaciura & Spinelli, 2008a; Crofts and Jefferson, 1999; Delbaere et al, 2012; Halada & Baca, 2013; Harris et al, 2011; INPN, 2011; Maciejewski, 2012; Muller, 2002; N2K Group, 2012; Søgaard et al, 2007; Valachovic et al, 2007; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	rotary mowers. **Scrub:** removal may be necessary but some should be left for diversity. Large stands should be reduced by staggered yearly cutting.			
6220 Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea** **f**	Grazing regime varies between habitat sub-types[1]. **<u>Subtype 1:</u>** **Intensity:** 0.2–0.4 LU/ha/year (or higher to control woody vegetation) **Seasonality:** Spring or autumn **Stock type:** sheep or goats **Regime:** shepherding preferable **Other:** limited supplementary feeding. **<u>Subtype 2:</u>** **Intensity:** 1 LU/ha/year (on closely related dehesa systems, much lower stocking rates needed; 0.2–0.3 LU/ha/year). **Seasonality:** grazing from mid-autumn to late summer. **Stock type:** sheep or cattle, sometimes goats and	**Scrub:** mechanical removal of woody vegetation may be necessary, particularly for initial restoration. Should repeat every 3–5 years and be carried out in small, irregular plots to increase structural diversity. **Fertiliser:** use of fertilisers (particularly N and K) and pesticides should be restricted.		In some circumstances carefully controlled **burning** management may be used in combination with grazing and mechanical scrub removal. Maintenance of **traditional mosaic** distribution of agricultural plots. **Field margins, beetle banks** and **fallow land** may be beneficial. **Silvicultural treatment** should be used in afforested areas.	(INPN, 2011) (VV.AA, 2009) (San Miguel, 2008) (Beaufoy et al, 2011) (Fuller et al, 2011)

[1] (García-González, 2008)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	occasionally horses. **Regime:** shepherding preferable **Supplementary feeding:** cattle require relatively high rates of supplementary feeding. **Subtype 3:** **Intensity:** 0.1 LU/ha/year (or up to 0.5 LU for short period to remove woody vegetation). **Seasonality:** usually spring, sometimes autumn depending on onset of rain. **Stock type:** sheep or goat **Regime:** shepherding preferable Regimes should be tailored to local conditions and intensity should not be increased above traditional levels.				
6230 Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)* **f**	Habitat is highly dependent on regular grazing at the right intensity. **Intensity:** varies between regions and sub-types; eg 04–0.6LU/ha in Poland and 0.3–1.0LU/ha in Slovakia. **Seasonality:** year-round grazing in Atlantic regions, seasonal grazing in Continental and Boreal regions. Traditional	Mowing is usually employed where productivity is too low to support grazing. Combination of mowing and grazing is traditional in many parts of Europe. **Treatment of cuttings:** leaving cuttings on ground may be necessary in very low nutrient systems. **Fertiliser:** Generally, no fertilisation or liming is		**Turf stripping** may be used during restoration.	(BfN, 2011; Carlin et al, 2010; Ceulemans et al, 2011; Chytry et al, 2007; Delbaere et al, 2012; Galvánek and Janák, 2008; Háková et al, 2004; Halada & Baca, 2013; INPN, 2011; Muller, 2002; SOPSR, 2012; Valachovic et al, 2007; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	transhumance grazing should continue at higher altitudes. **Stock type:** optimum stock type varies between regions. **Regime:** rotational grazing suitable (eg 3 cycles each year) with small herds of <15 LU grazing for up to 10 days in a single location. Fencing not advised. **Folding**: permitted in some locations in Slovakia, providing pens are moved each day. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	tolerated. Very low levels of manure may be suitable on low altitude grasslands. **Other:** in the absence of grazing, artificial methods to open up bare ground may be necessary. **Scrub:** clearance may be necessary for initial restoration.			
6240 Sub-pannonic steppic grasslands* **p (p/n)**	**Intensity:** very low; maximum 0.8 LU/ha. **Stock type:** sheep or goats. **Folding:** inappropriate. **Supplementary feeding:** restriction necessary to prevent nutrient enrichment. **Other:** can combine with mowing.	**Frequency:** at most once a year. **Seasonality:** mow after end of breeding bird nesting season. **Fertiliser:** no fertilisation. **Other:** can be followed by grazing.			(Sarbu et al, 2004) (Valachovic et al, 2007) (Zingstra et al, 2010) (SOPSR, 2012) (BfN, 2011)
6250 Pannonic loess	**Folding:** inappropriate. **Other:** can combine with	**Frequency:** at most once a year.		Significant issue with **invasive tree species** black locust (*Robinia*	(Valachovic et al, 2007)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
steppic grasslands* **f**	mowing.	**Seasonality:** mow after end of breeding bird nesting season. **Fertiliser:** no fertilisation. **Other:** can be followed by grazing.		*pseudoacacia*) and Russian olive (*Eleagnus angustifolia*).	(Illyés & Csatho, 2007) (SOPSR, 2012)
6260 Pannonic sand steppes* **f**	**Intensity:** moderate to extensive. For closed dunes, 1 sheep/ha for 2 days/year recommended. To maintain shifting dune system, initial overgrazing by goats, or sometimes sheep, should be used. **Stock type:** sheep mostly used on closed dunes. Cattle on sand plains. Mixed sheep/goats can be used where succession is a problem. **Regime:** rotational grazing appropriate for cattle on sand plain. **Folding:** inappropriate on all subtypes.	Mowing is used less commonly than grazing. Nearly impossible on sand steppe; more typically used for closed steppes. **Seasonality:** begin after end of bird breeding season and plant seed-setting. No mowing in dry years. **Frequency:** mow once a year. **Regime:** leave at least 15% uncut and rotate uncut area each year. Cut to approx. 10cm.		In some areas, objective is succession and non-intervention is appropriate. Otherwise, active management needed every 5 years at least. Control of **invasive species** may be necessary through clearing and subsequent grazing, eg *Robinia* trees.	(Šefferová et al, 2008a) (Valachovic et al, 2007) (SOPSR, 2012)
6270 Fennoscandian lowland species-rich dry to mesic grasslands* **f**	Requires low intensity or extensive management by grazing or mowing – grazing is usually preferable for invertebrates but management must be adapted to site history. **Intensity**: low/moderate	**Fertiliser:** no fertilisation. **Scrub:** some limited clearance may be appropriate, but intensive clearing in a short period of time is detrimental to biodiversity as the nutrient level in the soil increase			(Beaufoy et al, 2011; Ikonen, 2011; N2K Group, 2012; Pihlgren and Lennartsson, 2008)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	extensive. **Regime:** rotational grazing appropriate. **Seasonality**: delaying grazing until end of growing season beneficial for biodiversity, except on sites dominated by bracken where it may help break up dense stands. Appropriate management varies depending on the climate and history of the site. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	when the roots are decaying.			
6280 Nordic alvar and precambrian calcareous flatrocks* **f**	**Intensity**: Generally extensive grazing but significant variation between sites; balance and adjust grazing pressure on site-specific basis. Guideline of one LU per 5–6 hectares. **Seasonality:** no grazing in winter. **Stock type:** consider mix on a site-by-site basis. Generally best suited to hardy breeds of	**Scrub:** regular clearing may be necessary. Cleared material should be removed (or occasionally, burned). Never clear during bird breeding season. **Fertiliser:** fertilisers and biocides should not be used.	Drainage should be prevented.	Restrict establishment of **lime and gravel pits** on surrounding land. In some circumstances carefully controlled **burning** in winter or early spring can sometimes be appropriate to clear scrub.	(Beaufoy et al, 2011; Eriksson & Rosén, 2008; Lotman, 2004)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	beef cattle, horses and/or sheep. **Supplementary feeding:** should not be used. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates.				
62A0 Eastern sub-Mediterranean dry grasslands (*Scorzoneratalia villosae*) **f**	**Intensity:** extensive grazing, sufficient to prevent invasion by tall herbs such as *Peucedanum cervaria*.	Mowing 1/2 times per year. **Fertiliser:** no fertilisation. **Scrub:** Regular cutting of trees and shrubs (eg *Cottinus coggygria*) is necessary.			(EEA, 2011; Kaligaric et al, 2003)
6310 Dehesas with evergreen *Quercus* species **f**	**Stock type:** sheep, as cattle grazing can damage soil structure. Max threshold of 0.25 LU/ha. Iberian pigs feed on acorns during the pannage season in autumn and winter.	Promote variation in understorey vegetation by maintaining some scrub (reptiles benefit), but maintain sufficient fire breaks. Traditional management included small patches of ploughing to sow cereals or to remove shrubs to favour herb growth.		Need to promote the **regeneration of tree populations**, can be by cycles of abandonment and opening of land. Tree pruning and protection from grazing damage is necessary. **Fire prevention and management** measures. Management needs to balance demands of the range of users including grazing, hunting, gathering, bee-keeping, recreation etc.	(VV.AA, 2009), (ICNB, 2006), (INPN, 2011), (Bergmeier et al, 2012), (Pereira and da Fonseca, 2003), (Surová et al, 2011) (Godinho et al, 2011), (Tárrega et al, 2000), (Martín & Lopez, 2002), (Fabbio et al, 2003), (Kaonga, 2012), (Plieninger and Schaar, 2012)
6410 *Molinia* meadows on calcareous,	It would be favourable if a larger proportion of *Molinia* meadows were mown rather	**Frequency:** low-intensity; one cut a year. Generally late (September), but in some	Very sensitive to water table changes and requires winter	Maintain **spatial heterogeneity** to provide for needs of different taxa. Measures to reduce nutrient levels	(BfN, 2011; Bragazza, 2009; Cop et al, 2009; Crofts & Jefferson,

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
peaty or clayey-sit laden soils (*Molinion caerulae*) **f**	than grazed, but grazing can also be a suitable management form. Local traditional management regimes can be used as a guide. **Intensity:** extensive to moderate, but grazing levels need to be adapted to each site, or even varied within a site, in order to benefit different priority plant species; eg *Liparis loeselii* requires very extensive grazing whereas *Sanguisorba officinalis*, the host plant of the *Phengaris* butterfly species, requires more intensive grazing. **Fencing**: As livestock do not prefer *Molinia*, they should be prevented from grazing on other habitats, otherwise habitat will overgrow. **Sheep folding:** inappropriate. **Other:** use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	areas cut was traditionally earlier (though still at end of breeding bird nesting season) and late cutting may not prevent eutrophication. Rotational or staggered management at the landscape scale allows animal species to find refuges from cutting on any one patch, and also allows species that benefit from earlier or later cuts to co-exist. It is valuable if a rotating 30% of the area can be unmown. **Fertiliser:** no fertilisation is recommended. If fertilizer is used according to national recommendations, farmyard manure is preferable due to slow nutrient release and micro-nutrient content.	flooding. Typically, water tables should be raised by halting groundwater abstraction or, where this is not viable, by restricting the volume and the times at which water can be removed.	from atmospheric **eutrophication** may be necessary, such as topsoil burial, sod cutting or periodic intensive cutting or grazing. At lake shores it is important that the animals can move into the water, thus creating reed-free areas at shallow water where rare plants can thrive and birds can feed.	1999; Delbaere et al, 2012; Halada & Baca, 2013; INPN, 2011; Lotman, 2004; Muller, 2002; Søgaard et al, 2007; Valachovic et al, 2007; VV.AA, 2009; WallisDeVries et al, 2002)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
6420 Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion* **p**	**Intensity:** low, avoid overstocking. **Stock type:** sheep or cattle.	Mowing can help maintain a mosaic structure, favouring key herbaceous plants. **Timing:** dates of cutting best defined locally. **Scrub:** remove plantation pine in wet depressions. Cutting of scrub may be necessary. **Fertiliser:** manure fertilisation should be limited by grazing sheep at low densities after mowing.	Changes to groundwater levels should be avoided. Typically, water tables should be raised by halting groundwater abstraction or, where this is not viable, by restricting the volume and the times at which it water can be removed.	**Fencing** may be necessary to prevent trampling by wild boar. In some circumstances carefully controlled traditional winter **burning** regime may be beneficial (eg France); however, too frequent use can lead to colonisation by fire-tolerant plant species.	(Halada & Baca, 2013; ICNB, 2006; INPN, 2011; Sarbu et al, 2004; VV.AA, 2009)
6430 Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels **p/n**	Only secondary habitats where disturbance through floods and/or landslides or avalanches does not prevent succession. Historically unmanaged habitats eg cliff ledges are a refuge for grazing sensitive plants and should not be grazed. Because of diversity of habitat types, management must be locally adapted. **Intensity**: extensive, together with associated grassland habitats.	Because of diversity of habitat types, management must be locally adapted. Occasional cutting to stop succession. **Timing:** every two or three years. Control of invasive species may require more intervention.	Water quality and water/ groundwater/ snow/ ice dynamics are key influencing factor	Regular disturbance through natural events is characteristic of habitat, and will be affected by river regulation & embankment, avalanche barriers etc.	(Halada & Baca, 2013; ICNB, 2006; INPN, 2011; JNCC, 2013b; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
6440 Alluvial meadows of river valleys of the *Cnidion dubii* **f**	Control of access, duration and intensity are important. **Intensity:** low, particularly in wet season; high stocking levels have major impact on above and below-ground biomass **Seasonality:** no grazing in late wet or early dry season. Light grazing in wet season to avoid drowning grasses. After flooding, livestock off floodplains until they dry. **Folding:** inappropriate.	**Frequency:** **Type d)** depends on bi-annual mowing. In case of **other sub-types**, 1–2 times per year. **Seasonality:** Early mowing could improve forage quality and integrate easily into farming systems. But later mowing necessary to avoid bird nesting season and plant seed-setting. **Regime:** Leave stubble >8mm high. **Treatment of cuttings:** remove fresh and dry biomass. **Method:** light mowing equipment. **Fertiliser:** Determine correct levels[2].	**Type d)** depends on spring floods. Species composition in **subtype a)** depends on duration/ timing of floods. River regulation should be prevented. Spring floods should only be allowed until end of April. Area should not be flooded for more than 10 days.		(INPN, 2011) (Šeffer et al, 2008) (Valachovic et al, 2007) (SOPSR, 2012) (BfN, 2011)
6450 Northern boreal alluvial meadows **f**	Not possible to give any general recommendations; decision to be made on a site-by-site basis.	If the habitat is locally dependent on traditional management, mowing is usually crucial. In Scandinavia large areas with 6450 are however kept open by	Depends on site. Restore natural spring flooding regime. Damming where possible to keep site	Destruction of **natural hydrological regime** may restrict restoration/management. If possible the water regime of regulated rivers should follow the natural fluctuations.	(Eriksson, 2008a; N2K Group, 2012)

[2] Květ et al. (1996) found that fertiliser doses higher than 90 kg of nitrogen coupled with corresponding doses of phosphorus and potassium strongly reduced the number of species in the alluvial meadow community: the strongest reduction was recorded when using 400 kg of nitrogen per hectare. This led to a 40% loss in species diversity (Šeffer et al, 2008).

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
		natural disturbances, and not dependent on recurring management. **Method:** scything is preferable but labour intensive and expensive; supplement with machinery. Cut to 10–15 cm. **Seasonality:** After end of breeding bird nesting season. In Northern Sweden, mowing not carried out before mid-July. **Treatment of cuttings:** essential to remove. **Scrub:** should be regularly removed.	inundated in winter, at a suitable depth to prevent bottom-freezing. Meadow should dry for 2–3 weeks before mowing[3].		
6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) **f**	Management should be adapted to local conditions, meadow vegetation subtype and historic management. **Intensity:** low (sensitive to overgrazing by cattle). **Regime:** after hay cutting. Grazing for a short period in spring may improve the germination rate for some spring-germinating plants by creating small patches with	**Seasonality:** no cut before mid-June to allow bird nesting and plant seed-setting. **Timing**: Rotational or staggered management at the landscape scale allows animal species to find refuges from cutting on any one patch, and also allows species that benefit from earlier or later cuts to co-		**Intensification** reduces species richness but moderately intensive management of some meadow types is acceptable.	(BfN, 2011; Carlin et al, 2010; Cizek et al, 2012; Cop et al, 2009; Crofts & Jefferson, 1999; Delbaere et al, 2012; Halada & Baca, 2013; ICNB, 2006; INPN, 2011; Maciejewski, 2012; Muller, 2002; N2K Group, 2012; VV.AA, 2009; Zechmeister et

[3] It is sometimes recommended to flood the site again after mowing, in late summer, to create good foraging conditions for ducks. However, stubble must not be drowned, reducing risk of die off.

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
	open soil. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	exist. A rotating 30% of the area should be left unmown. **Fertiliser:** normally no fertilization, especially not in areas that have not been fertilized previously. In northern Europe all fertilization is considered as negative for habitat quality. In eastern Europe some meadows have historically received small amounts of manure, but this should be carefully planned based on historical management and vegetation subtype. Other fertilisers and slurry must be avoided. **Other:** mowing should control Marsh horsetail (*Equisetum palustre*).			al, 2003)
6520 Mountain hay meadows **f**	**Stock type:** traditional livestock preferable. **Seasonality:** in spring and autumn; preferably sheep in spring and cattle in autumn. **Regime:** alternation of mowing and grazing possible.	**Frequency:** one cut per year, except for some mesophile subtypes which can be mown 2–3 times annually. Rotational or staggered management at the landscape scale allows animal species to find refuges from cutting on any one patch, and also allows species that benefit from		Regulate and control **tourism** impacts eg through signposting, fencing and path management. Prevention and control of **invasive species** may be necessary. **Wild boar** populations may need to be controlled (eg Spain).	(Baur et al, 2006; BfN, 2011; Cop et al, 2009; Crofts & Jefferson, 1999; Dolek and Geyer, 1997; Halada & Baca, 2013; INPN, 2011; Jefferson, 2005; Maciejewski, 2012; Muller, 2002; Sarbu et al, 2004; Valachovic et al, 2007; VV.AA, 2009)

Habitat and agricultural dependence	Management recommendations				References
	Grazing	Cutting or Mowing	Hydrological	Other	
		earlier or later cuts to co-exist. A rotating 30% of the area should be left unmown. **Fertiliser:** normally no fertilization, especially not in areas that have not been fertilized previously. Some meadows can tolerate occasional low amounts of manure, but this should be carefully planned based on historical management and vegetation type. Other fertilisers and slurry must be avoided.			
6530 Fennoscandian wooded meadows* **f**	Differs according to traditional management. **Regime:** grazing can be used in combination with mowing, or in place of mowing. Normally after harvest. **Other**: use of animal medicines, particularly worm treatments, must be minimal to avoid affecting invertebrates. **Supplementary feeding** of livestock will negatively affect conservation status.	Differs according to traditional management. Late mowing once a year, normally not before end of June, though depending on the climate and tradition. Removal of fallen twigs and leaves in spring. **Scrub:** removal of shrub overgrowth where necessary. **Method:** often by hand. **Fertiliser**: normally no fertilisation.		**Pollarding/coppicing** trees according to traditional management (in Estonia, trees were shredded or coppiced; in Sweden they were generally pollarded).	(Bergmeier et al, 2012; Daugavpils Universitate, 2011; EEA, 2009; Kukk and Kull, 1997; Losvik and Hjelle, 2010; Lotman, 2004; N2K Group, 2012; Vassilev et al, 2011)

RAISED BOGS AND MIRES AND FENS					
7210 Calcareous fens with *Cladium mariscus* and species of the *Caricon davallianae** **p/n**	Primary habitat types do not require management and dependence on grazing varies from region to region. **Intensity:** low, extensive (as alternative to mowing). Care needed to minimize unwanted effects of foraging and trampling, particularly on priority species. **Stock type**: hardy equines eg Konik Polski horses or cattle eg Highland cattle.	Primary habitat types do not require management and dependence on mowing varies from region to region. **Frequency:** one cut per year. **Fertiliser:** none, or only very limited manure application (<30 kg N, <7 kg P and <50 kg K /ha /year).			(Muller, 2002) (VV.AA, 2009) (INPN, 2011) (National Parks and Wildlife Service, 2013) (Halada et al, 2011) (Muller, 2002) (Stammel et al, 2003) (BfN, 2011)
7230 Alkaline fens **p**	Mowing is generally preferable, but grazing may be suitable in sites with shallow peat or where traditional grazing has been carried out for 50 years or more such that the species composition is adapted to the trampling disturbance. **Intensity:** should be carefully determined on site-by-site basis. In France, 0.2–0.8 livestock unit/ha recommended **Stock type:** cattle preferable to sheep. Traditional, hardy breeds preferable. **Regime:** rotational grazing where possible. **Other:** grazing not suitable on calcareous fens; mowing should be used.	**Frequency:** mowing every second year or at 3-5 year intervals is sufficient for very wet calcareous fens and low-productivity alkaline fens dominated by mosses. **Cuttings** should be removed or burned in portable incinerator. **Equipment:** hand-mowing preferable, but only suitable on small scale. Use small light mowers or specially adapted tyres (low pressure twinned wheels). **Fertiliser:** no fertiliser use within habitat and restricted use in adjacent land. **Scrub:** at some sites, cutting scrub by hand may be only option, but only economic over small areas.	Restoration will involve minimising fluctuations in water column and boosting groundwater levels to soil surface level eg by blocking/ infilling of ditches. Ditching etc must also be controlled in surrounding landscape. Knowledge of hydrological conditions is necessary for effective preservation of the structure and function of fens.	**Buffer zones** and other measures in the surroundings of the fen are necessary to reduce pressures from atmospheric and aquatic eutrophication.	(BfN, 2011; Broads Authority, 2011; Carlin et al, 2010; Delbaere et al, 2012; Halada & Baca, 2013; INPN, 2011; Middleton et al, 2006; Schrautzer et al, 2013; Šefferová et al, 2008c; Søgaard et al, 2007; Valachovic et al, 2007; van Diggelen et al, 2006; VV.AA, 2009)

ROCKY HABITATS					
8230 Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii* **p/n**	Only secondary habitat type needs grazing (habitat may be the result of overgrazing of acidic grassland). **Intensity**: very extensive **Type**: sheep and/or goats, cattle, also wild grazers eg chamois or ibex **Regime**: needs to be grazed together with the rest of the habitat mosaic of which it is part				(Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 2008; Sohlman, 2007; VV.AA, 2009) (N2K Group, 2012; Valachovic et al, 2007)
8240 Limestone pavements* **p**	Varies between different subtypes[4]. **Intensity:** low: less than 1 ewe/ha (or cattle equivalent; 5 ewes = 1 cow). **Stock type:** cattle often preferable, at low grazing density. Traditional breeds beneficial.	**Scrub:** maintain/ reintroduce coppice and woodland management (thinning); control deer and fence coppice re-growth.		Control **invasive species**.	(INPN, 2011) (Cumbria Biodiversity Partnership, 2006) (JNCC, 2013b) (National Parks and Wildlife Service, 2013) (Valachovic et al, 2007)
FORESTS					
9070 Fennoscandian wooded pastures **f**	Grazing pressure must preserve a mosaic of habitats. **Intensity:** low (<1.0 lu/ha); eg 0.2 cattle/ha. **Stock type:** cattle, preferably older, hardier breeds. **Regime:** year-round grazing closely reflects natural system; should be used where climate suited. **Other:** use of animal medicines,	**Regime:** mowing can be an additional measure to combat unwanted vegetation, but otherwise mowing is not part of the management practices. **Scrub:** some removal may be necessary to re-open site for grazing, but some scrub should be maintained; open glades should not be too wide. **Treatment of cuttings:** Do not		Restoration may be necessary to re-open a site to grazing. Remove invasive tree species. **Tree management**: Maintain clear space around old trees, pollard carefully.	(Beaufoy et al, 2011; Bergmeier et al, 2012; Eriksson, 2008b; Lotman, 2004; N2K Group, 2012)

[4] Open = restore by reducing stocking rate/ removing grazing animals. Wooded = maintain/ reintroduce coppice and woodland management (thinning); remove non-native species; control deer and fence coppice re-growth. Scrubby = remove non-native species where shade out other growth; consider coppice management.

	particularly worm treatments, must be minimal to avoid affecting invertebrates. Supplementary feeding of livestock will negatively affect conservation status.	remove dead or decaying wood. Material from scrub and tree thinning can be used to increase dead wood habitat.			

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