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IMPACT ASSESSMENT REPORT

ANNEX VIII-c

Accompanying the

proposal for a Regulation of the European Parliament and of the Council

on nature restoration

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Annex VIII-c: AGRICULTURAL HABITATS AND GRASSLANDS

Introduction

This paper provides information derived from the Member States' reports and assessments under Article 17 of the Habitats Directive. It is a background information to help identify possible restoration targets for the 'legal binding instrument' under the EU Biodiversity Strategy to 2030.

The 'agricultural habitats and grasslands' group include, 35 Annex I habitat types (see Table 1): all grasslands (except alluvial meadows), and a selection of habitats dependent on agricultural management (particularly grazing) from different types.

Costal	and dune habitats (2 types)	Grass	lands
1630	Boreal Baltic coastal meadows	6220	Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea
21A0	Machairs	6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)
Heath	and scrub habitats (5 types)	6240	Sub-Pannonic steppic grasslands
4030	European dry heaths	6250	Pannonic loess steppic grasslands
4040	Dry Atlantic coastal heaths with	6260	Pannonic sand steppes
4090	Endemic oro-Mediterranean heaths	6270	Fennoscandian lowland species-rich dry to
5130	Juniperus communis formations on heaths or calcareous grasslands	6280	Nordic alvar and precambrian calcareous flatrocks
8240	Limestone pavements	62A0	Eastern sub-Mediterranean dry grasslands (Scorzoneratalia villosae)
Grass	ands (25 types)	62B0	Serpentinophilous grassland of Cyprus
6110	Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi	62C0	Ponto-Sarmatic steppes
6120	Xeric sand calcareous grasslands	62D0	Oro-Moesian acidophilous grasslands
6130	Calaminarian grasslands of the Violetalia calaminariae	6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
6140	Siliceous Pyrenean Festuca eskia grasslands	6420	Mediterranean tall humid grasslands of the Molinio-Holoschoenion
6150	Siliceous alpine and boreal grasslands	6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
6160	Oro-Iberian Festuca indigesta	6520	Mountain hay meadows
6170	Alpine and subalpine calcareous grasslands	Dehes	as and wooded meadows (3 types)
6180	Macaronesian mesophile grasslands	6310	Dehesas with evergreen Quercus spp.

Table 1 - Agricultural and grassland Annex I habitat types selected

6190	Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)	6530	Fennoscandian wooded meadows
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)	9070	Fennoscandian wooded pastures

'Agri-habitats and grasslands' coverage in the EU

The 35 habitat types selected cover close to **177 442 km²** (**4.5 %** of the EU terrestrial area¹); this excludes areas reported by Romania, which are known to be largely overestimated².

The data available from Corine Land Cover³ and from the Ecosystems Map of Europe⁴ do not allow a straightforward comparison between the total area of agricultural habitats and grasslands in the EU and the area covered by these Annex I habitats. This is mainly due to the nomenclatures used and the spatial resolution of the datasets. A comparison between these data sources is given in Table 2 below.

Table 2 – Agricultural habitats and grassland areas (km²) from different sources
(EU27)

Corine Land Cover 2018 (level 3)

Pastures and grasslands	417 957
231 – Pastures	326 224
321 – Natural grasslands	91 733
Heterogenous agricultural areas	377 584
241 - Annual crops associated with permanent crops	5 517
242 – Complex cultivation patterns	174 253
243 - Agricultural mosaics with significant natural vegetation	164 751

¹ Area of habitats calculated from the area reported by Member States as 'best estimate' or 'average of minimum/maximum'

² The average total area of agri-habitats and grasslands habitats reported by Romania is 54 124 km²

³ https://www.eea.europa.eu/data-and-maps/dashboards/land-cover-and-change-statistics

⁴ https://www.eea.europa.eu/themes/biodiversity/mapping-europes-ecosystems

244 – Agro-forestry areas	33 062

Ecosystems map (level 3)

E – Grasslands and land dominated by forbs, mosses or lichens	624 605
E1 – Dry grasslands	88 042
E2 – Mesic grasslands	443 643
E3 – Seasonally wet and wet grasslands	48 060
E4 – Alpine and sub-alpine grasslands	24 875
E6 – Inland salt steppes	4 893
E7 – Sparsely wooded grasslands	15 092

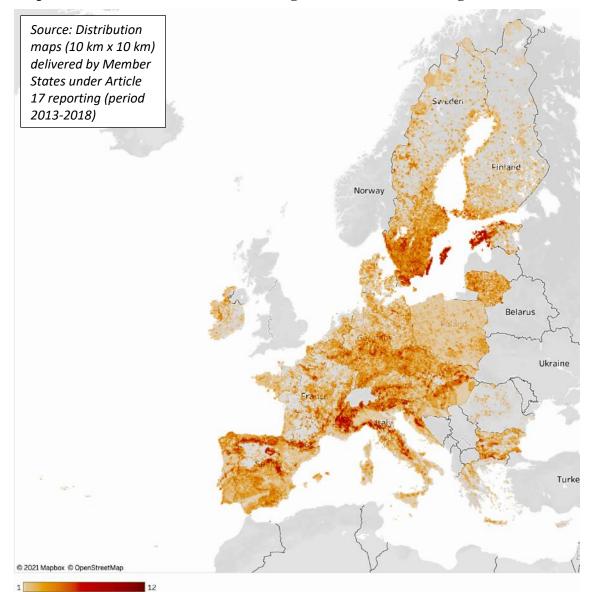
The areas of agricultural habitats and grasslands have a good representation in most EU countries (see Map 1), but better in southern and mountainous regions. The Member States with the highest proportion of those habitats are Spain (16%), Croatia (12%), Greece (9%), Austria (7%), Italy (6%) and Luxembourg (6%); ten Member States have less than 2% of their territory covered by Annex I agricultural habitats and grasslands.

Table 3 gives the areas and proportion of agri-habitats and grasslands for each Member State, including coverage by Natura 2000. Maps illustrating the distribution of different wetland habitats in the EU are available in Annex A.

From the **177 442 km²** of agricultural habitats and grasslands (excluding Romania), over **43** % is estimated to be inside the Natura 2000 network (about **77 025 km²**); this may be an underestimation since reports from Member States were not comprehensive on this regard. The coverage by Natura 2000 varies according to the sub-group, **from 67** % for 'coastal and dune habitats' **to 35** % for 'dehesas and wooded meadows'. The proportion of habitats per sub-group of 'agricultural habitats and grasslands' and their coverage is detailed in Table 4.

Coverage by Natura 2000 also greatly varies according to the Member State: from over 90 % (Bulgaria) to less than 25 % (Austria, France, Lithuania, Poland and Slovakia) (Table 3).

However, several Member States reported **over 75 %** of these habitats' area inside Natura 2000 (Estonia, Finland, Malta, Netherlands, Portugal and Slovenia).



Map 1 – Distribution of the 35 Annex I agricultural habitats and grasslands in the EU

Note: the shades of brown indicate the number of habitat types per 10 km x 10 km grid cell.

		In the Member S	State	Proportion	Inside Natura	2000
	Member State area (km ²)	Agri-habitats & grassland area (km²)	Agri- habitats & grassland area (%)	of the Agri- habitats & grassland area (%)	Agri- habitats & grassland area	% Agri- habitats & grassland area
Austria	83 944	6240.0	7.4	3.4	1329.5	21.3
Belgium	30 683	218.2	0.7	0.1	106.0	48.6
Bulgaria	110 995	3344.0	3.0	1.8	3018.4	90.3
Croatia	55 590	6793.9	12.2	3.7	3277.4	48.2
Cyprus	9 249	15.0	1.1	0.1	4.6	54.6
Czechia	78 874	1876.3	2.4	1.0	481.3	25.7
Denmark	44 162	507.0	1.1	0.3	193.1	38.1
Estonia	45 382	460.1	1.0	0.2	373.9	81.3
Finland	338 004	400.4	0.1	0.2	328.6	82.1
France	551 881	24400.8	4.4	13.2	5090.7	20.9
Germany	362 177	3110.6	0.9	1.7	1931.4	62.1
Greece	132 014	4615.2	9.3	6.6	2139.0	34.6
Hungary	93 012	1274.8	1.4	0.7	938.2	73.6
Ireland	70 699	1626.4	2.3	0.9	945.9	58.2
Italy	301 321	17222.0	5.7	9.3	7562.9	44.0
Latvia	64 590	346.7	0.5	0.2	173.6	50.1
Lithuania	65 289	606.3	0.9	0.3	118.7	19.6
Luxembourg	2 595	149.5	5.8	0.1	63.0	42.2
Malta	316	9.6	3.0	0.0	7.4	77.1
Netherlands	39 898	254.8	0.6	0.1	191.3	75.1
Poland	312 683	8170.5	2.6	4.4	1803.5	22.1
Portugal	92 378	3987.0	4.3	2.2	3949.5	99.1
Romania (*)	238 404	54123.4	22.7		6166.8	11.4
Slovakia	49 026	2217.8	4.5	1.2	429.8	19.4
Slovenia	20 274	1452.9	7.2	0.8	1106.2	76.1
Spain	506 222	79158.1	15.6	42.7	37939.7	47.9
Sweden	450 110	8983.9	2.0	4.9	3521.0	39.2
Total	4 149 772	231 565.2	5.6		83 191.5	35.9
Total (without Romania)	3 911 772	177 441.8	4.5		77 024.7	43.4

 Table 3 – Area and proportion of agricultural habitats and grasslands per Member State

Notes: Member States with more than 4.5 % (the EU average) of their terrestrial area covered by 'agricultural habitats and grasslands' are highlighted; (*) areas reported by Romania are overestimated.

		Inside Natura 2000			
EU27 excluding Romania	Area (km ²)	Agri/grassland area (km ²)	% Agri/grassland area		
Coastal and dune habitats	365	243	67		
1630	334	216	65		
21A0	31	27	86		
Heath and scrub habitats	29 493	16 498	56		
4030	15 156	8 514	56		
4040	17	13	77		
4090	12 033	6 575	55		
5130	941	580	62		
5430	270	258	96		
8240	1 076	558	52		
Grasslands	115 616	49 041	42		
6110	987	479	49		
6120	124	88	71		
6130	17	11	65		
6140	1 106	598	54		
6150	10 776	3 637	34		
6160	413	373	90		
6170	9 009	5 580	62		
6180	180	144	80		
6190	41	36	89		
6210	11 255	6 490	58		
6220	30 441	17 189	56		
6230	3 728	2 303	62		
6240	394	335	85		
6250	346	298	86		
6260	413	270	66		
6270	1 947	163	8		

		Inside Natura 2000			
EU27 excluding Romania	Area (km ²)	Agri/grassland area (km ²)	% Agri/grassland area		
6280	436	262	60		
62A0	6 295	3 208	51		
62B0 (*)	0	0	100		
62C0	77	59	77		
62D0	345	208	60		
6410	2 806	874	31		
6420	556	198	36		
6510	21 978	5 318	24		
6520	11 945	919	8		
Dehesas and wooded meadows	31 968	11 243	35		
6310	31 079	10 932	35		
6530	70	35	49		
9070	818	276	34		
TOTAL	177 442	77 025	43		

Note: (*) restricted to Cyprus (0.42 km²)

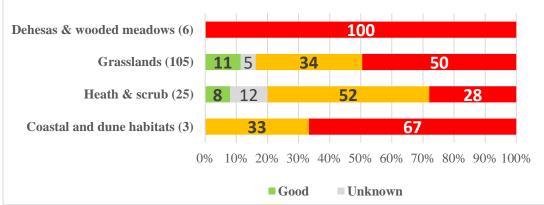
Conservation status and trends

The vast majority (84 %) of the assessments of the 35 agricultural habitats and grasslands at the EU level have an **unfavourable** conservation status (36 % poor and 48 % bad). Only 10 % have a **good** conservation status. There are some differences between the different habitat groups (Figure 1): 'grasslands' has the highest proportion of good status (11 %) and the 'dehesas and wooded meadows' the worst status (100 % unfavourable, but only three habitats in this group).

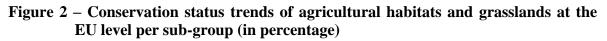
Among the habitat assessments that do not have a good status, almost half have a **deteriorating** trend (45 %) while only 8 % have an improving trend. An additional 25 % maintain their unfavourable status; the conservation status trend is unknow for 22 % of the assessments. The group with the worst conservation status trends is 'grasslands' (52 % **deteriorating**); however, 'costal and dune' habitats have the higher proportion of improving trends (33 %) (Figure 2).

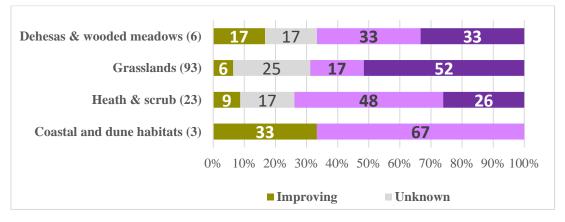
Details on conservation status and conservation status trends for each Member State are given in Table 5.

Figure 1 – Conservation status of agricultural habitats and grasslands at the EU level per sub-goup (in percentage)



Note: Number of assessments per group shown in brackets.





Note: Number of assessments per group shown in brackets.

Member States	FV	U1-	U1+	U1=	U1x	U2-	U2+	U2=	U2x	XX
AT (27)	7	4			30	19		4	33	4
BE (18)					6	28	28	6	33	
BG (41)	10			17	66				5	2
CY (3)	33			33				33		
CZ (21)	14	14		33	14	14		10		
DE (29)	14	28		10		48				
DK (11)		9				45		27	18	
EE (11)	36		18	36					9	
ES (40)	13	10	5	25	23	5			8	13
FI (12)	17		8			8		67		
FR (53)	28	6	2	11	2	40			9	2
GR (11)	55		9	18						18
HR (29)	31			14	7	7		7	21	14
HU (12)		17		17		58		8		
IE (9)	11	11		22		33		22		
IT (47)	6	6	13	28		34		11		2
LT (10)				10	20	10		10	50	
LU (7)	14					71		14		
LV (12)					8	58			25	8
MT (1)								100		
NL (9)				11		22	22	33	11	
PL (20)	10	15		30	10	30		5		
PT (18)	39	28		17		17				
RO (28)	93	7								
SE (38)	11	5				66	3	11	5	
SI (19)	37	16			5	37			5	
SK (23)	30	9		30	30					

 Table 5 – Conservation status and trends of agricultural habitats and grasslands in the Member States (in percentage)

Notes: FV = good, U1 = poor, U2 = bad, XX = unknown conservation status '-' = deteriorating, '+' = improving, '=' = stable, 'x' = unknown conservation status trend; number of assessments per Member State shown in brackets.

Pressures

Agricultural habitats and grasslands are subject to a wide diversity of pressures resulting in their degradation and extirpation. According to Member States reports under Article 17 of the Habitats Directive, the top three groups of pressures (in percentage of the total) are:

- **Habitat management** with over **42 %** of all pressures; these include inadequate agricultural practices like intensive grazing (18 %), under grazing (12 %), forestry like logging and removal of dead and old trees (44 %); however, over half of these pressures result from abandonment of grassland management (49 %)
- **Conversion and land use change** amounts to **24 %**; from these, over one-third (35 %) is originated from agriculture intensification, conversion to forest (23 %), and construction of urban, industrial and leisure sites (28 %)
- **Natural processes**, with over **15 %**; this is mainly due to natural succession (83 %), which is often due to abandonment of agricultural activities

Equally important is **pollution** with over to **10 %**, mainly originating from agriculture (73 %) or from mixed sources (25 %).

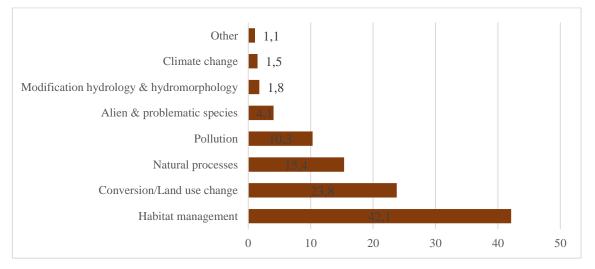


Figure 3 – Pressures reported for agricultural habitats and grasslands (in percentage)

Note: based on pressures reported as 'high-ranking'.

Condition of habitats

Member States reported on the condition of habitat types under Article 17 of the Habitats Directive. This data can be used to estimate the area of agricultural habitats and grasslands assessed as degraded (condition not-good) therefore, requiring restoration.

The area of agricultural habitats and grasslands that would need to be restored, i.e., improved condition, is **at least 31 180 km²**, representing **18 %** of the total area reported for this group of habitats (the values exclude Romania). However, the condition of habitats reported as 'unknown' (or not reported) is over 62 100 km² (35 % of the total area). This means that the area requiring restoration is bigger than 31 180 km²; for example, assuming that half of the 'unknown' area is in a not-good condition, the area to be restored would be over 61 000 km² or 93 000 km² if all the 'unknown' is assumed to be in a 'not-good' condition (18 % of the total area). Table 6 gives information for each of the 35 agricultural habitats and grasslands (excluding Romania) and Table 7 the condition areas and percentage for each of the Member States.

In addition to the habitat condition, Member States also reported on the 'favourable reference areas'⁵. Comparing this area with the actual habitat area allows to estimate how much area of the habitat would need to be re-created to achieve a good distribution and area of the habitat. Based on this data, it is estimated that a **strict minimum** of **2 400 km²** would need to be **re-created** to achieve a 'favourable area':

- 5 km² for coastal and dune habitats
- 204 km² for heath and scrub habitats
- 2 145 km² for grasslands, dehesas and wooded meadows

However, these values are much higher since several Member States did not provide enough information in their reports to allow a more realistic estimation.

⁵ The surface area in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the habitat type; this should include necessary areas for restoration or development for those habitat types for which the present coverage is not sufficient to ensure long-term viability.

		Condition (area in km2)			Condit	ion (in perce	ntage)
	Habitat area	Good	Not-good	Unknown	Good	Not-good	Unknown
Total	177 441	84 154	31 183	62 104	47	18	35
Coastal and dune habitats	365	242	97	26	66	27	7
1630	334	218	90	26	65	27	8
21A0	31	24	7		77	23	
Heath and scrub habitats	29 493	11 040	2 618	15 835	37	9	54
4030	15 156	5 373	1 789	7 994	35	12	53
4040	17	8	2	7	45	12	43
4090	12 033	3 995	606	7 432	33	5	62
5130	941	506	153	283	54	16	30
5430	270	241	1	28	89		10
8240	1 076	918	68	91	85	6	8
Grasslands	115 616	50 530	26 218	38 867	44	23	34
6110	987	425	84	478	43	9	48
6120	124	24	65	36	19	52	29
6130	17	11	1	5	64	7	29
6140	1 106			1 106			100
6150	10 776	8 360	73	2 343	78	1	22
6160	413	212	45	156	51	11	38
6170	9 009	3 747	322	4 940	42	4	55
6180	180	30	130	20	17	72	11
6190	41	13	3	24	33	8	59
6210	11 255	4 176	1 066	6 013	37	9	53
6220	30 441	9 350	3 403	17 688	31	11	58
6230	3 728	1 865	587	1 276	50	16	34
6240	394	97	116	181	25	29	46
6250	346	64	126	156	18	36	45
6260	413	124	241	48	30	58	12
6270	1 947	924	855	168	47	44	9
6280	436	276	129	30	63	30	7
62A0	6 295	1 040	131	5 124	17	2	81
62B0					100		
62C0	77			77			100
62D0	345			345			100
6410	2 806	579	468	1 759	21	17	63
6420	556	159	91	307	29	16	55
6510	21 978	8 392	8 058	5 528	38	37	25
6520 (*)	11 945	10 663	10 224	-8 941	89	86	-75
Dehesas & wooded meadows	31 968	22 342	2 249	7 376	70	7	23
6310	31 079	21 923	1 831	7 325	71	6	24
6530	70	25	36	10	35	51	14
9070	818	394	383	41	48	47	5

Table 6 – Condition of agricultural habitats and grasslands per Annex I habitat type

Notes: Areas reported by Romania excluded from the table; (*) issue with data for habitat 6520 in the Mediterranean region of France (total area reported as both 'good' and 'not-good')

	Habitats area (km²)				Percentage		
Member State	Total	Good	Not-good	Unknown	Good	Not-good	Unknown
AT	6 240	4 488	22	1 729	72		28
BE	218	48	99	72	22	45	33
BG	3 344			3 344			100
СҮ	15	8	4	3	54	24	21
CZ	1 876	1 127	227	522	60	12	28
DE	3 111	2 285	665	161	73	21	5
DK	507	173	334		34	66	
EE	460	305	93	63	66	20	14
ES	79 158	36 396	6 5 3 6	36 226	46	8	46
FI	400	309	18	74	77	4	18
FR (#)	24 401	15 838	14 428	-5 864	65	59	-24
GR	4 615	3 914	52	650	85	1	14
HR	6 794	508	102	6 184	7	2	91
HU	1 275	467	607	201	37	48	16
IE	1 626	1 016	611		62	38	
IT	17 222	4 913	590	11 719	29	3	68
LT	606	344	140	123	57	23	20
LU	149	28	122		18	81	
LV	347		122	224		35	65
MT	10	5	5		49	51	
NL	255	124	126	5	49	49	2
PL	8 170	3 774	4 218	179	46	52	2
РТ	3 987	30	130	3 827	1	3	96
RO (*)	54 123	40 475	2 500	11 148	75	5	21
SE	8 984	6 836	1 585	563	76	18	6
SI	1 453	1 137	306	10	78	21	1
SK	2 217	83	43	2 091	4	2	94

Table 7 – Condition of Annex I agricultural habitats and grasslands per Member State

Notes: (*) areas reported by Romania largely overestimated; (#) issue with data for habitat 6520 in the Mediterranean region of France (total area reported as both 'good' and 'not-good')

Carbon stock and sequestration

Generally carbon sequestration rates in agricultural and grassland habitats are estimated to be rather low (<1.5 Mg C ha-1 yr-1). Only coastal and halophytic habitats (1630) show relative high sequestration rates but as they cover less than 0,2% of the habitat area their contribution remains small. Despite the low carbon uptake rates, carbon stocks are relatively high as significant amounts of carbon are accumulated in soils and in some habitat types also in the vegetation. Covering almost 4.3% of the EU-27 territory agricultural and grassland habitats sequester around 13,7 Mio tons of carbon equivalent to 50 Mio tons of CO2 if habitats are in good condition. As such sequestration rates per km2 are similar to wetlands but storage capacity is significant lower. Carbon stocks are estimated to range between 0,6 and 2,8 Gt C equivalent to 2,2 – 10,3 Gt of CO2 which is only 60% of the storage capacity of wetlands despite these habitats cover 30% more land.

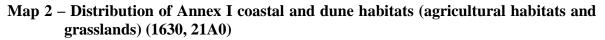
EU27	Area $(1m^2)$	Total Carbon Stock		Potential carbon sequestration rate (Mt
excluding Romania	(km ²)	(Mt)		y-1)
		min	max	mean
Coastal and dune habitats	364.58	0.00	2.73	0.10
1630	333.70	0.00	2.50	0.10
21A0	30.88	0.00	0.23	0.00
Heath and scrub habitats	29 492.68	120.86	344.06	2.21
4030	15 155.66	113.67	227.33	1.14
4040	16.87	0.13	0.25	0.00
4090	12 032.57	0.00	90.24	0.90
5130	941.33	7.06	14.12	0.07
5430	269.96	0.00	4.05	0.02
8240	1 076.29	0.00	8.07	0.08
Grasslands	113	368.10	1 871.71	9.07
	531.31			
6110	987.26	0.00	7.40	0.07
6120	124.08	0.00	1.86	0.01
6130	17.41	0.00	0.13	0.00
6140	1 105.61	8.29	24.88	0.08
6150	10 776.08	0.00	161.64	0.81
6160	412.89	0.00	6.19	0.03
6170	9 009.50	0.00	67.57	0.68
6180	180.00	1.35	4.05	0.01
6190	40.52	0.00	0.30	0.00
6210	10 971.04	0.00	164.57	0.82
6220	28 678.38	0.00	430.18	2.15
6230	3 727.97	0.00	55.92	0.28
6240	393.78	2.95	5.91	0.03
6250	346.03	0.00	2.60	0.03
6260	412.66	0.00	3.09	0.03
6270	1 946.85	14.60	43.80	0.15
6280	435.50	3.27	6.53	0.03
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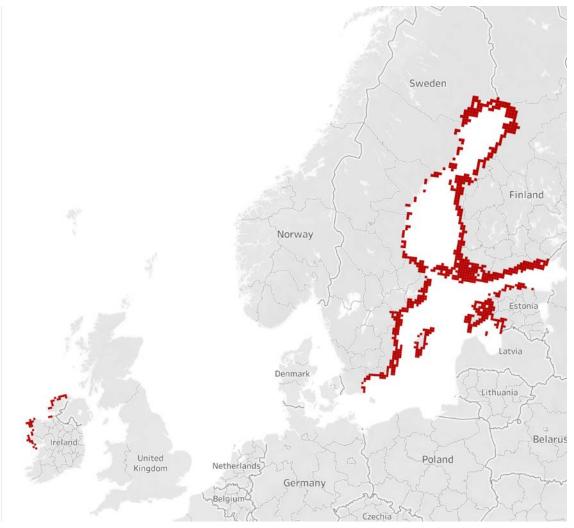
Table 8 – Carbon stock and sequestration of Annex I agricultural habitats and grasslands

EU27 excluding Romania	Area (km ²)	Total Ca (Mt)	rbon Stock	Potential carbon sequestration rate (Mt y ⁻¹)	
		min	max	mean	
62A0	6 295.29	0.00	94.43	0.47	
62B0	0.42	0.00	0.00	0.00	
62C0	76.83	0.00	0.58	0.01	
62D0	344.95	2.59	5.17	0.03	
6410	2 806.08	21.05	63.14	0.21	
6420	556.22	4.17	12.52	0.04	
6510	21 940.53	220.24	440.48	2.20	
6520	11 945.43	89.59	268.77	0.90	
Dehesas and wooded meadows	30 253.78	28.00	66.66	0.18	
6310	29 365.22	21.33	53.33	0.11	
6530	70.16	0.53	1.05	0.01	
9070	818.40	6.14	12.28	0.06	
TOTAL	173 642.35	516.96	2 285.16	11.56	

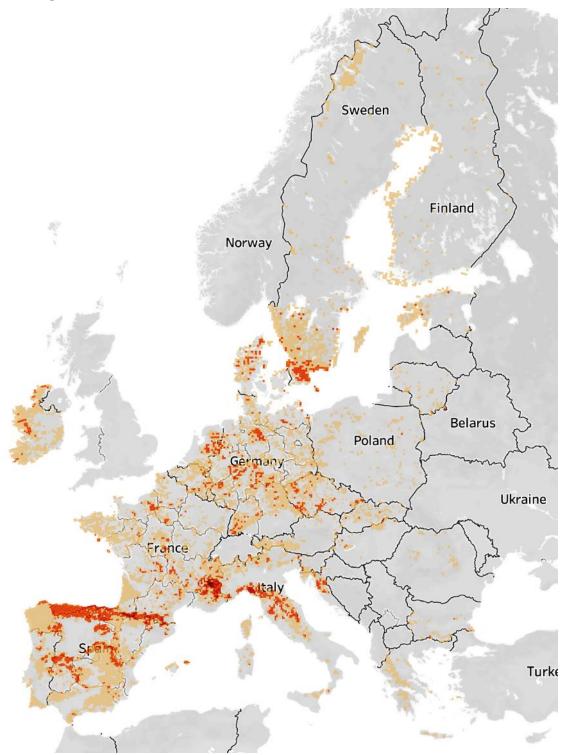
Note: areas reported by Romania note included

Annex A



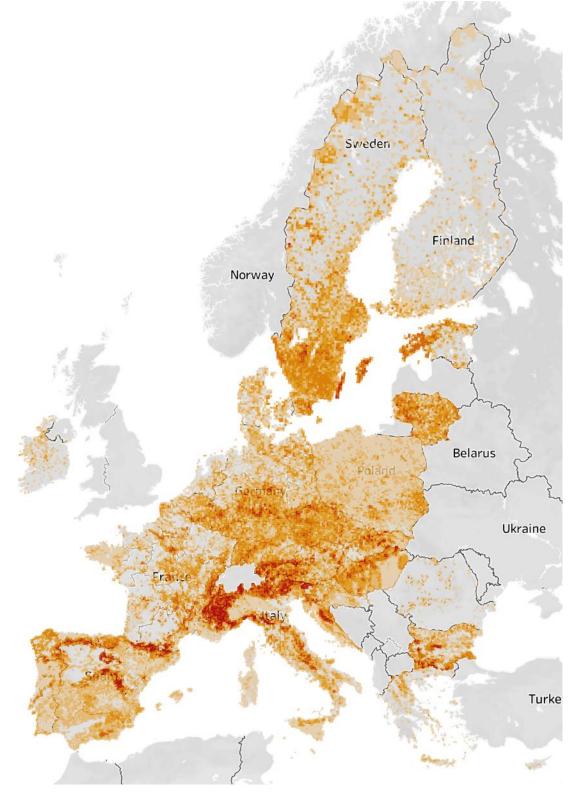


Map 3 – Distribution of Annex I heath and scrub habitats (agricultural habitats and grasslands) (4030, 4040, 4090, 5130, 5430, 8240)



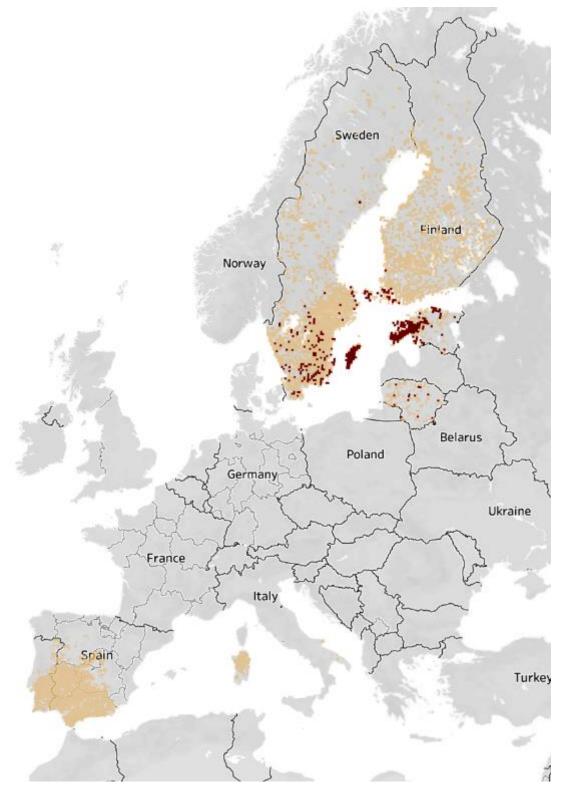
Note: the shades of brown indicate the number of habitat types per 10 km x 10 km grid cell. Macaronesian islands not shown in the map.

Map 4 – Distribution of Annex I grasslands (6110-6190, 6210-62D0, 6410, 6420, 6510, 6520)



Note: the shades of brown indicate the number of habitat types per 10 km x 10 km grid cell. Macaronesian islands not shown in the map.

Map 5 – Distribution of Annex I dehesas and wooded meadows (agricultural habitats and grasslands) (6310, 6530, 9070)



Note: the shades of brown indicate the number of habitat types per 10 km x 10 km grid cell. Macaronesian islands not shown in the map.