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RESEARCH REPORT

Research Report 1285

Agri-Environment Climate Scheme Heat Maps Report 2015-18

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RESEARCH REPORT

Summary

Agri-Environment Climate Scheme Heat Maps Report 2015-18

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Background

The Agri-Environment and Climate Scheme (AECS) forms part of the 2014 to 2020 Scottish Rural Development Programme (SRDP). During 2019-20, NatureScot carried out some work on behalf of Scottish Government to monitor and evaluate the scheme. This involved two separate pieces of work which complement each other, one produced in-house (covered by this report) and an externally commissioned report. The objective of this in-house part of the project was to organise internal data to help evaluate and provide an assessment of uptake and potential impact of the scheme.

Main findings

The Agri-Environment and Climate Scheme covers a wide range of interventions, some relevant to general habitats and the wider countryside while others have a narrower focus on rarer habitats or vulnerable species.

The uptake figures show the scale of impact of the scheme. AECS represents Scotland's most important investment for securing environmental benefits from the land. It contributes to delivery of national and international targets relating to biodiversity, climate change, water quality and flooding, and to support for organic farming, the historic environment and improving public access. The work also gives an understanding of the geographic distribution of key options. Options with more significant uptake included the main arable and grassland options, water margins, organic, and moorland management. The scheme has also made an important contribution to the management of designated sites.

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Overview Report




1. INTRODUCTION

The Agri-Environment and Climate Scheme (AECS) forms part of the 2014 to 2020 Scottish Rural Development Programme (SRDP). It represents Scotland's most important investment for securing environmental benefits from the land. It contributes to delivery of national and international targets relating to biodiversity (supporting management for vulnerable and iconic species and habitats, ecological networks, controlling invasive non-native species and condition of protected nature sites), climate change, water quality and flooding, and to support for organic farming, the historic environment and improving public access.

The evaluation and monitoring stages are an important part of the process to assess how schemes have operated, understand their impact and to contribute to development of future schemes. During 2019-20, NatureScot carried out some work on behalf of Scottish Government to monitor and evaluate the Agri-Environment and Climate Scheme. This involved two separate pieces of work, which complement each other, one produced in-house, and an externally commissioned report. For the latter, NatureScot commissioned the James Hutton Institute to take forward some work to monitor the biodiversity outcomes of the Agri-Environment Climate Scheme through a selection of case studies, which is published separately.

The objective of this in-house part of the project was to organise internal data to evaluate and provide an assessment of uptake and potential impact of the scheme.

During 2019-20 NatureScot produced a series of heat maps looking at uptake in terms of geographic distribution, numbers of hectares and funding allocated for specific AECS management options and other key elements[1]. These heat maps relate to agri-environment, which forms the largest element of AECS, and to organic management, but do not include, improving public access and slurry stores.

The map exercise covers contracts arising from the 2015 to 2018 application rounds i.e. the first four years of AECS. Reports were run during May-October 2019 so maps reflect the status during that period. It was not possible to include the 2019 round as applications were being assessed. The data does not include legacy agreements under Rural Priorities and Land Managers Options; however, these had largely expired by 2019 and many land managers with expiring RP or LMO contracts will have then entered AECS. Therefore, although the maps are not fully comprehensive of agri-environmental activity they provide a good understanding of uptake and impact of the Agri-Environment and Climate Scheme.

The figures on area and committed funding are based on AECS contract data from Scottish Government for the rounds 2015-18 (as at October 2019, unless otherwise stated).

It is worth noting that contracts under the scheme have a five-year duration and that contracts will commence the year after application. Therefore, contracts issued for the four rounds 2015-18, are in effect implemented over the 2016 to 2023 period.

There are some further clarifications to make about the figures and data presented. First, figures used will accurately reflect the situation of the scheme on the date specified, but they are not static. Changes to contracts happen during the duration of the scheme, so the scheme data is continually changing. Second, funding figures are for committed funding, which reflects the committed funding on the specified date (but funding figures may vary depending on what is finally claimed and paid).

2. GEOGRAPHICAL UPTAKE OF THE SCHEME

The report consists of a series of heat maps, which provide a useful understanding of geographic uptake and impact of the main AECS options. These have been grouped by type of objectives.

For each of the main management options, maps were produced as follows:

- Area: hectares per 10km square
- Funding allocated per 10km square
- Density: number of fields (land parcels) per 10km square

The targeting maps for each option have also been included so that uptake can be considered in the context of target maps. The scheme followed a targeted approach to enable budget management and to focus activity in areas of need. The design of the targeting map for each management option was based on criteria such as biodiversity, water quality, flood risk, upland mask, peatland and specific habitat requirements. Some options remained available throughout the country. Also, uptake of options outwith target areas was allowed, where this would benefit designated site features.

The Agri-Environment and Climate Scheme covers a wide range of interventions, some relevant to general habitats and the wider countryside while others have a narrower focus on more rare habitats or vulnerable species.

[1] NatureScot staff involved: Fiona Findlay, Susi Hodgson, Liz McTeague and Maria de la Torre. With thanks to Paul Jarron (Scottish Government).

The map reports were run during May-October 2019.The figures on committed funding and area were based on AECS contract for the rounds 2015-18 and were extracted in October 2019.

The findings for each of the main groupings are discussed in more detail below.

2.1. Arable Farmland and Birds

Key management options that provide food for farmland birds had a good uptake across the whole country and in the arable areas. Many of these management activities also deliver water quality benefits.

The area covered by key options for arable farmland birds was estimated about 13,800 hectares with £31.6 million committed[2].

Where arable farming is prevalent there was a good uptake of the associated options, with Retention of Winter Stubbles, Wild Bird Seed Creation and Stubbles followed by Green Manure having a high uptake in the North East of Scotland and all along the eastern coastal fringe including south east Scotland. The Retention of Winter Stubbles and Wild Bird Seed Creation options also had a good uptake in Caithness and Orkney. The Forage Brassica Crops for Birds option had a good uptake too with a similar distribution pattern.

All these options, which have a wide availability, had a good uptake contributing to provide food for farmland birds. The exception was the Beetlebanks option with a lower level of uptake.

The Unharvested Conservation Headlands had a good level of adoption in the corn bunting area (North East, Fife and southeast), supporting the recovery of this key vulnerable species. The Cropped Machair option had a good uptake in the target area, the Western Isles, with AECS contributing to the maintenance of this rare habitat that supports a range of important species[3].

2.2. Water Management

There was a high level of adoption of water margins management with a wide geographical distribution. Water Margins managed under the scheme to help improve water quality was estimated as more than 1,060 hectares with a committed funding of £6 million during the period. These interventions are targeted to catchments identified as having diffuse pollution or poor water quality. Data on designated site features supported by AECS shows that water management options are helping to address the requirements of fish and freshwater habitat features (see Table 8 below).

There was a good uptake of water margins and grass strips for arable fields across the Eastern fringe, including the North East, central and borders areas. The combined map for water margins, which includes grassland and arable fields, shows a wider geographical distribution covering some of the northern and central western areas. ‘Converting arable land at risk of erosion or flooding’ and ‘management of flood plains’ options had limited uptake.

2.3. Grassland Management, Habitat Mosaics and Carbon Rich Soils

One of the measures under AECS with widest distribution across Scotland was the management of Species Rich Grassland (SRG). Uptake of Species Rich Grassland management and creation has been high across the country including west parts with cluster areas in the north of Scotland, North East, islands and borders.

[2] Figure is based on Table 1 and includes Wild Bird Seed Creation and Management, Stubbles followed by Green Manure, Retention of winter stubble, Forage Brassica Crops for Farmland Birds, Cropped Machair and Unharvested Conservation Headlands options.

[3] The Glasgow Naturalist, Volume 25, 2009. Supplement. Machair Conservation: Successes and Challenges

The combined management and creation Species Rich Grasslands map shows the widespread uptake. The management of SRG option was mapped separately too, and these maps shows how many sites in the north, Northern Isles and the Hebrides have been supported through the scheme, with some concentrations in Orkney, Hebrides and Borders. The Habitat Mosaic option had a similar distribution pattern; this has been another option with a good uptake and geographic distribution.

The 2015-18 round contracts have more than 26,140 hectares of species rich grassland and habitat mosaic with a committed funding of more than £20 million. These are some of the most diverse habitats, which without this support, are more likely to decline or disappear[4].

2.4. Carbon rich soils and climate change

There is an estimated area of 7,400 hectares of carbon rich soils (lowland bogs and wetlands) in the 2015-18 round contracts, contributing to climate change and biodiversity targets, with a £5 million budget committed. Peatland restoration capital work can also be funded under AECS, and it was estimated that £2.3 million was spent or committed on restoration activities during the period. The combined map for Wetland Management, Lowland Bog and Management of buffer areas for fens and lowland bogs, shows a high level of uptake across areas with wetlands and bogs including the Western and Northern Isles, North East and parts of west, central and south Scotland. Peatland restoration capital works funded under AECS were also relatively widely distributed. Blanket bog management is covered under the moorland management options which are explained below.

2.5. Managing Grasslands for Key Vulnerable Species

The scheme is helping address the decline of vulnerable species such as corncrakes, corn bunting and waders.

Management for waders (through grazing or mowing) was one of the measures with widest distribution and level of uptake. This included clusters in 'hot spots' areas in Caithness, Speyside, the Islands (Western Isles and Orkney), and parts of the North East, central and south Scotland. Not all the options are available in the same target area. The combined area of land managed for waders, that will help provide cover and food for their survival, was estimated as more than 48,880 hectares with a committed funding of more than £30,5 million.

Corncrake management options had good uptake across the core areas in the west for this species including the Western Isles, Outer and Inner Hebrides, and Orkney, contributing to support the recovery of this species[5]. Over £4 million was committed with 2,464 hectares under management. There was also good uptake of mown grassland for the benefit of corn bunting in the target area for this species focused in North East and Fife. Management options to support chough and hen harrier are targeted to very defined areas, where they had a good level of uptake.

2.6. Upland, Peatland, Moorland Management and Heath Options

The combined map for the three main Livestock and Deer Moorland Management options (Deer and Livestock, Livestock only and Deer only) shows that there was a reasonable level of interventions to benefit moorland and peatland habitats with good distribution across Scotland. There was good uptake across many upland areas, including clusters in the Highlands, Cairngorms, Southern Uplands, and Muirkirk (Muirkirk and North Lowther Uplands SPA). There was also uptake in coastal areas in the west and peatland areas in the north and Western Isles. There is a cluster of contracts in the Caithness and Sutherland peatland area, the largest blanket bog in Europe - a key carbon

[4] Dadds, N.J. & Averis, A.B.G. 2014. *NatureScot Commissioned Report 571: The extent and condition of non-designated species-rich lowland grasslands in Scotland.*

[5] Beaumont, D.J. and England, B.J. 2016. 'The Corncrake Crex crex population in Scotland from 1993 to 2015 with an overview of conservation measures taken during this period' International Corncrake Conference, Pilsen. Available at: *136: 153 – 161 (2016) Volume: Vogelwelt*.

store in Scotland and at international level. Moorland Management for deer only was predominantly (although not exclusively) adopted in upland deer management group areas.[6]

The Summer Hill Grazing of Cattle is one of the options with a good uptake in the Inner Hebrides (Mull and Skye), and also in Central Highlands and Southern Scotland.

The Heath management option supports the management of specialised heaths, which are relatively rare (Coastal, Serpentine, Lowland and Special Interest heaths). The option has had good uptake in the areas where these valuable habitats are particularly found, in the Outer and Inner Hebrides and particularly in Orkney, which is a stronghold for some of these valuable habitats including coastal heaths which host the rare Scottish primrose.

About 653,079 of land is managed in the uplands for the benefit of moorland and heath with £27,4 million committed to help achieve biodiversity and climate change benefits.[7]

2.7. Other Options

Organic Farming Organic conversion and maintenance were popular options which had a good level of uptake across the North East, the borders, and central Scotland, less so in the north and west. A key achievement of the scheme has been supporting the land currently under organic management, with 52,258 hectares of land managed or converted to organic farming with a £15,8 million budget allocated under the scheme.

Small Units – The cattle management on small units option (retention and introduction) area of uptake was primarily in the Highlands and Islands, (as expected since this is an option associated with crofting), with a high uptake in the Western Isles, but relatively low in other parts of the west.

2.8. Farmland habitat and feature options

Hedgerows -There was a high uptake across all eastern Scotland, including the Black Isle, North East and southern Scotland. The Hedgerow heat map series includes combined data for the management and creation options although the two options have quite different target maps so their uptake will differ. One of the main cluster of uptake was in the borders (under the previous Rural Priorities scheme the main area associated with hedgerow creation was the North East but this area is now excluded from the target area for the creation option).

The combined area of Creation and of Management/Restoration of Hedgerows was estimated as 1,214,700 metres, with more than £8,4 million funding allocated, which is contributing to increase connectivity across the landscape.

Tall Herb Vegetation and Scrub of Conservation Value – these are more specialised options, so it is not unexpected that uptake is a lot lower than for many other options, but distribution is quite widespread.

Control of Invasive Non-Native Plant Species – there was very limited number of capital projects for controlling invasive Non-Native Plant Species under AECS.

2.9. Further data on uptake of the scheme

The following table provides figures on spending and area for some of the key options, based on contract data from Scottish Government for the rounds 2015-18 as at October 2019. The table does not cover spending on all options and does not include capital works, it is intended to provide a snapshot of uptake during the main period of the scheme operation.

[6] See https://www.deer-management.co.uk/dmgs/deer-management-groups/deer-management-group-map/

[7] These figures are from table 1. Budget is based on the sum of Moorland Management, Heath Management, Summer Grazing, Stock Disposal and Away Wintering. The area figure is based on area covered by Heath Management and Moorland Managament (as the latter is a foundation option for the others).

Table 1. Key AECS options and figures for contracts from the 2015 to 2018 rounds

KEY OPTIONS	AREA under management- Ha unless indicated	COMMITTED FUNDS- Total £
FARMLAND BIRDS		
Wild Bird Seed Creation and Management	1,511	4,350,544
Stubbles followed by Green Manure	4,152	16,123,140
Retention of winter stubble for Wildlife and Water Quality	6,601	7,881,326
Forage Brassica Crops for Farmland Birds	784	1,939,657
Cropped Machair	667	1,055,249
Unharvested conservation headlands option	95	306,790
GRASSLANDS		
Species Rich Grassland management and creation	11,087	11,284,903
Combined Corncrake Options	2,464	4,107,788
Habitat Mosaic Management	15,054	8,729,608
Corn Bunting Mown Grassland	1,152	1,667,037
Wader& Wildlife Mown Grassland and Wader Grazed Grassland	48,888	30,560,523
Chough mown grassland and grazing management	1,709	994,380
Hen Harrier management	79	71,141
MOORLAND MANAGEMENT		
Moorland Management livestock (livestock only and livestock & deer options)	644,172	17,528,909
Summer Hill Grazing of Cattle	85,019	1,359,608
Heath management	8,907	3,043,834
Away wintering sheep and stock disposal	43,723	5,532,972
Predator control	94,967	1,208,018
Tall Herb Vegetation & Scrub of Conservation Value management	837	444,757
Ancient wood pasture	402	158,252
WATER MANAGEMENT		
Water Margins in Arable Fields and in Grassland Fields Combined	1063 (this is hectares)	6,013,130
Management of floodplains	356	104,137
WETLAND AND BOG MANAGEMENT		
Combined Lowland Bog management (with or without grazing), Wetland Management (management only and creation), Management of buffer areas for fens and bogs	7,407	4,979,624
ORGANIC FARMING		
Organic Farming Conversion and Maintenance[10]	52,258	15,800,000
SMALL UNITS		
Conservation management small units, cattle retention and introduction	3,548	1,481,547
HEDGEROWS		
Creation and management or restoration of Hedgerows combined options	1,214,714 NB this is metres not hectares.	8,449,318
DESIGNATED SITES		
Area of Fields where AECS management is benefiting Designated Sites[8]	621,444	45,340,000
PEATLAND		
Peatland Restoration Capital Work[9]		2,400,000

[8] This includes some fields adjacent to designated sites, where the AECS works benefits the designated features.

[9] This figure is from the data provided for the RDOC May 2021 update.

3. DATA FOR THE 2015 TO 2020 AECS ROUNDS

This section aims to provide more updated figures. The more recent figures as at May 2021 show a total committed to rural businesses under the AECS scheme since 2015 of more than £213 million[10]. For AECS and Organic management a total of more than £200 million benefiting more than 3,000 applicants has been committed.

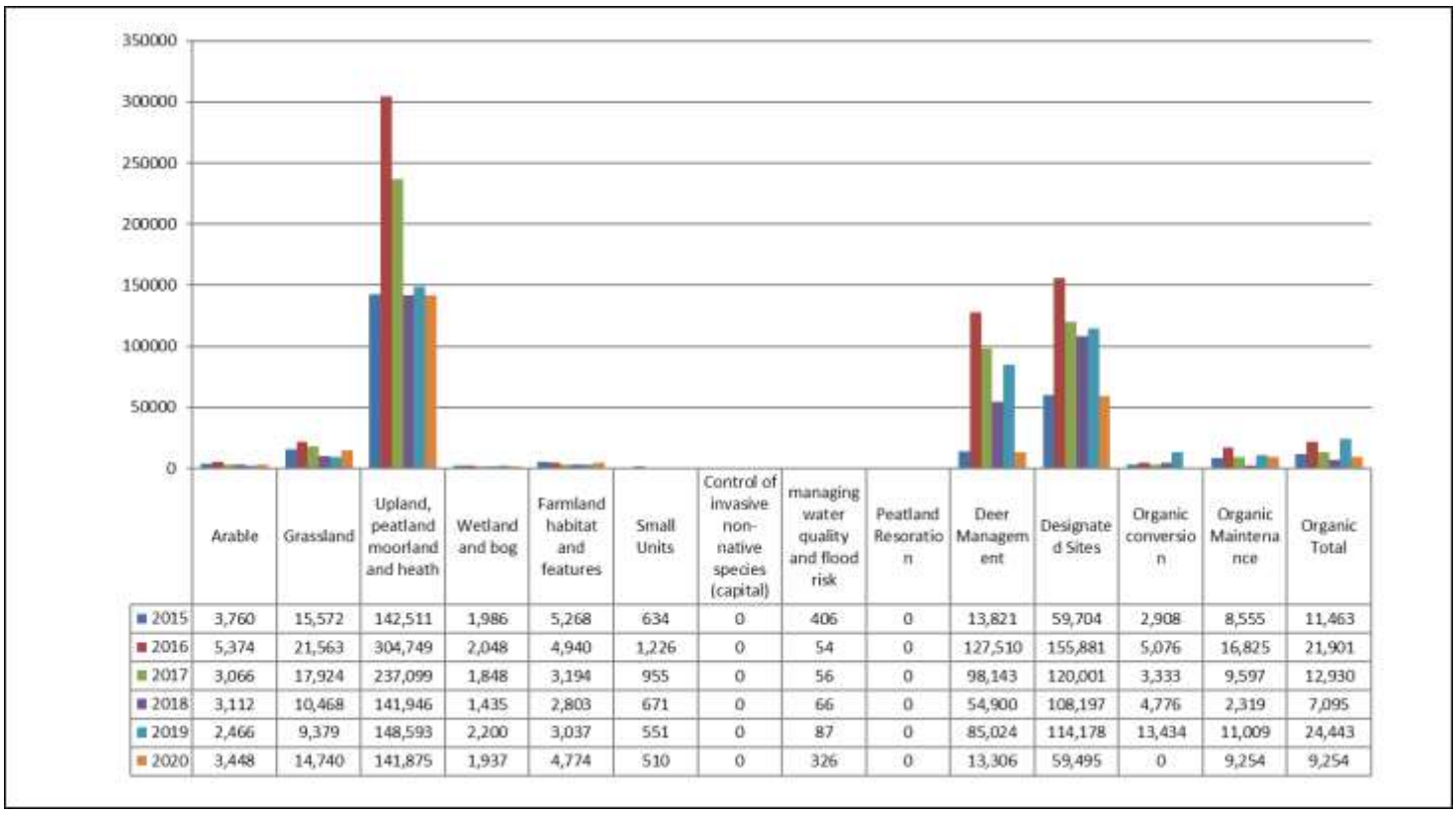
Table 2. High level statistics for the 2015 to 2020 rounds

Round	Applications Assessed	Approved	Contracts Accepted	Value of Accepted Contracts	Ha under Management (2021)
2015	927	594	558	39,404,453	174,937
2016	1,251	979	907	55,662,868	361,684
2017	989	807	744	43,931,948	276,740
2018	900	604	567	36,600,318	167,271
2019	709	506	471	32,399,846	187,882
2020	*NA*	547	490	5,643,343	*NA**
Total	**4,776**	**3,490**	**3,247**	**213,642,776**	**1,168,514**

*The 2020 AECS Round consisted of a one year extension of management Options ending in 2020. The area covered is therefore not counted in the total.

Contracts issued for the four rounds 2015-19 are in effect being implemented over the 2016 to 2024 period (the 2020 AECS round consisted of a one year extension). Data published in reports for the Rural Development Operational Committee provides a useful general picture of how spend and area covered compares across different options groupings. The more recent figures show:

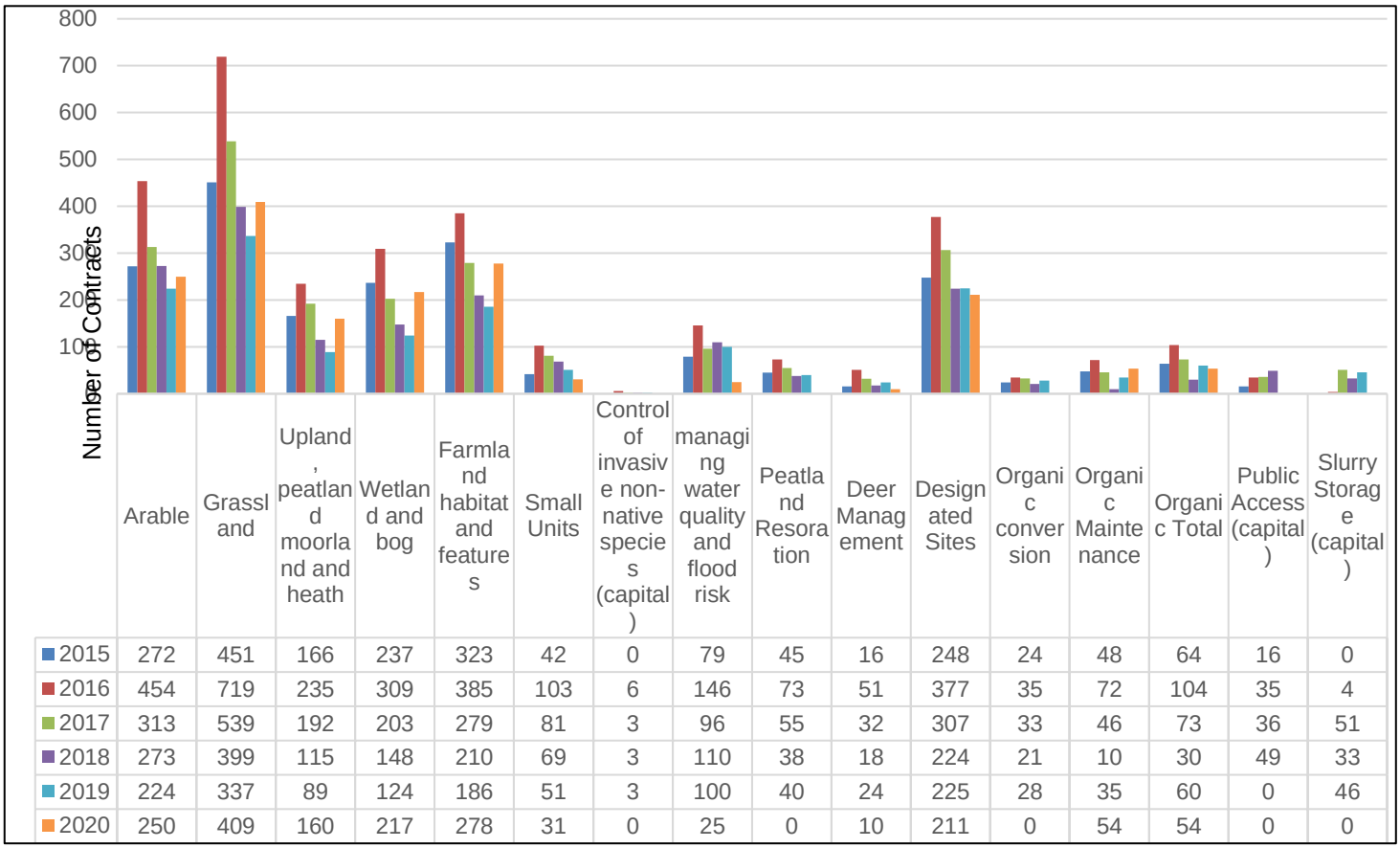
Table 3. Area (ha) Managed by different AECS Options for the rounds 2015-20 [11]



	Arable	Grassland	Upland, peatland moorland and heath	Wetland and bog	Farmland habitat and features	Small Units	Control of invasive non-native species (capital)	managing water quality and flood risk	Peatland Resoration	Deer Management	Designated Sites	Organic conversion	Organic Maintenance	Organic Total
2015	3,760	15,572	142,511	1,986	5,268	634	0	406	0	13,821	59,704	2,908	8,555	11,463
2016	5,374	21,563	304,749	2,048	4,940	1,226	0	54	0	127,510	155,881	5,076	16,825	21,901
2017	3,066	17,924	237,099	1,848	3,194	955	0	56	0	98,143	120,001	3,333	9,597	12,930
2018	3,112	10,468	141,946	1,435	2,803	671	0	66	0	54,900	108,197	4,776	2,319	7,095
2019	2,466	9,379	148,593	2,200	3,037	551	0	87	0	85,024	114,178	13,434	11,009	24,443
2020	3,448	14,740	141,875	1,937	4,774	510	0	326	0	13,306	59,495	0	9,254	9,254

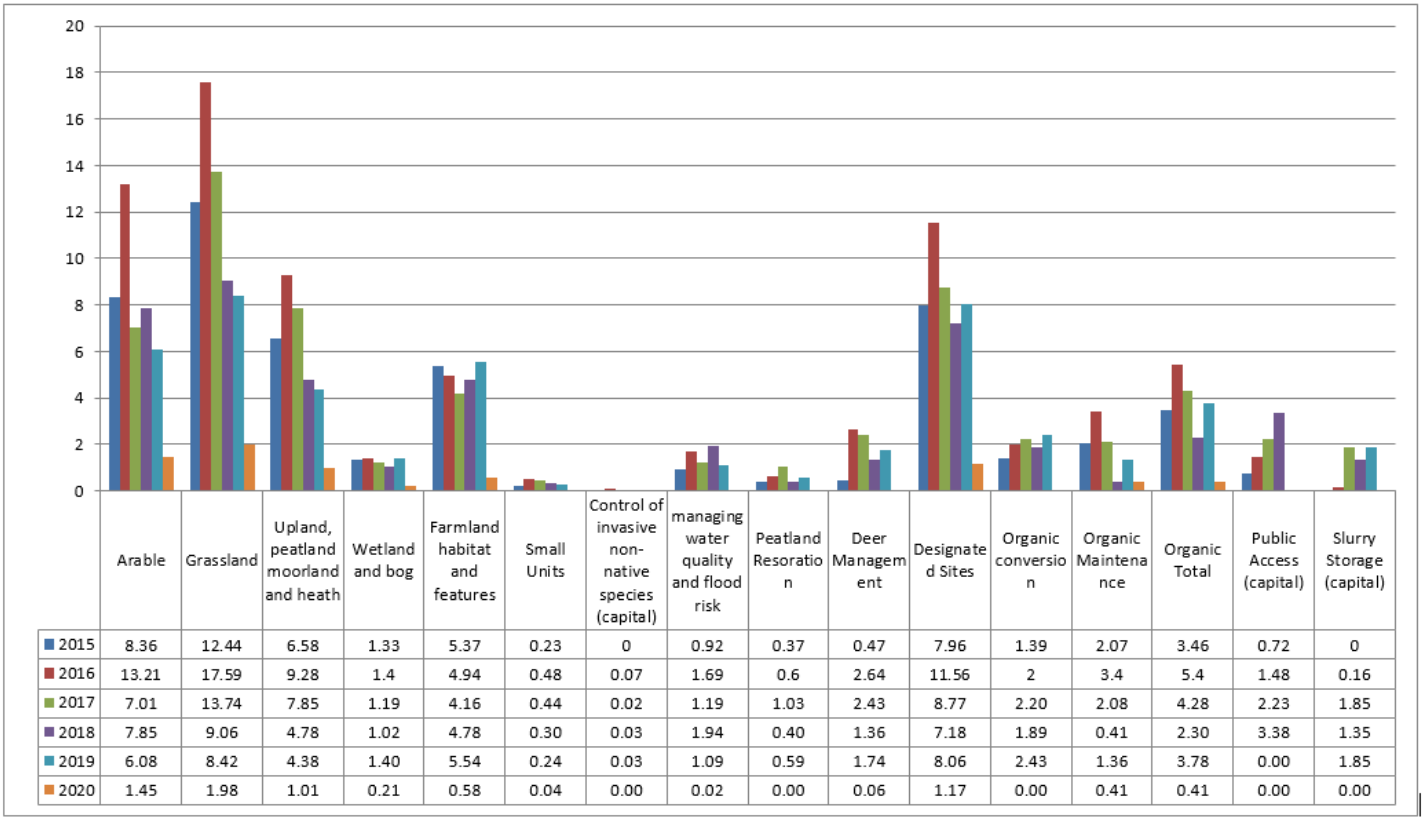
[10] Source Scottish Government as at May 2021, this figure includes contracts for Agri-Environment, Organic, Slurry Stores and Improving Public Access (Core Brief May 2021).
[11] Data from Report to the Rural Development Operational Committee May 2021.

Table 4. AECS Contracts approved for the rounds 2015-20 [12]



	Arable	Grassland	Upland, peatland moorland and heath	Wetland and bog	Farmland habitat and features	Small Units	Control of invasive non-native species (capital)	managing water quality and flood risk	Peatland Resoration	Deer Management	Designated Sites	Organic conversion	Organic Maintenance	Organic Total	Public Access (capital)	Slurry Storage (capital)
2015	272	451	166	237	323	42	0	79	45	16	248	24	48	64	16	0
2016	454	719	235	309	385	103	6	146	73	51	377	35	72	104	35	4
2017	313	539	192	203	279	81	3	96	55	32	307	33	46	73	36	51
2018	273	399	115	148	210	69	3	110	38	18	224	21	10	30	49	33
2019	224	337	89	124	186	51	3	100	40	24	225	28	35	60	0	46
2020	250	409	160	217	278	31	0	25	0	10	211	0	54	54	0	0

Table 5. Total value of contracts approved for the rounds 2015-20[13]



	Arable	Grassland	Upland, peatland moorland and heath	Wetland and bog	Farmland habitat and features	Small Units	Control of invasive non-native species (capital)	managing water quality and flood risk	Peatland Resoration	Deer Management	Designated Sites	Organic conversion	Organic Maintenance	Organic Total	Public Access (capital)	Slurry Storage (capital)
2015	8.36	12.44	6.58	1.33	5.37	0.23	0	0.92	0.37	0.47	7.96	1.39	2.07	3.46	0.72	0
2016	13.21	17.59	9.28	1.4	4.94	0.48	0.07	1.69	0.6	2.64	11.56	2	3.4	5.4	1.48	0.16
2017	7.01	13.74	7.85	1.19	4.16	0.44	0.02	1.19	1.03	2.43	8.77	2.20	2.08	4.28	2.23	1.85
2018	7.85	9.06	4.78	1.02	4.78	0.30	0.03	1.94	0.40	1.36	7.18	1.89	0.41	2.30	3.38	1.35
2019	6.08	8.42	4.38	1.40	5.54	0.24	0.03	1.09	0.59	1.74	8.06	2.43	1.36	3.78	0.00	1.85
2020	1.45	1.98	1.01	0.21	0.58	0.04	0.00	0.02	0.00	0.06	1.17	0.00	0.41	0.41	0.00	0.00

[12] Data from Report to the Rural Development Operational Committee May 2021.
[13] Data from Report to the Rural Development Operational Committee May 2021.

4. DESIGNATED SITES

The maps show that overall AECS has provided comprehensive geographical coverage supporting the management of designated sites (SSSIs and European sites) across all parts of Scotland.

The full-page map shows in green the larger designated sites[14]. Comparing distribution with that for some individual options suggests that in some parts of the west uptake is strongly associated with designated sites. The location of some of the clusters cover more peripheral areas such as the Inner and Outer Hebrides, Argyll mainland, Orkney, Caithness, and Wester Ross. Further analysis showed that in Argyll and Western Isles, c. 80% of AECS contracts are fully or partly associated with designated sites, compared with c. 45% for Scotland as a whole[15]. However, this is not unexpected as the proportion of the land under designation is higher in these areas, and also fewer of the sites are associated with woodland which is funded through SFGS.

There was also good uptake across the Cairngorms and Grampian area, Highland, Southern Scotland including Galloway and the Borders. There is significant level of activity round the Rivers Dee, Spey, Tay and Tweed that will be benefiting condition of fish and freshwater habitat features in designated sites. Two European sites with a high level of coverage were the Muirkirk and North Lowther Uplands in Ayrshire, and the Caithness and Sutherland Peatlands.

The scheme has a major role in helping to deliver the favourable condition of designated sites. About 621,444 Hectares are under positive management through AECS with 1,399 contracts and a total budget of £45 million committed.

Table 6. Funding committed for designated sites

AECS round	2015	2016	2017	2018	2019	Total
Total Commitments £m	8.21	11.83	9.18	7.47	8.65	**45.34**
Accepted Contracts	249	381	309	226	234	**1,399**
Ha Managed (2020)	69,685	168,225	133,736	114,447	135,351	**621,444**

Nb. Area includes some fields adjacent to designated sites, where the AECS works benefits the designated features.

As part of the work, analysis was carried out to identify the features that would benefit from contracts from the 2015 to 2018 AECS rounds. The data showed that fish, lowland heath and upland habitats were features for which the highest percentage was being addressed by AECS. The highest number of contracts per feature were for breeding bird assemblage features followed by Machair and Upland assemblage features.

Table 7- SSSI features with highest number of AECS contracts

SSSI feature name	number of AECS contracts
Breeding bird assemblage	215
Machair	91
Upland assemblage	84
Vascular plant assemblage	70
Hen harrier (Circus cyaneus), breeding	69
Blanket bog	56

[14] See map titled “Density of fields with AECS options that benefit designated sites 2015-18”.
[15] Internal analysis of SSSI features (A3256310)

Table 8 - Designated site features supported by AECS 2015-2018[16]

Feature Category	**number of features being fully or partly addressed by AECS ***	***total number of features in Scotland under each feature category***	**% of features being addressed by AECS to some extent***
Fish	30	*48*	**62.5**
Lowland heath	13	*33*	**39.4**
Upland habitat	273	*783*	**34.9**
Mammals (except marine)	18	*52*	**34.6**
Lowland grassland	44	*141*	**31.2**
Vascular plants	42	*159*	**26.4**
Wetlands (including lowland bogs)	89	*351*	**25.4**
Coast	83	*334*	**24.9**
Birds	382	*1549*	**24.7**
Freshwater habitats	40	*226*	**17.7**
Invertebrates	41	*242*	**16.9**
Non-vascular plants	15	*148*	**10.1**
Reptiles & amphibians	1	*12*	**8.3**
Grand Total***	**1071**	**4078**	**26.3****

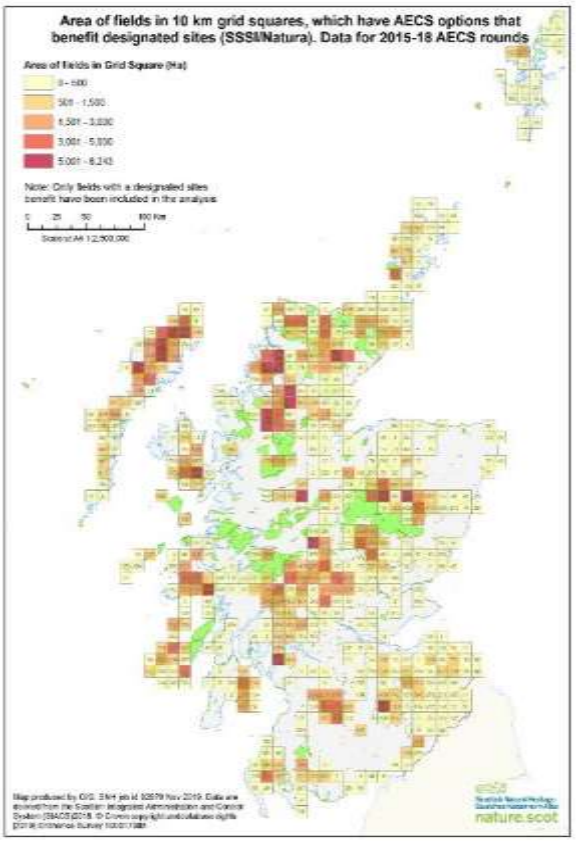
* This includes both SSSI and European features.
** A further 304 features were being addressed by SRDP Rural Priorities contracts that ran from 2015 to 2019. If these are included, the % increases to **33%**.
*** Woodland features are excluded above as these are supported through FGS (Forestry Grant Scheme) rather than AECS. Marine and Earth Sciences features are also excluded above as they fall outwith the scope of AECS.

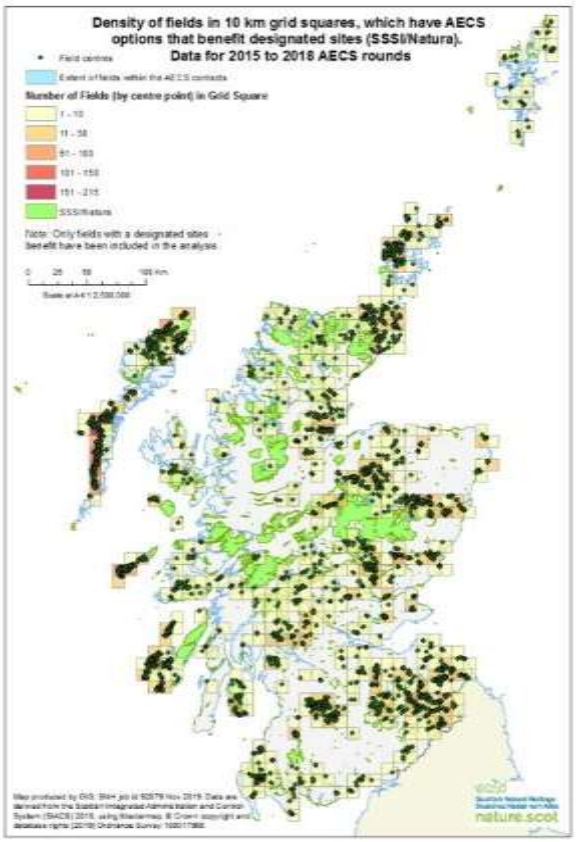
[16] Nb. The figures come from analysis of NatureScot's MIDAS database, where it is recorded which designated sites features are expected to benefit from each AECS contract (A3081856).

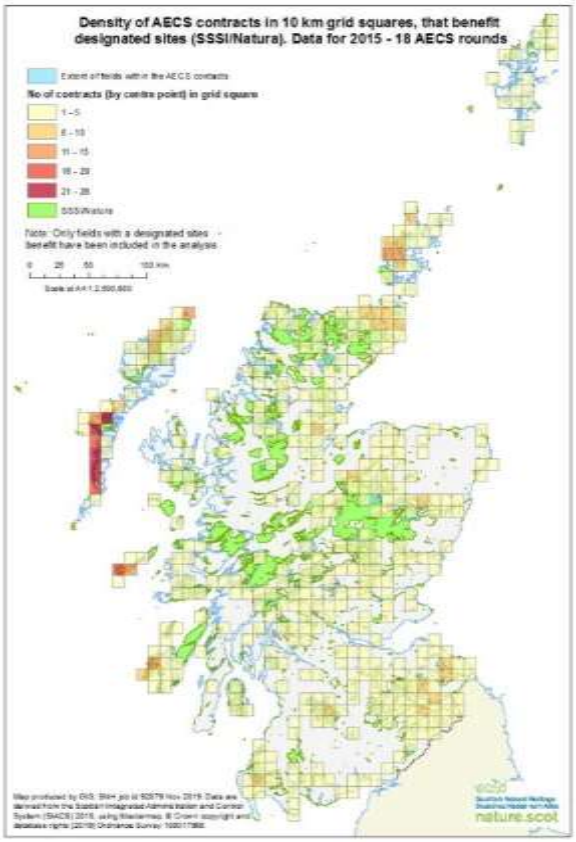
Designated Sites

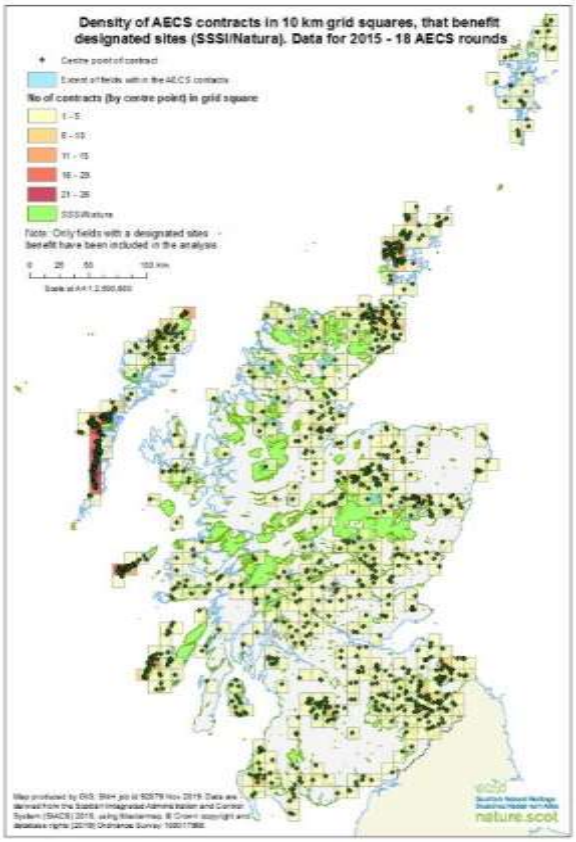
Designates Sites

Designated Sites 2015-18

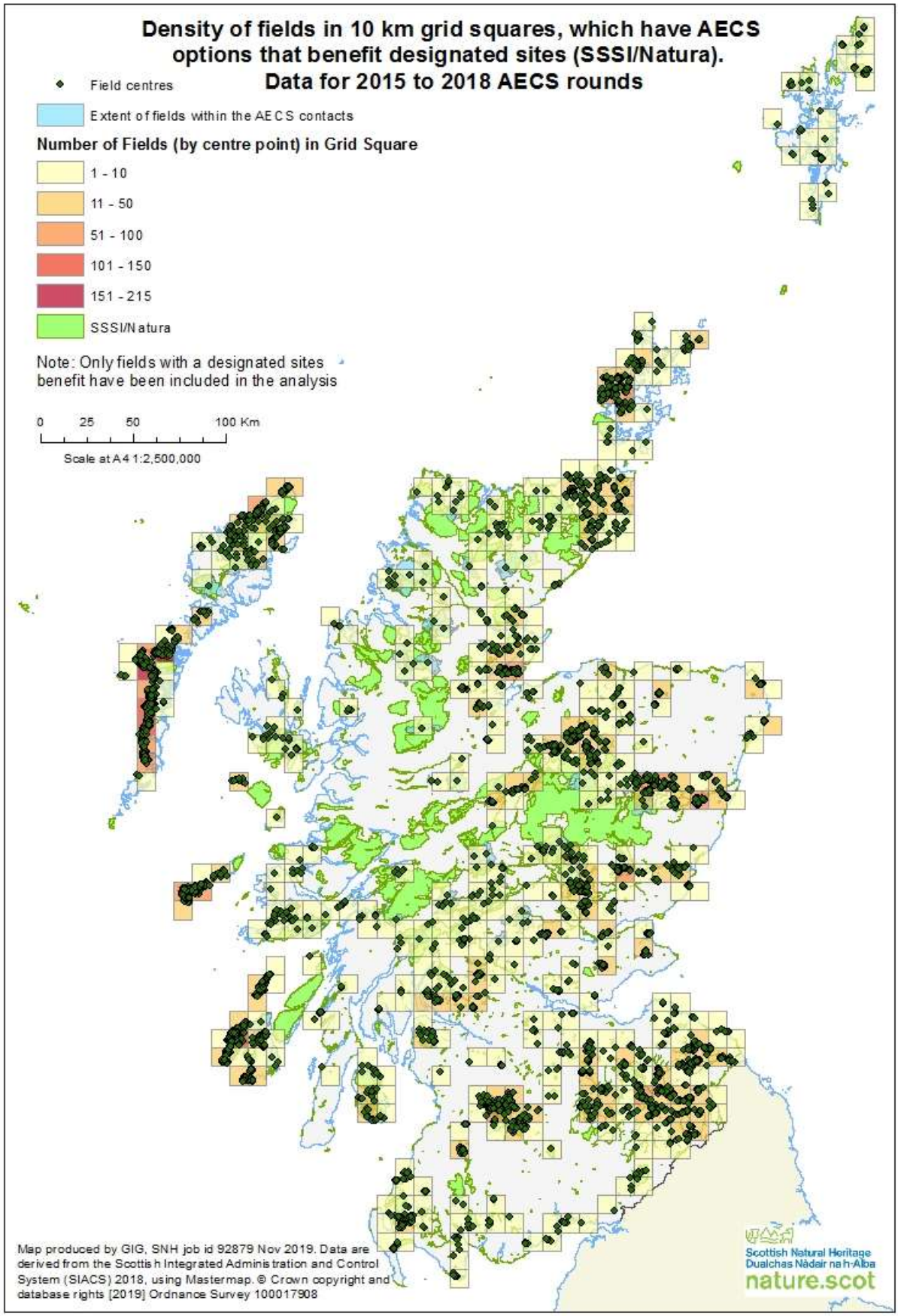




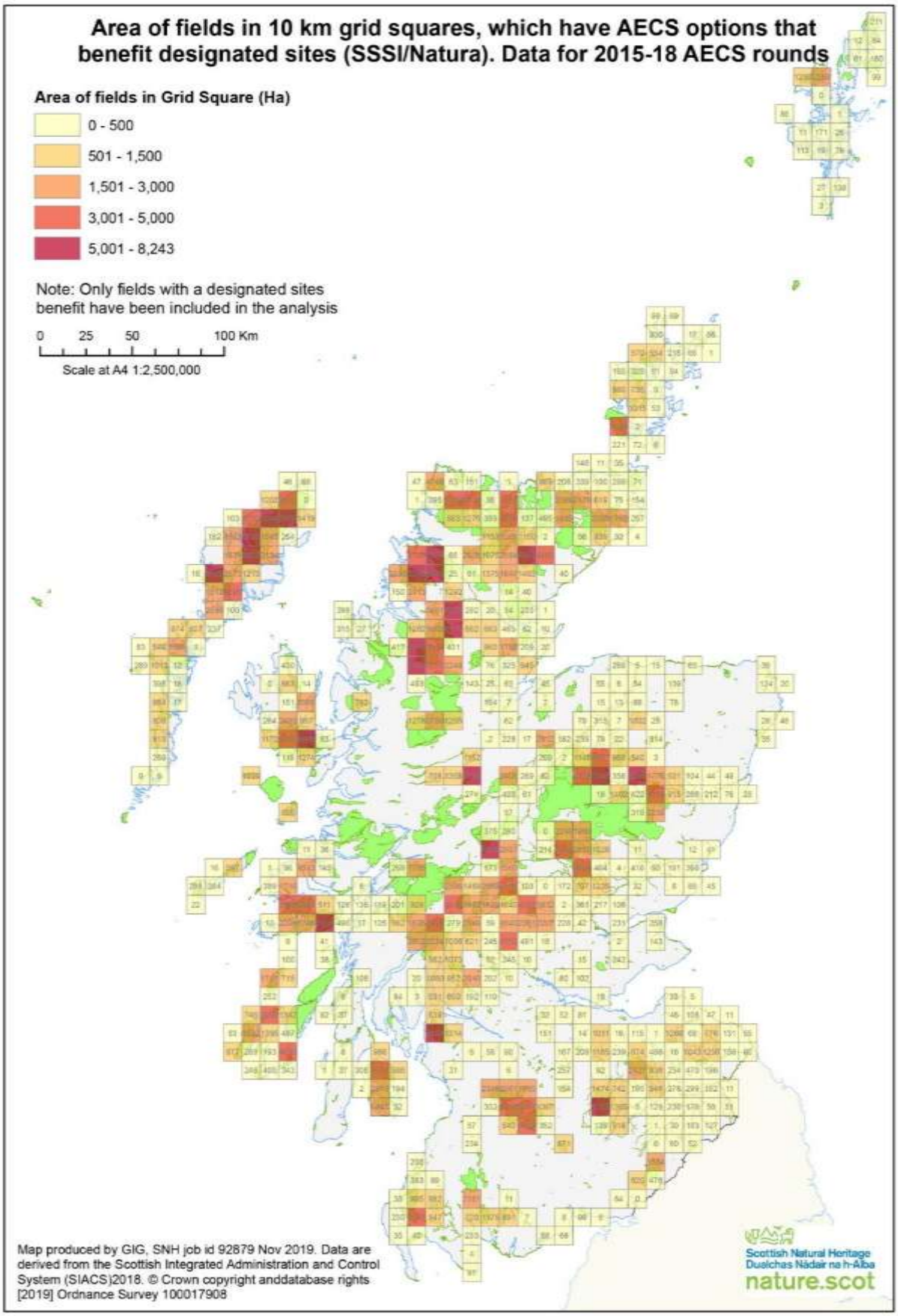




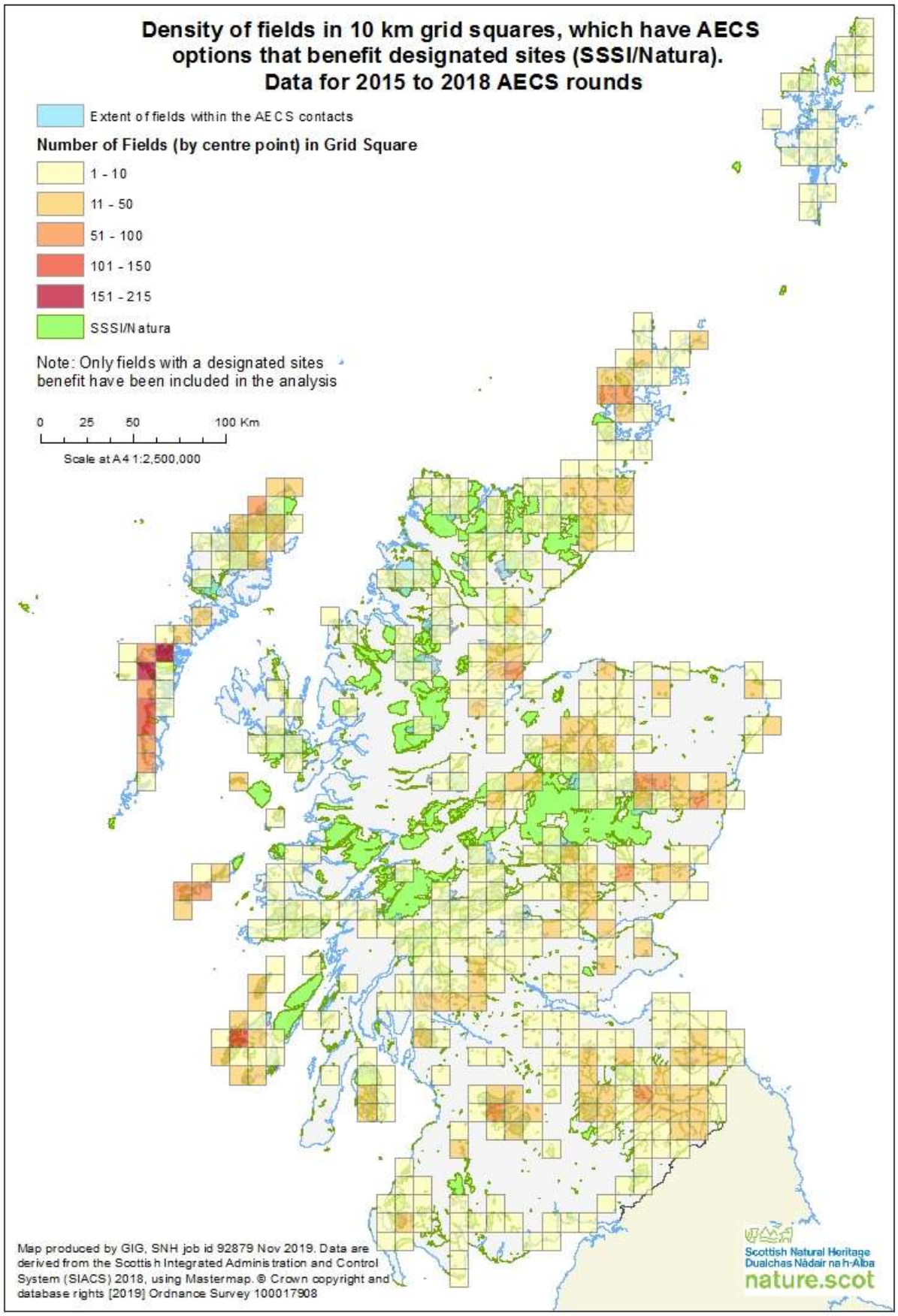
Density of fields which have AECS options that benefit designated sites 2015-18



Area of fields which have AECS options that benefit designated sites 2015-18

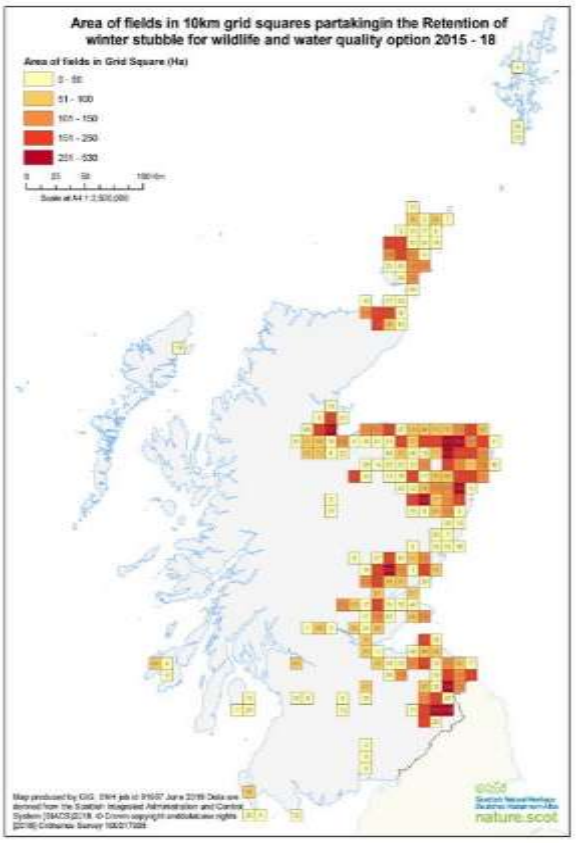


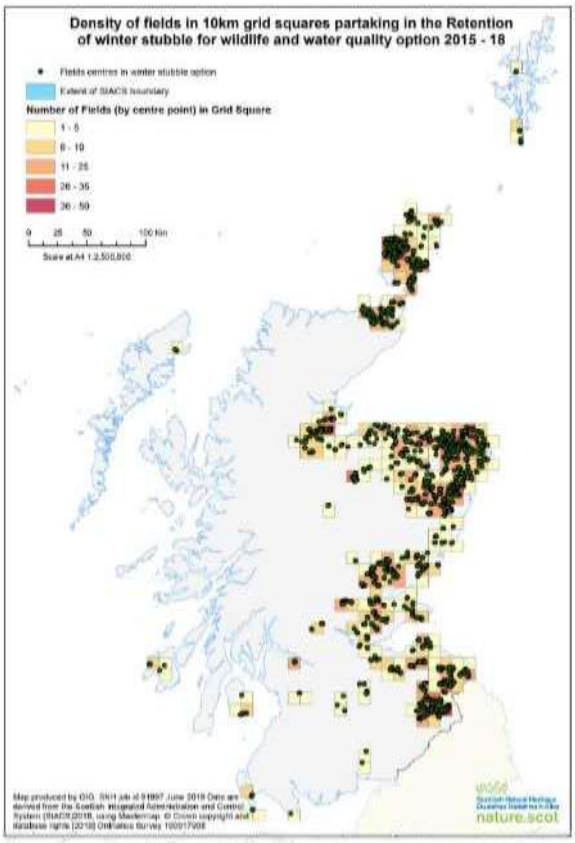
Density of fields which have AECS options that benefit designated sites 2015-18

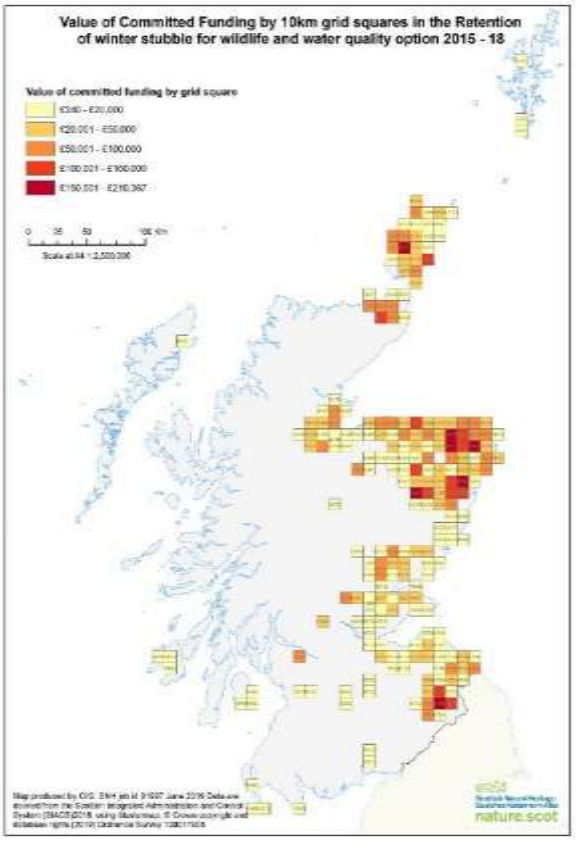


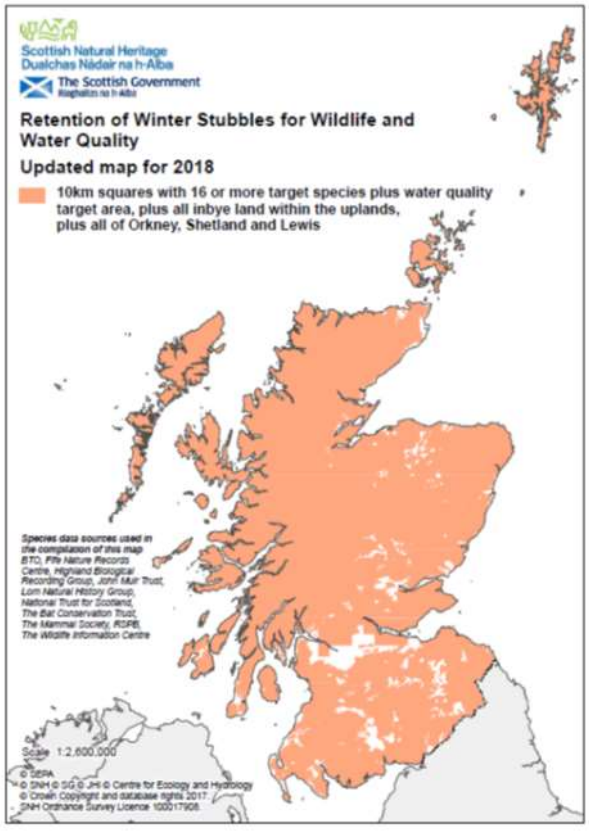
Arable Farmland Options

Retention of Winter Stubbles option

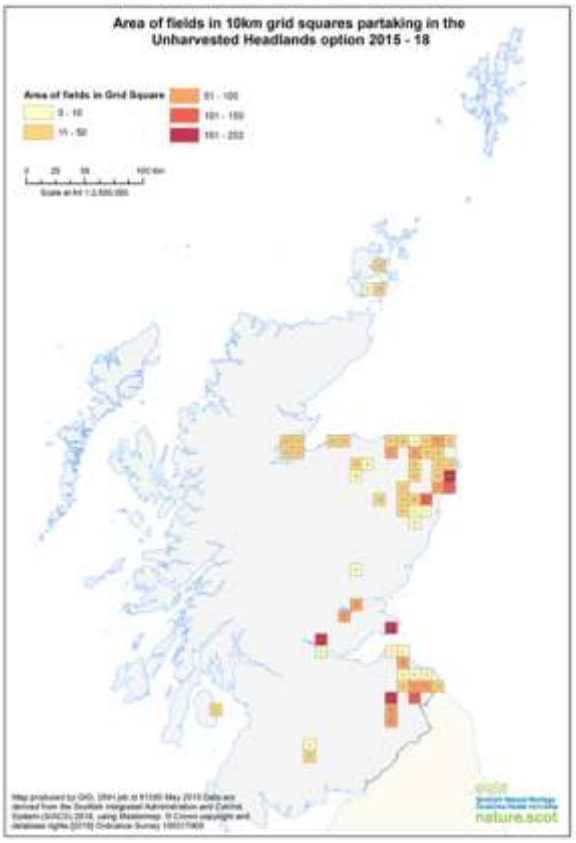


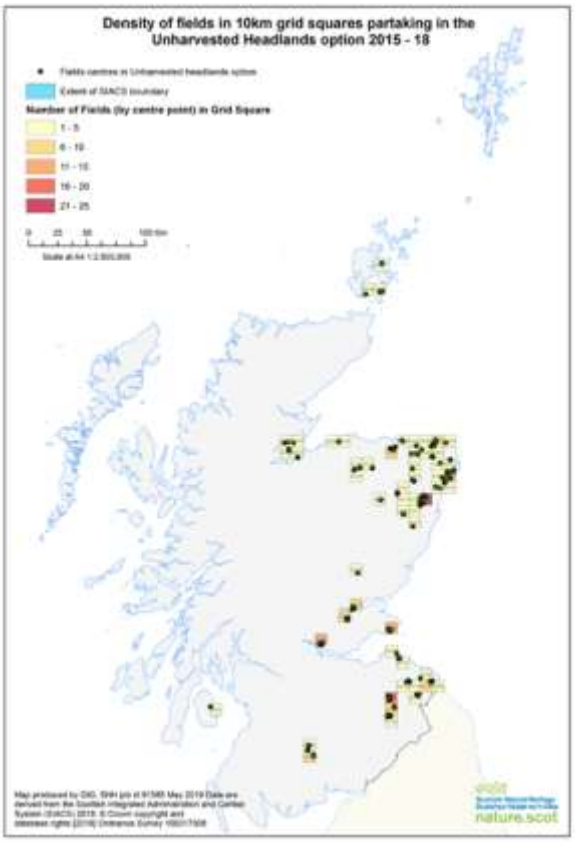


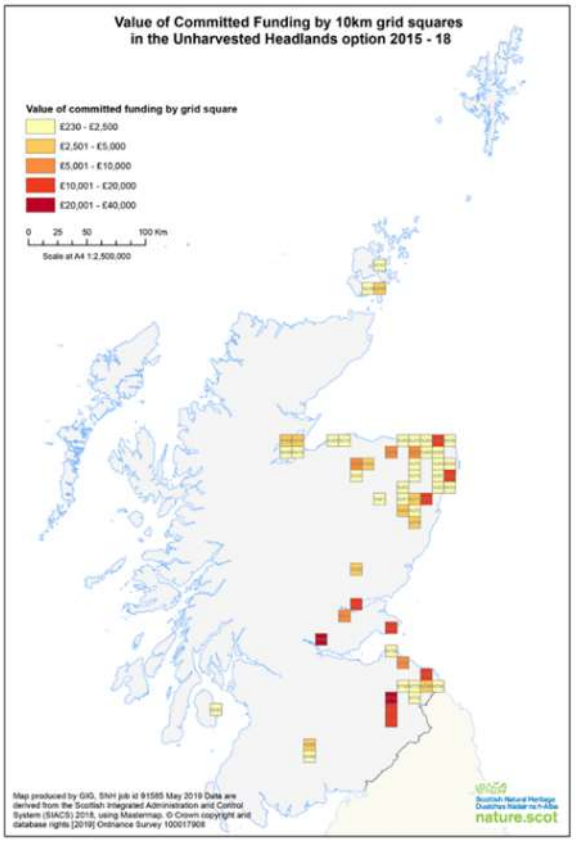


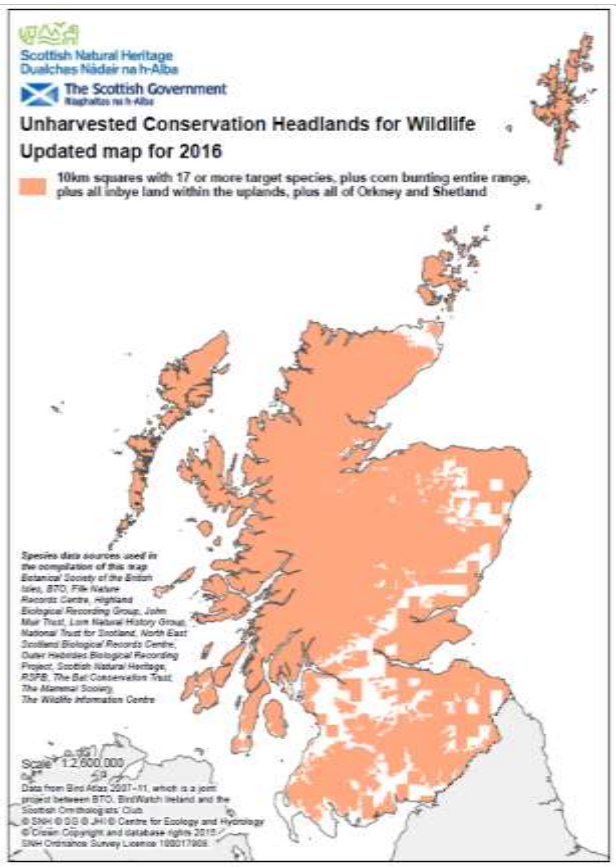


Unharvested conservation Headlands option



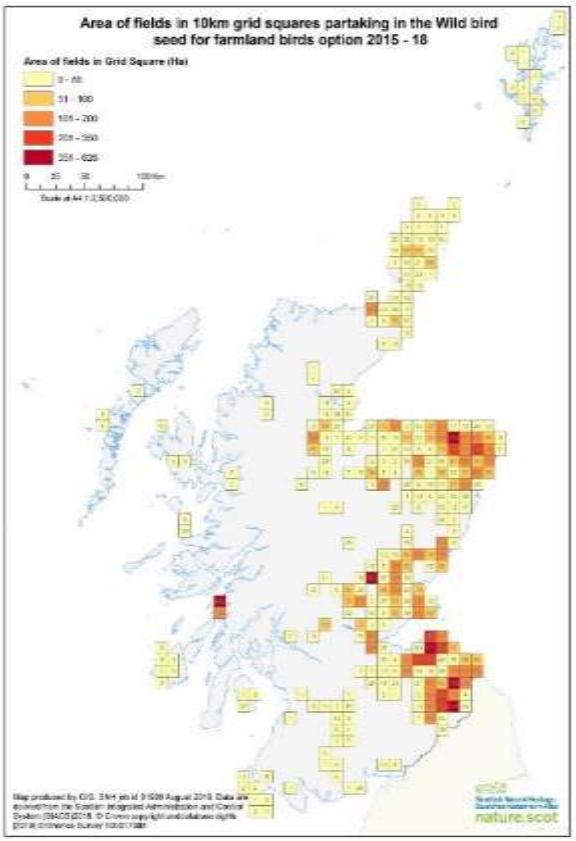


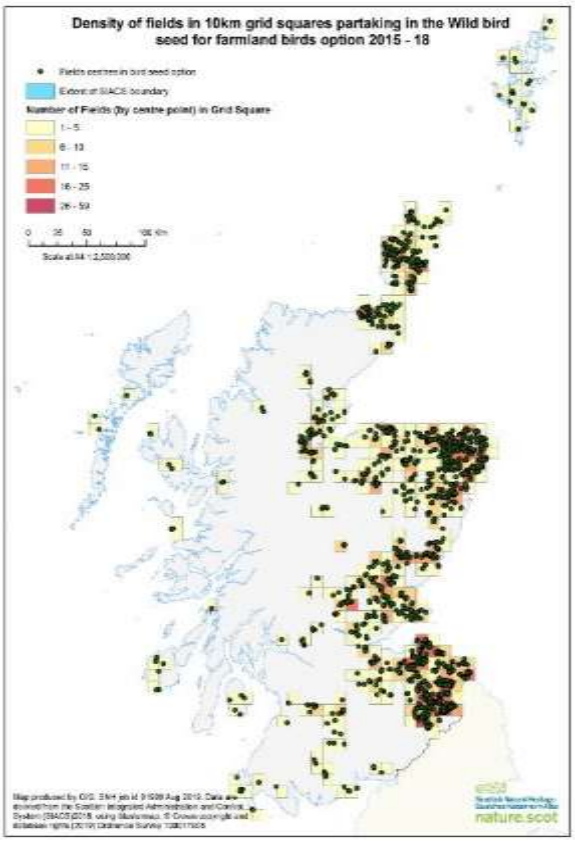


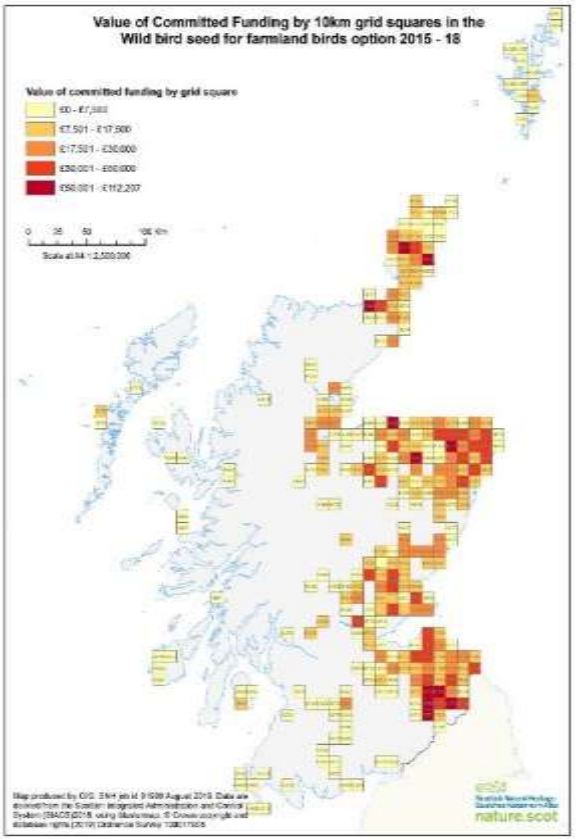


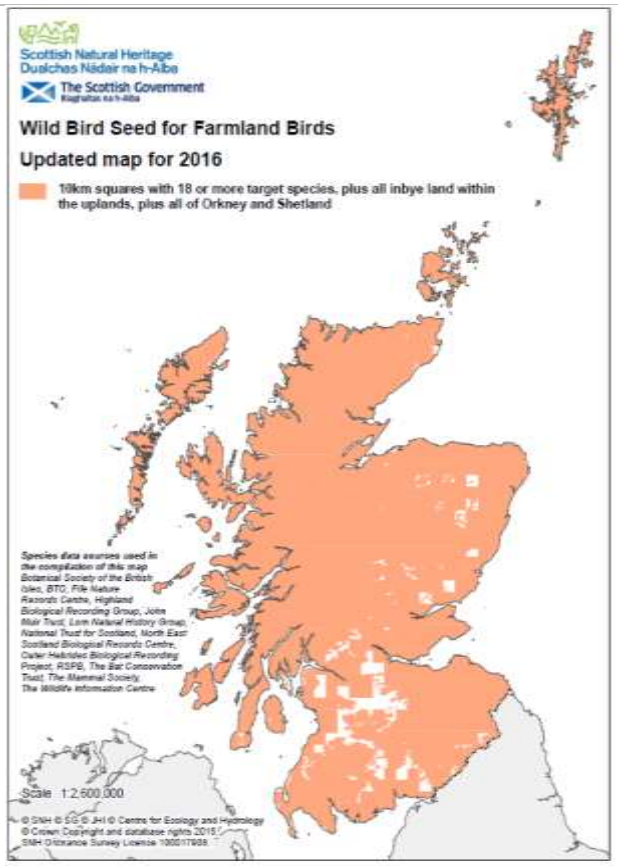
Arable Farmland and Birds

Wild Bird Seed Creation and Management option

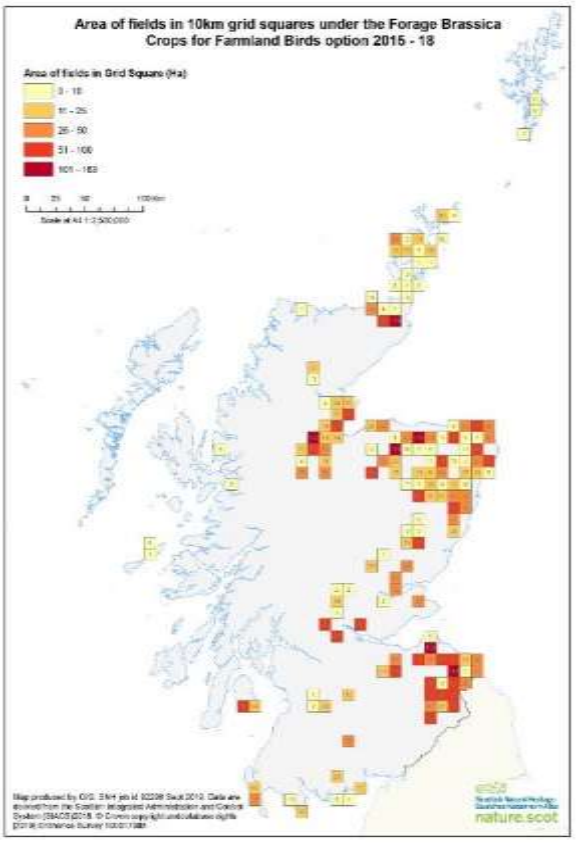


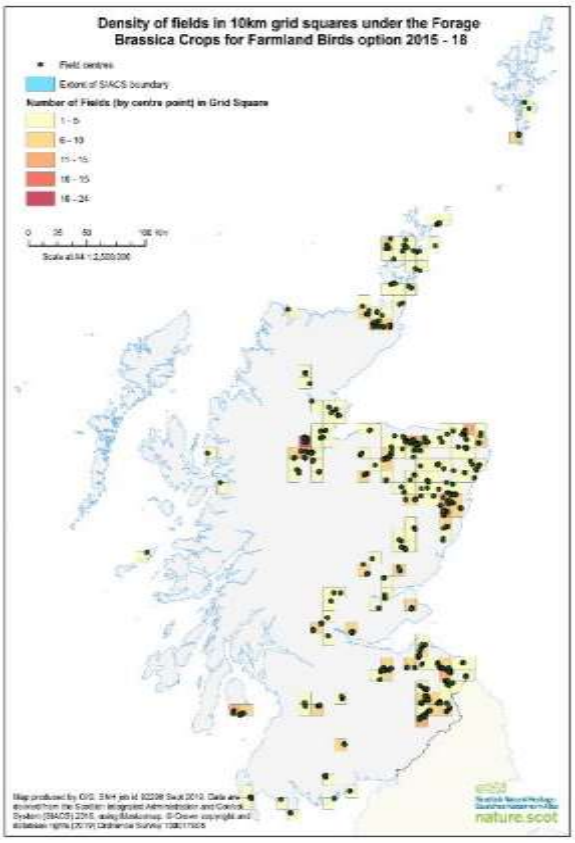


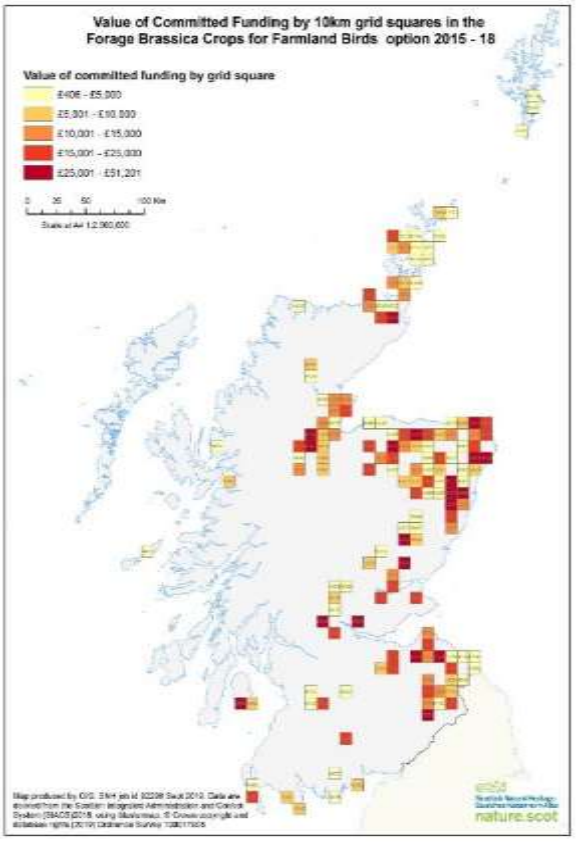


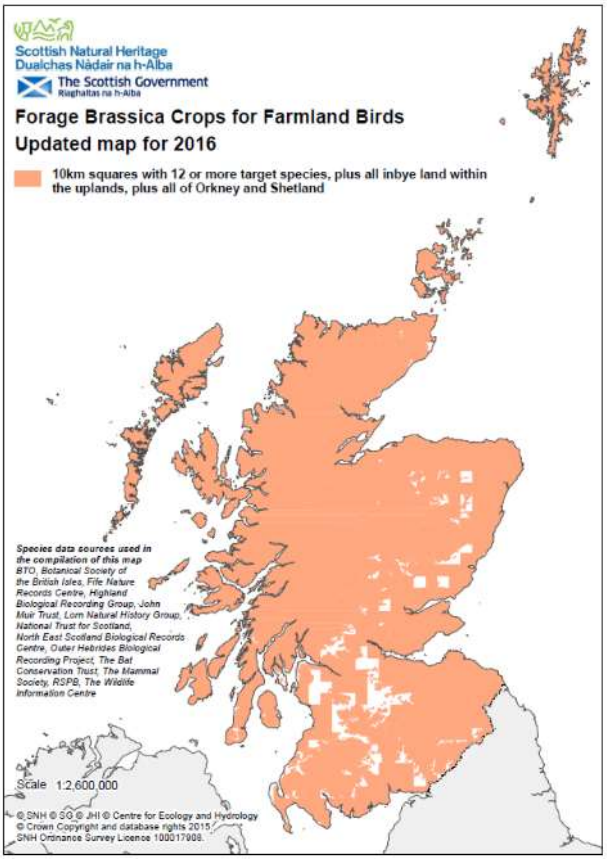


Forage Brassica Crops for Birds

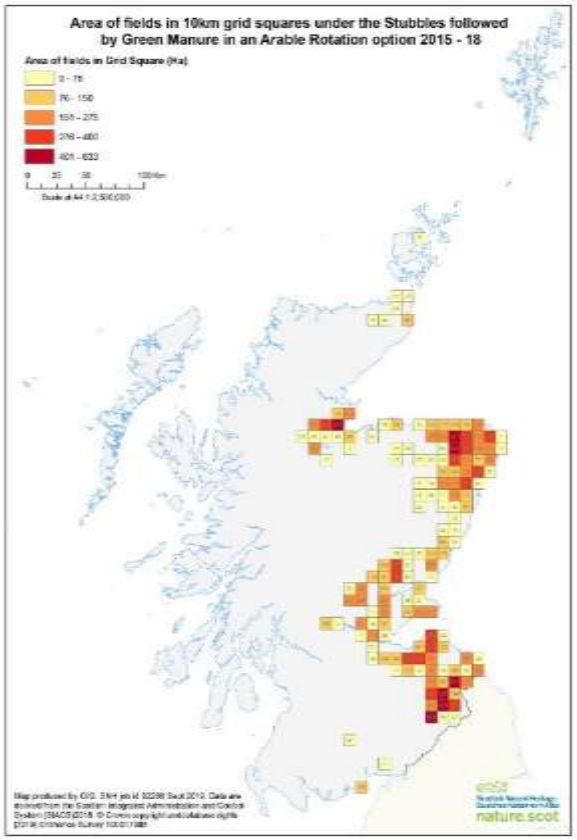


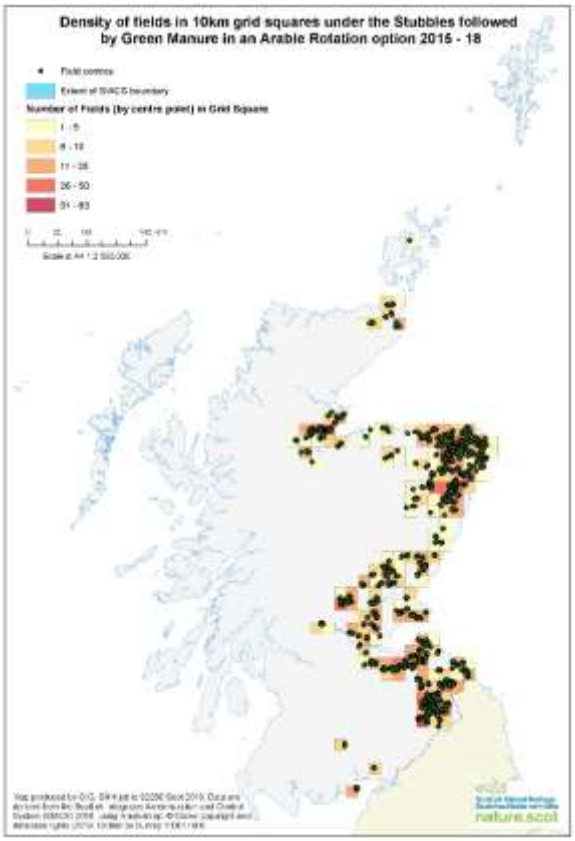


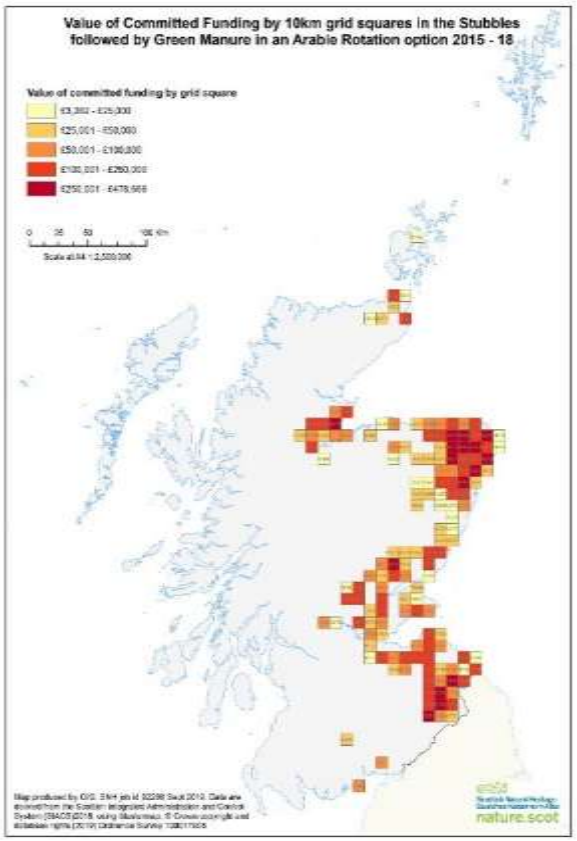


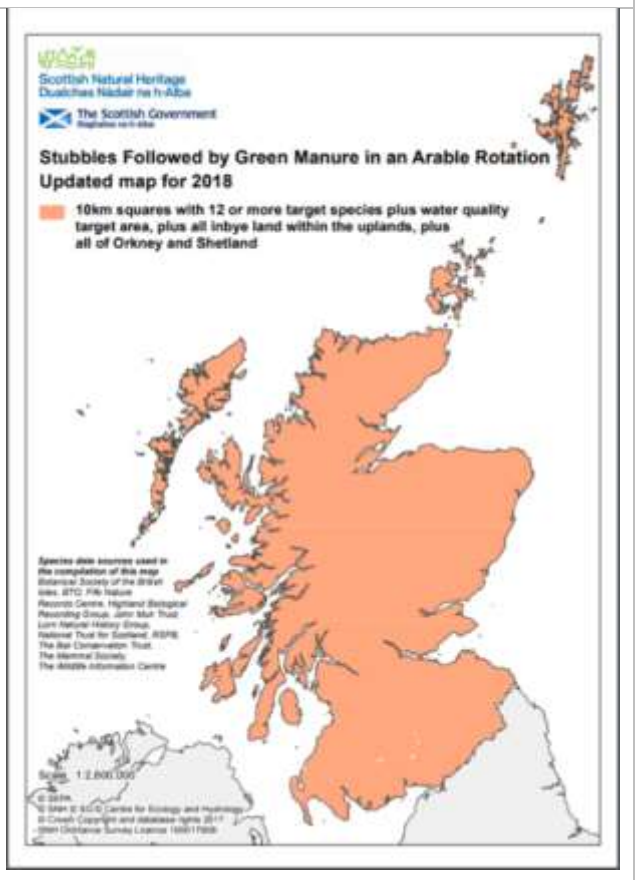


Stubbles Followed by Green Manure



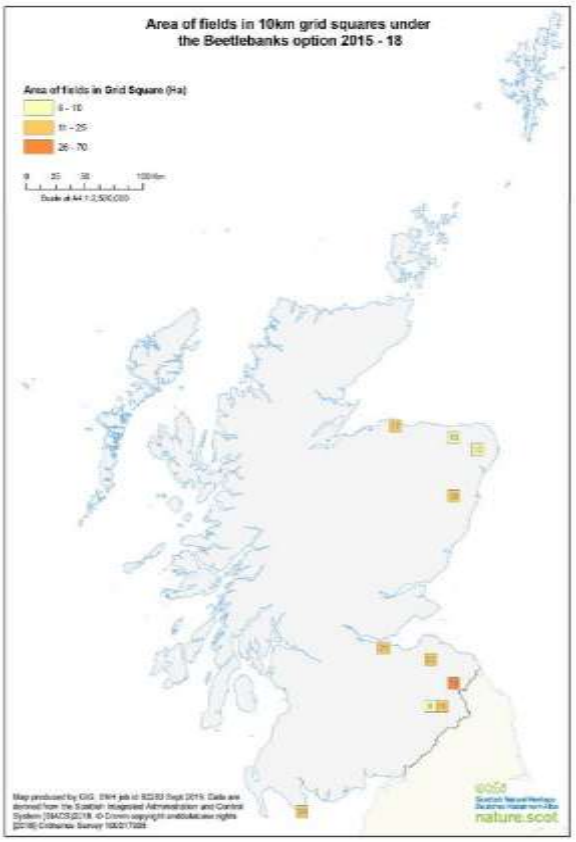


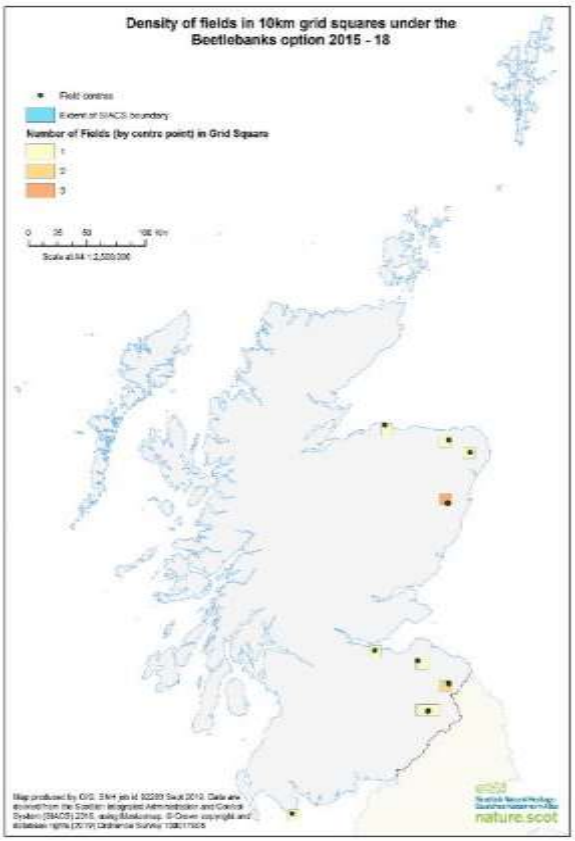


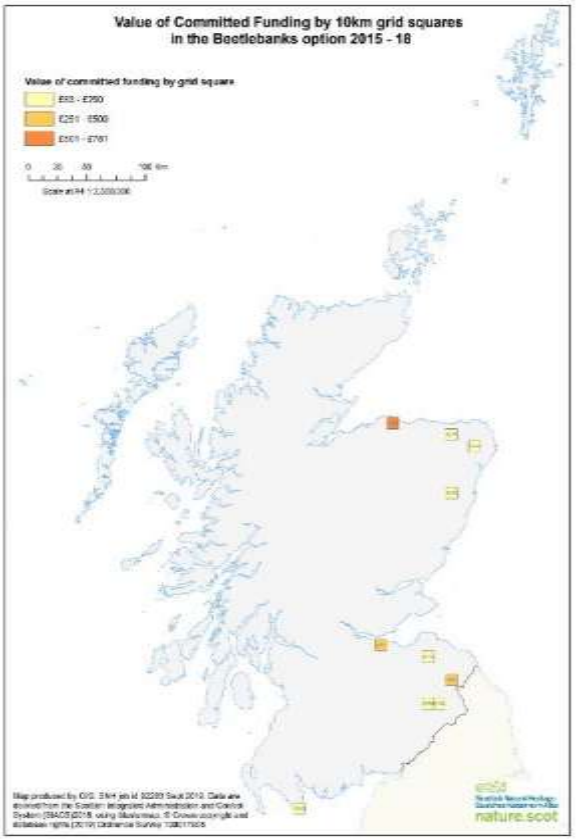


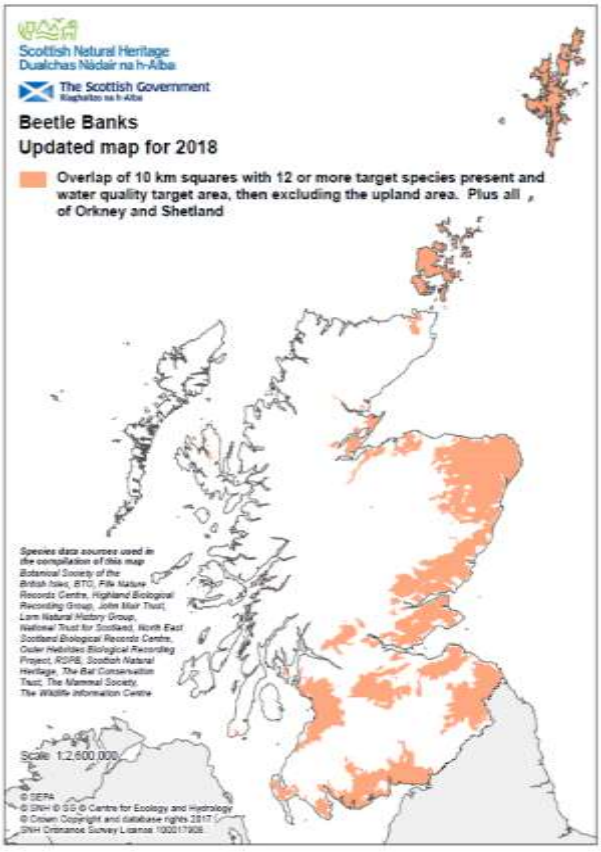
Arable Farmland and Birds/Wildlife

Beetlebanks



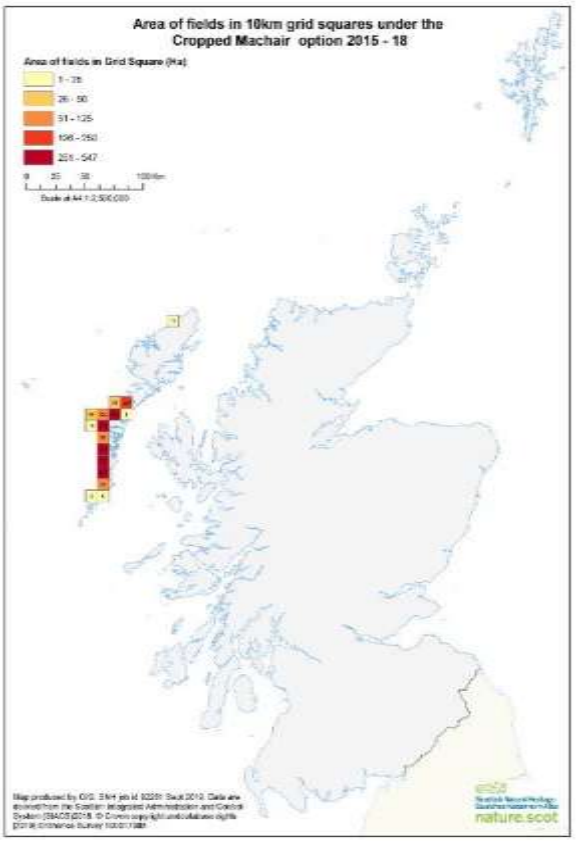


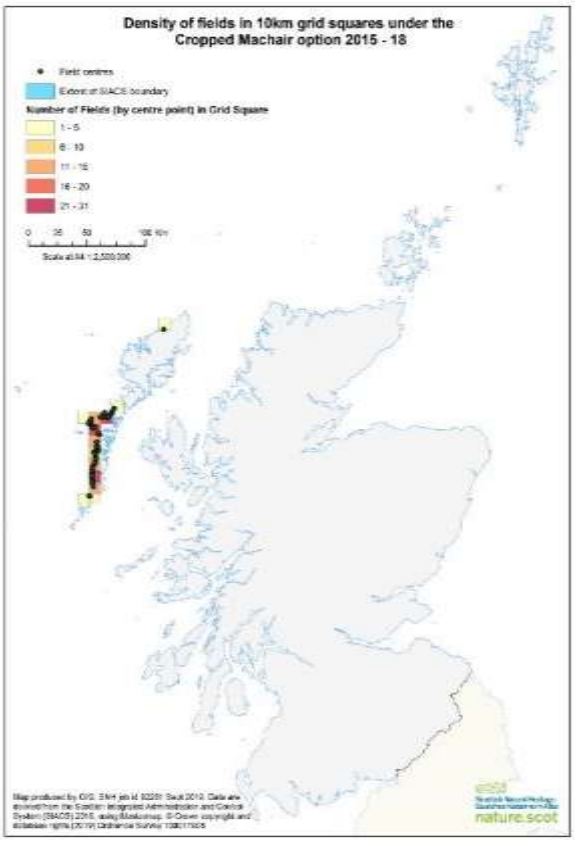


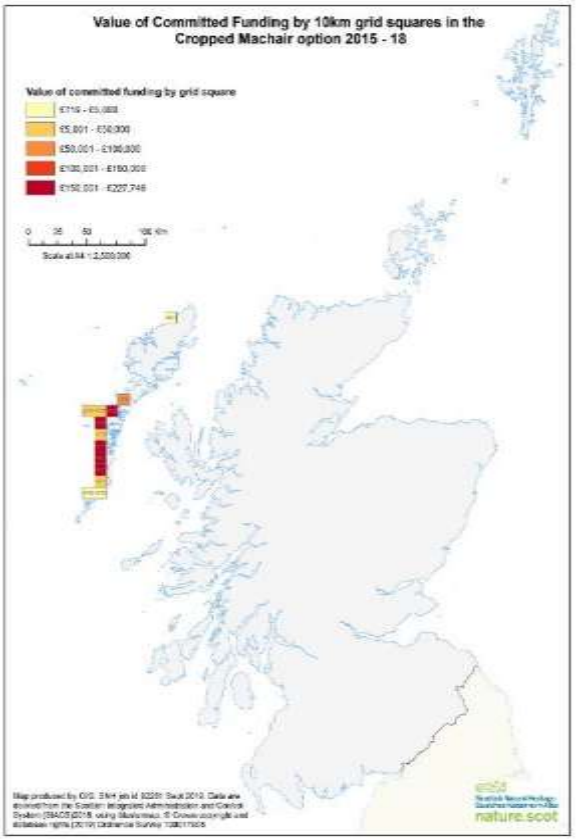


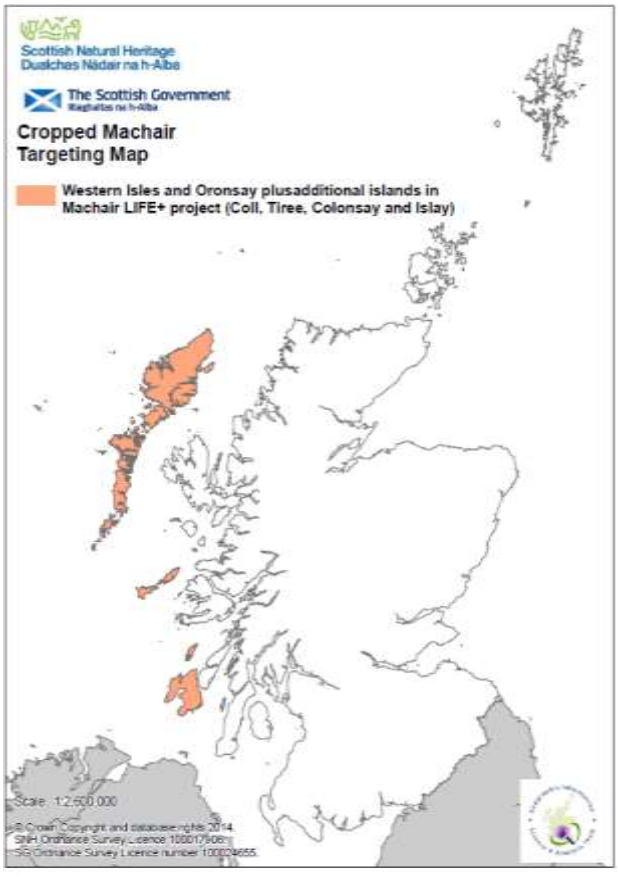
Arable Farmland and Birds

Cropped Machair



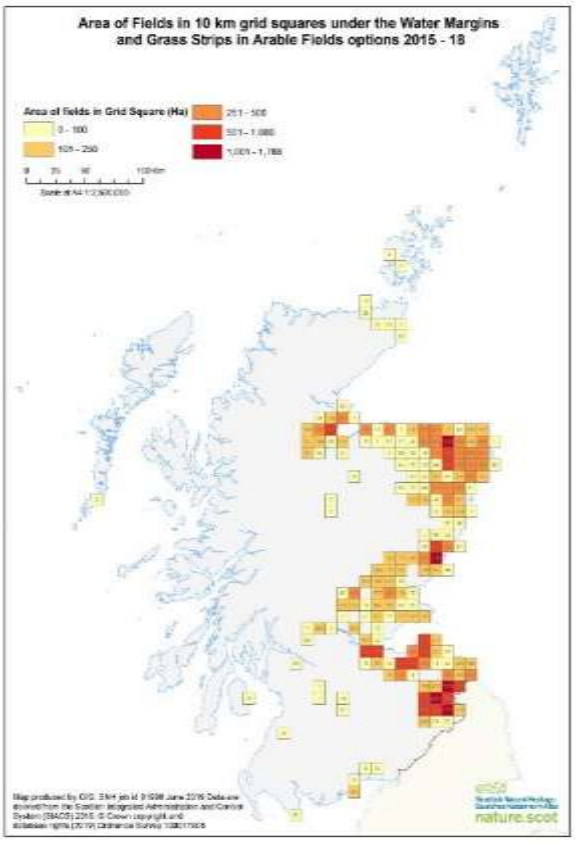


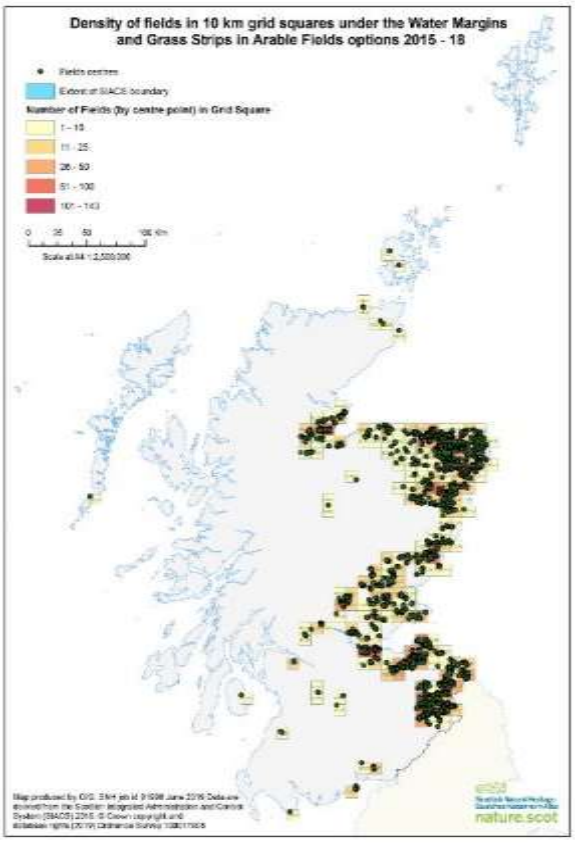


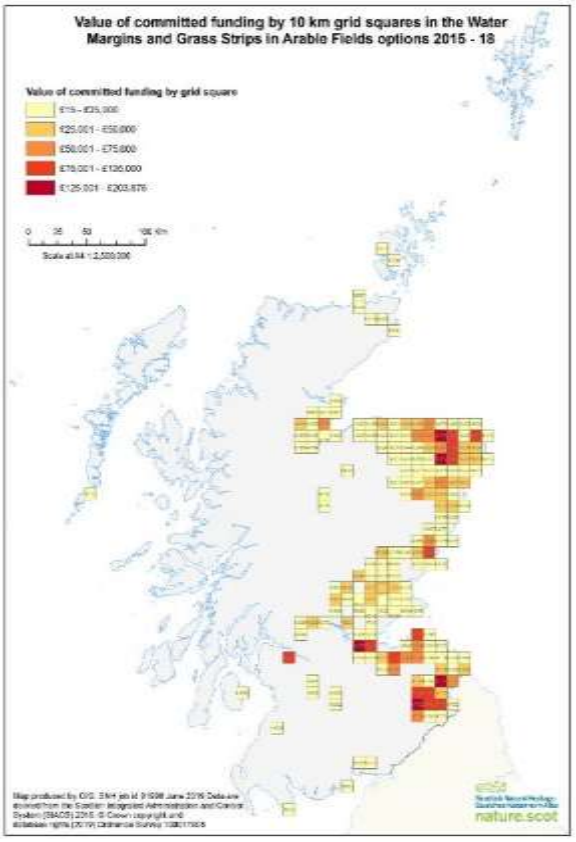


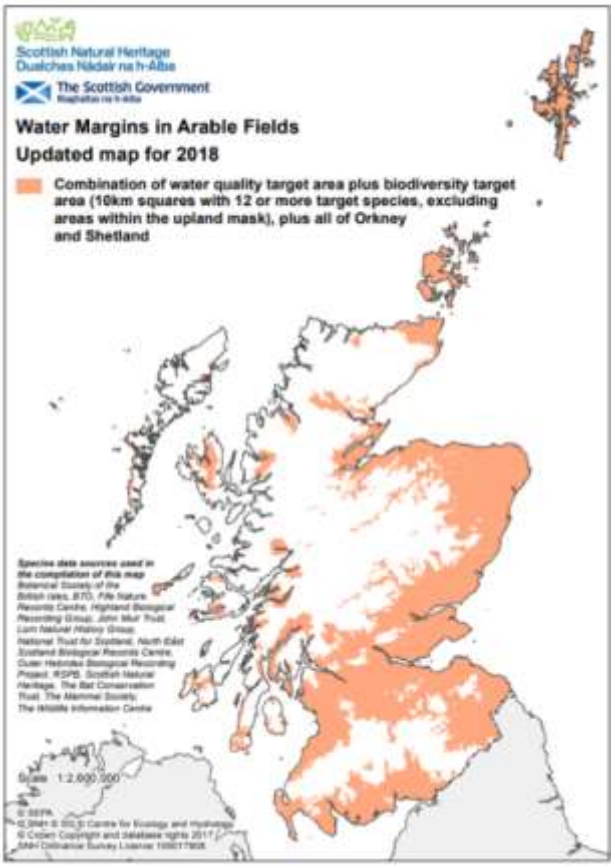
Water Management

Water Margins and Grass Strips in Arable in Fields

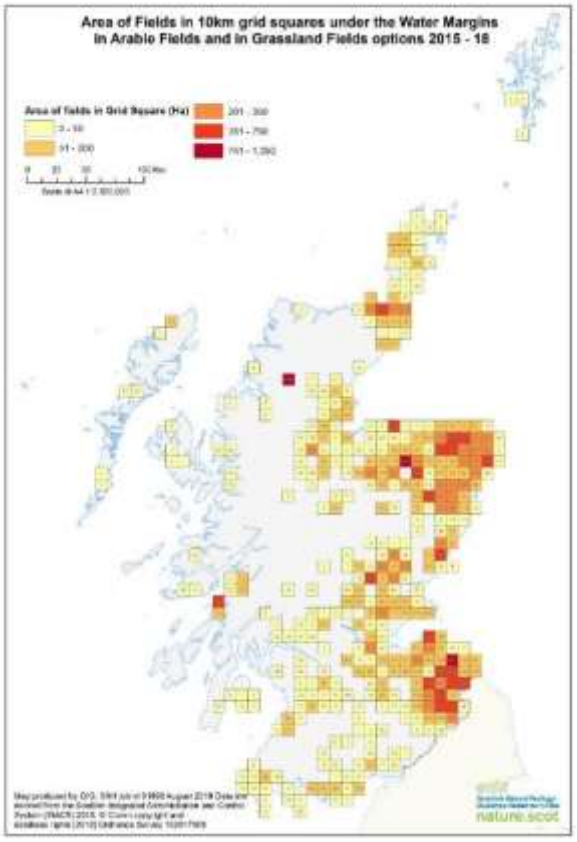


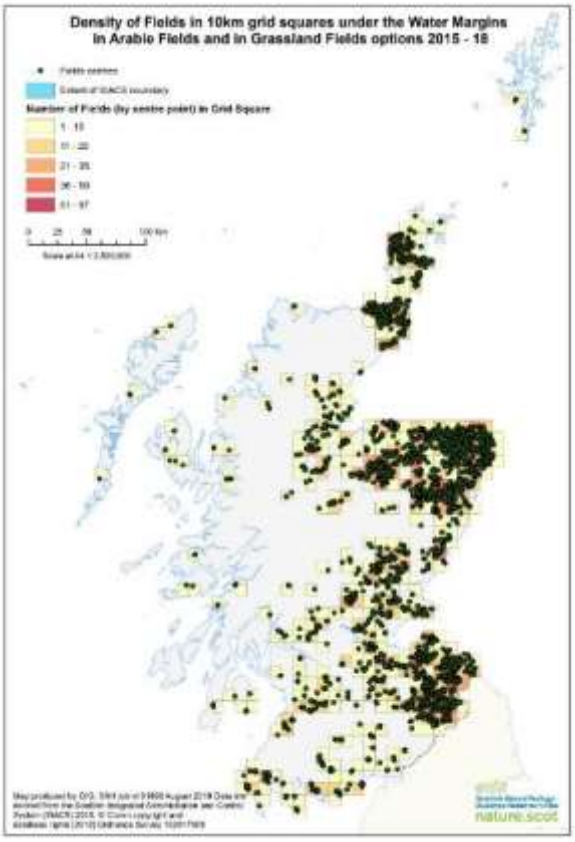


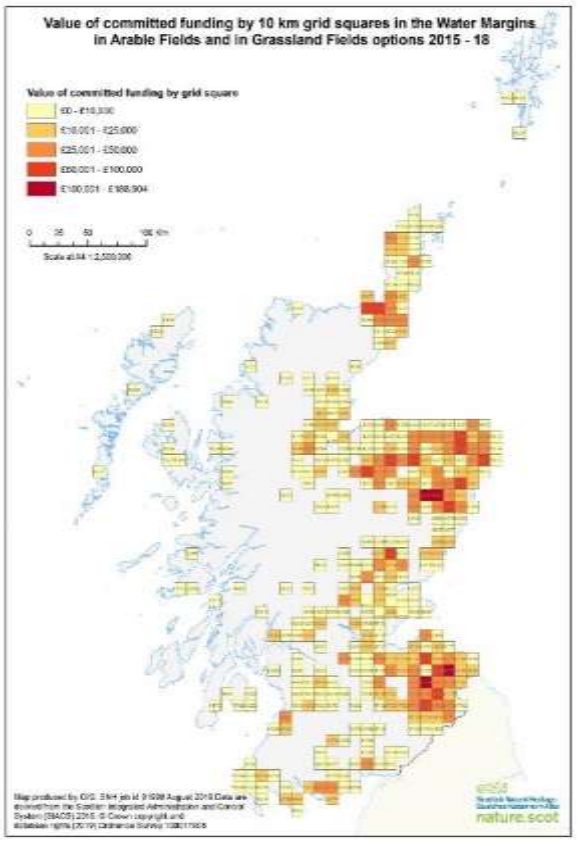


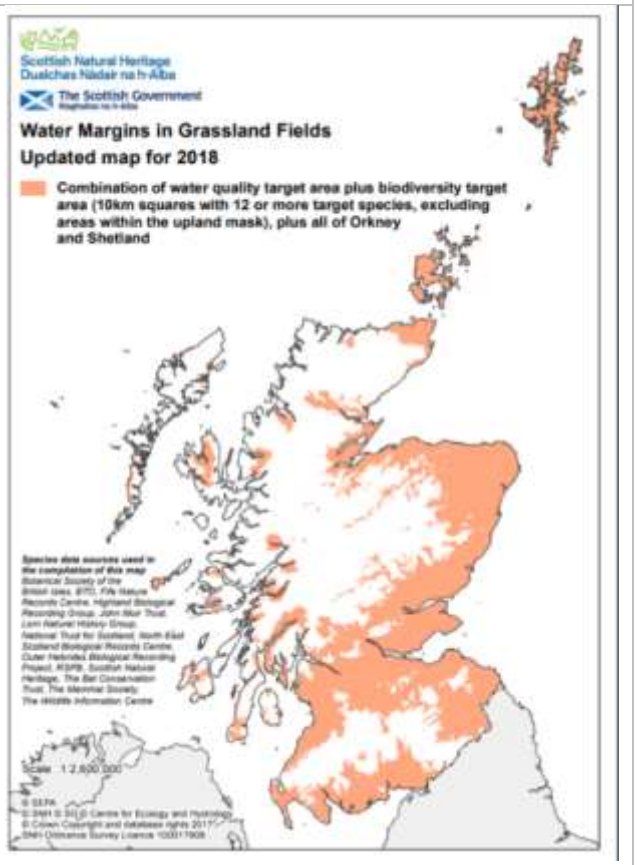


Water Margins in Arable Fields and in Grassland Fields Combined



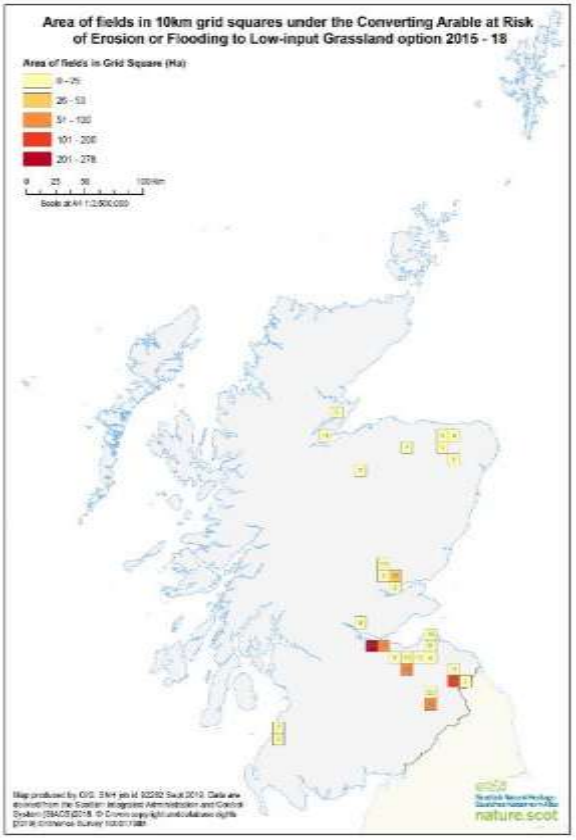


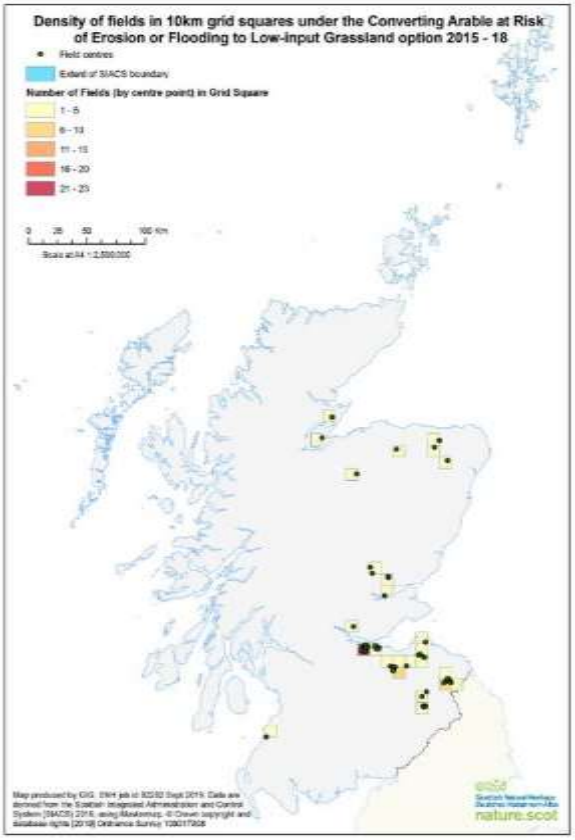


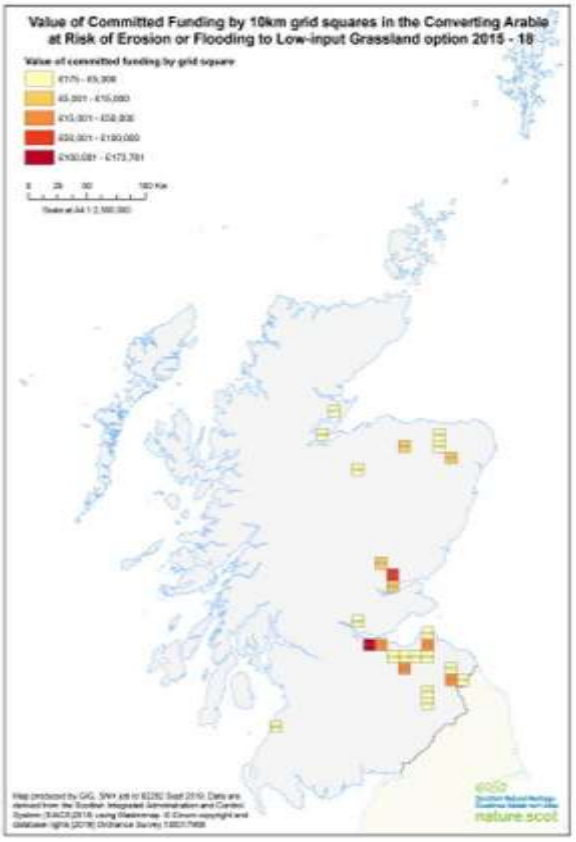


Water Management

Converting Arable at Risk of Erosion or Flooding to Low-input Grassland



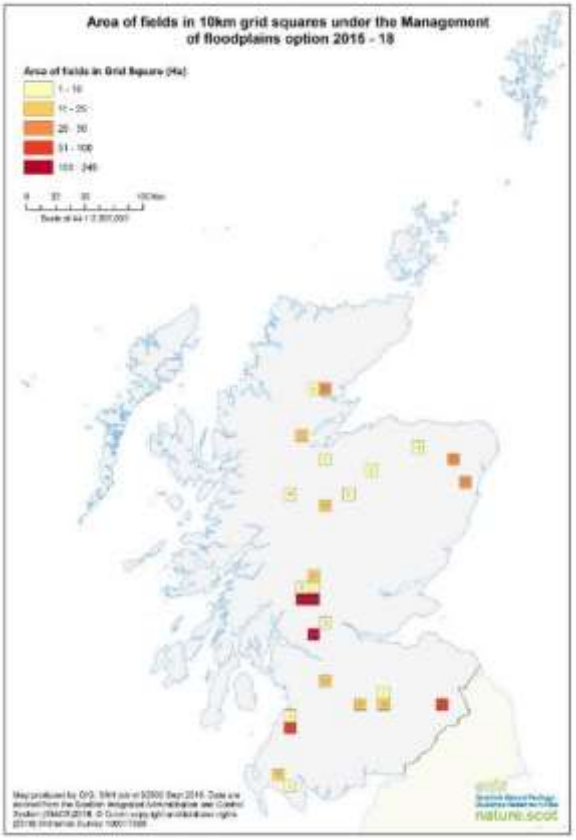


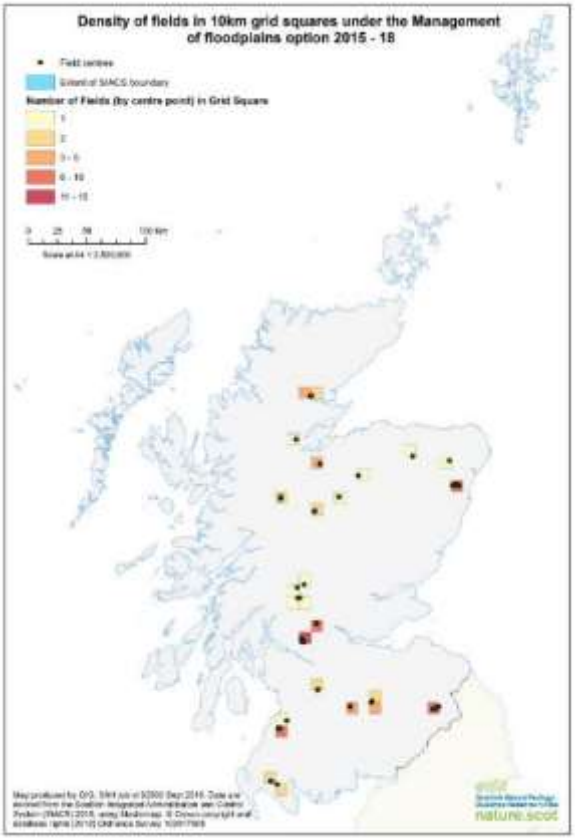


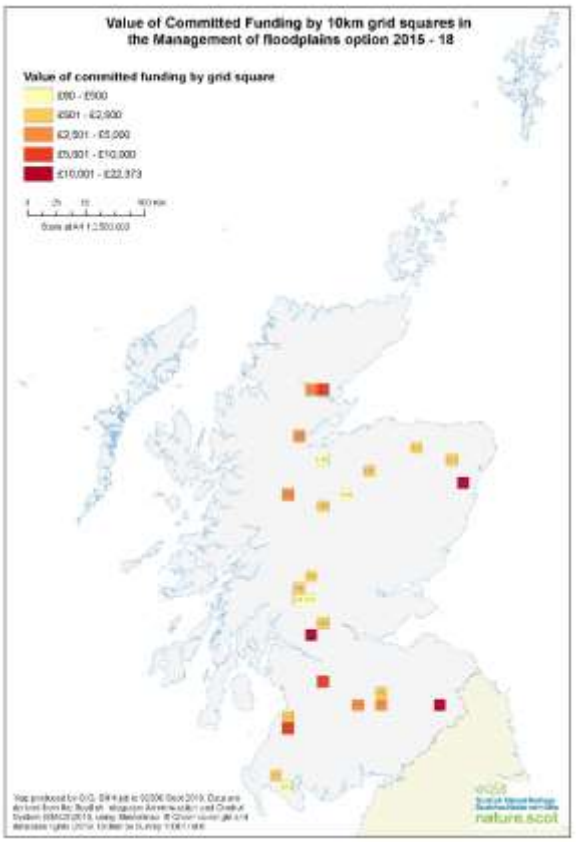
Land that has been in arable cropping for all of the last five years is eligible.

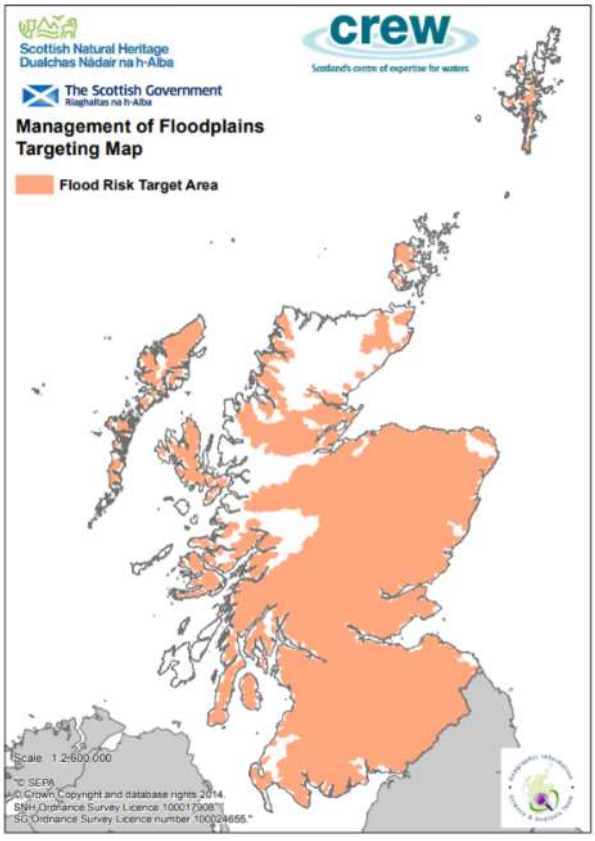
Water Management

Management of Flood Plains



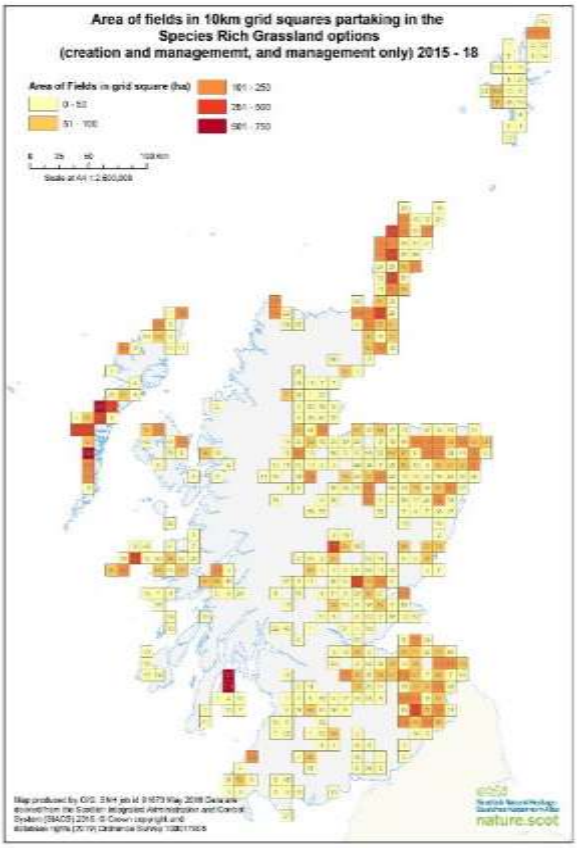


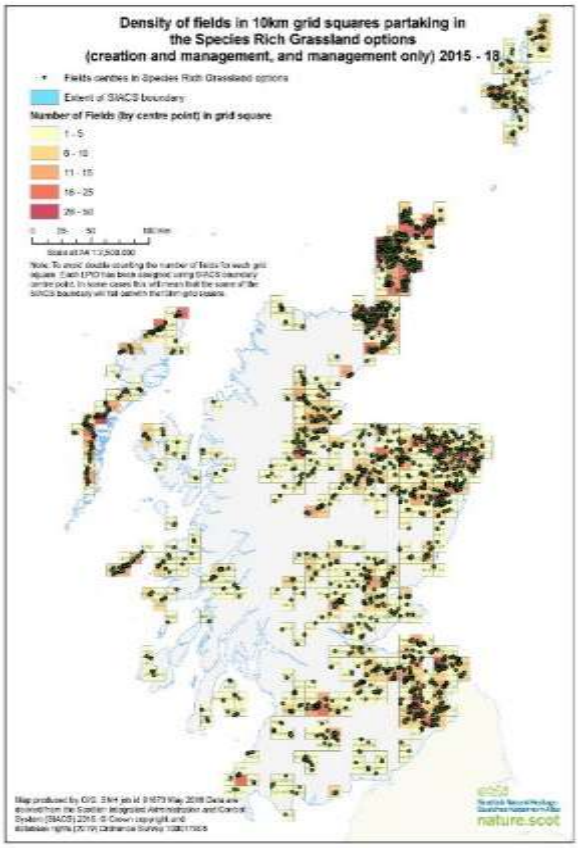


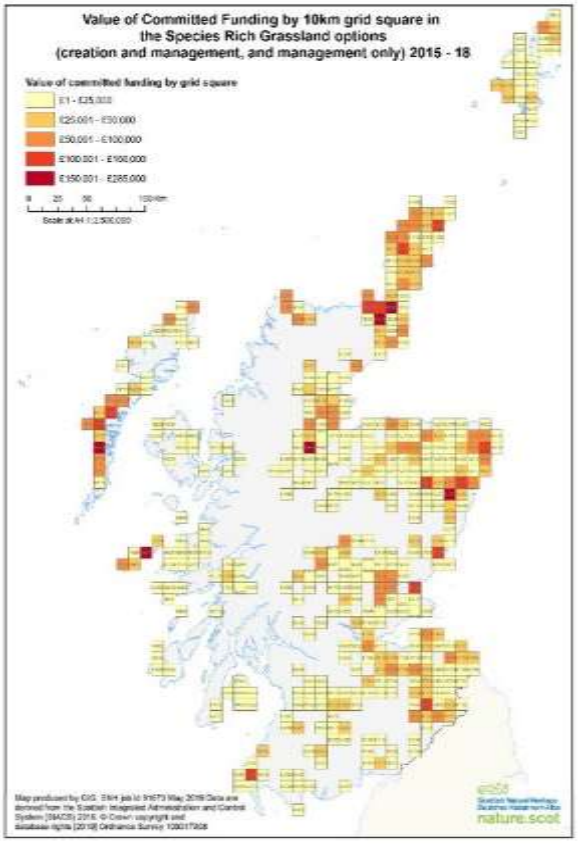


Grassland Options

Species Rich Grassland Combined – 'Creation and management' and 'management only - options

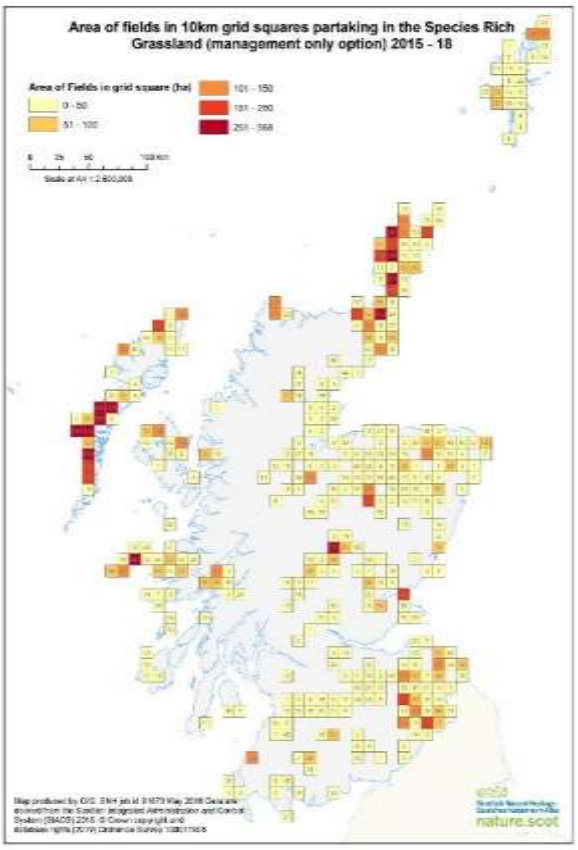


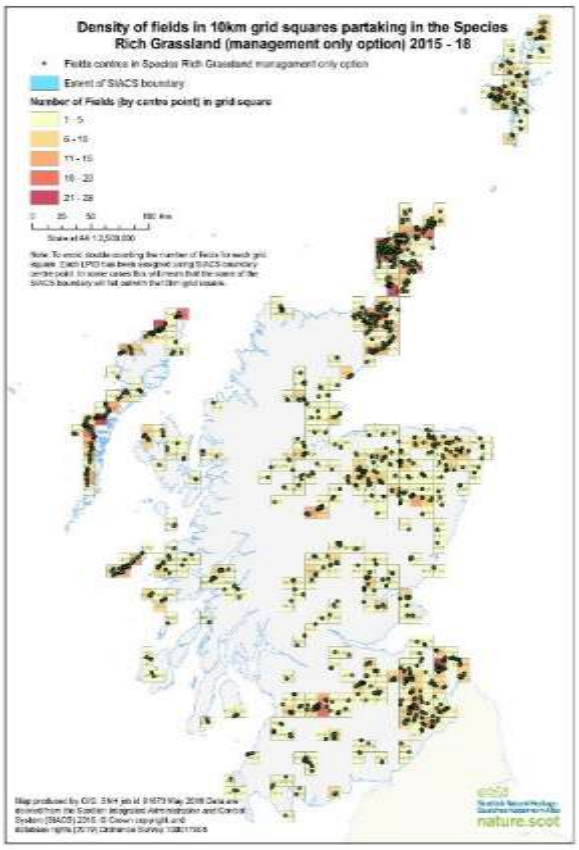


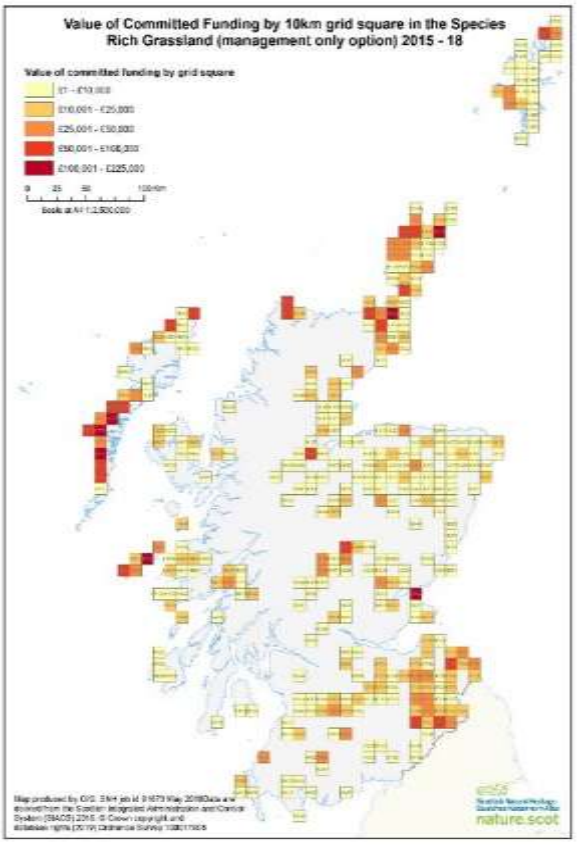


ALL SCOTLAND

Species Rich Grassland management – ‘‘management only’ option

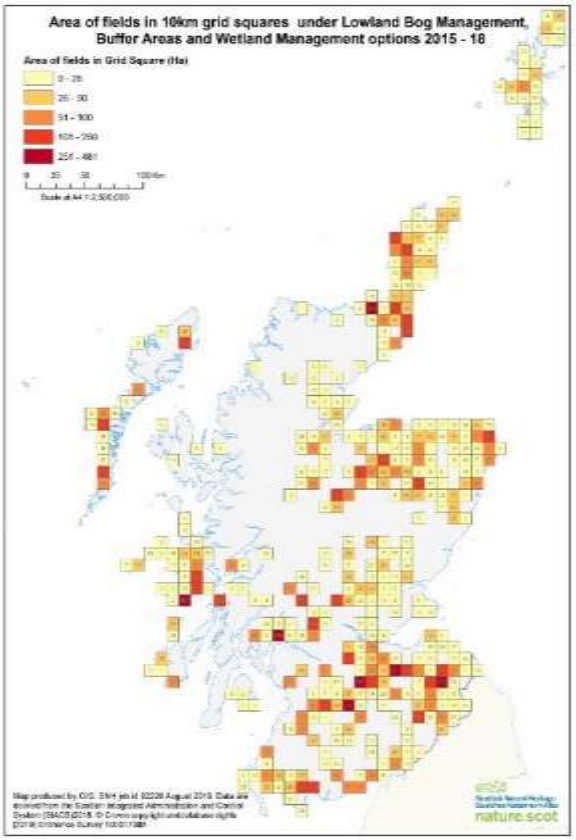


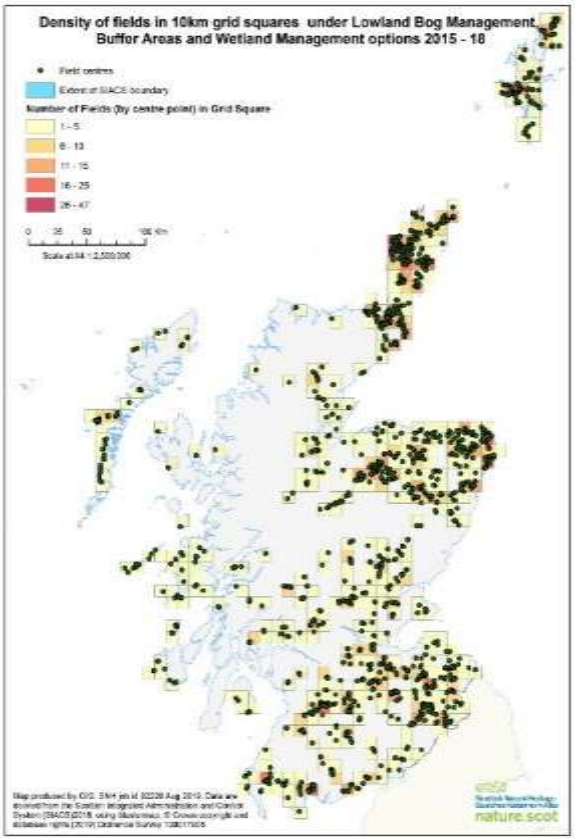


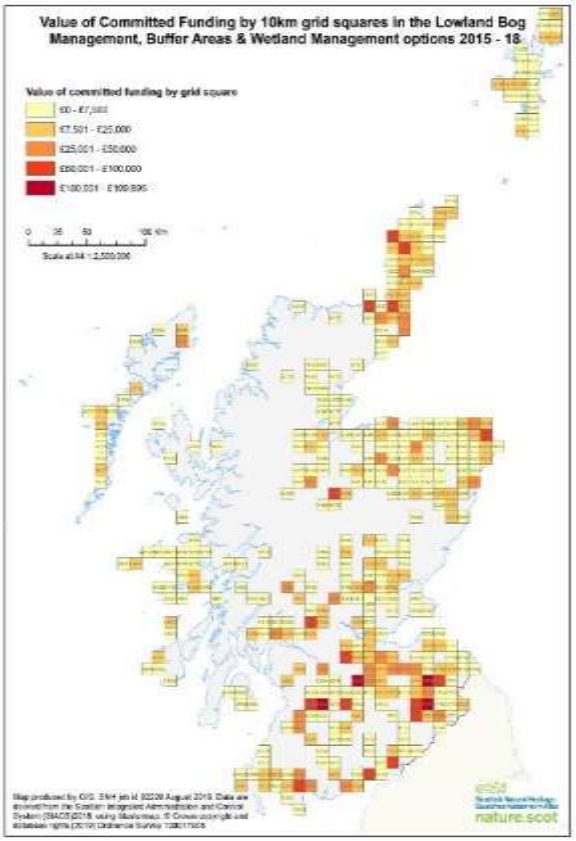


ALL SCOTLAND

Combined Map of Lowland Bog Management, Buffer Areas and Wetland Management (3 Options)





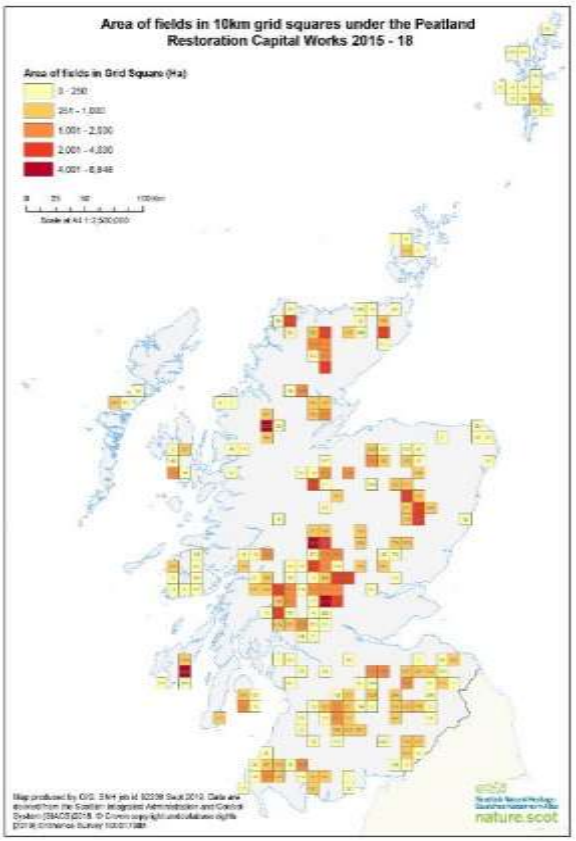


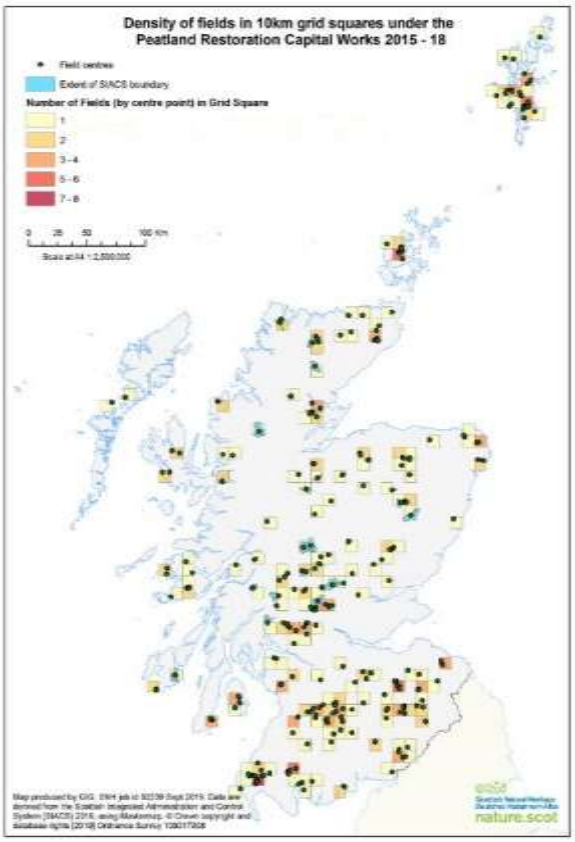
ALL SCOTLAND

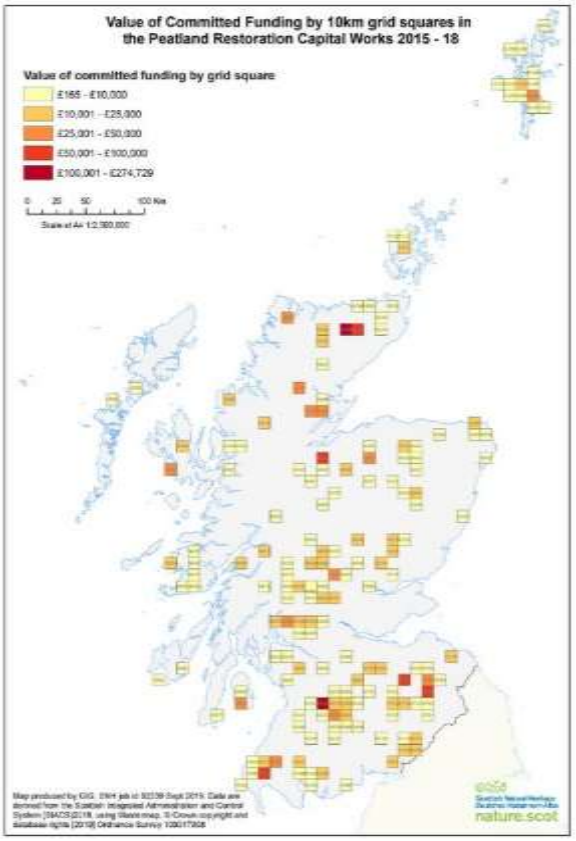
(for land with suitable conditions/habitat)

Grasslands and Carbon Rich Soils

Peatland Restoration Capital Work





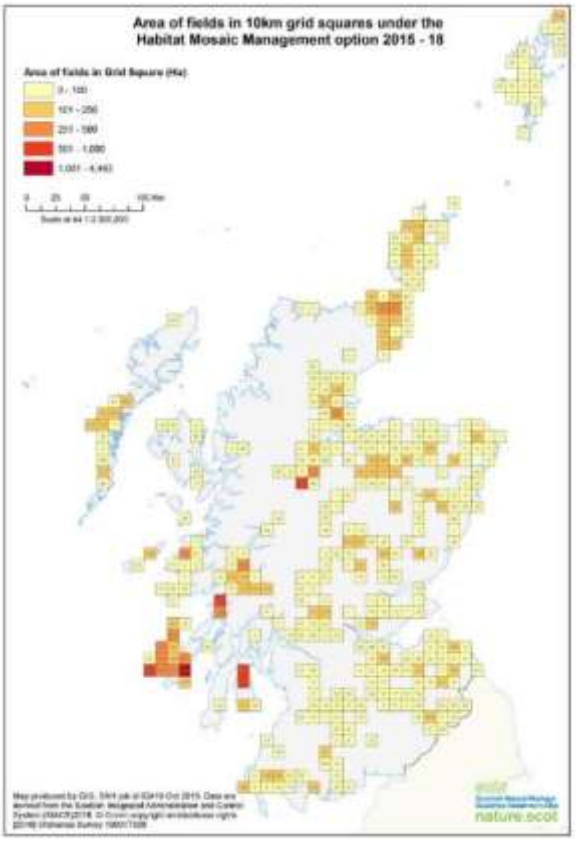


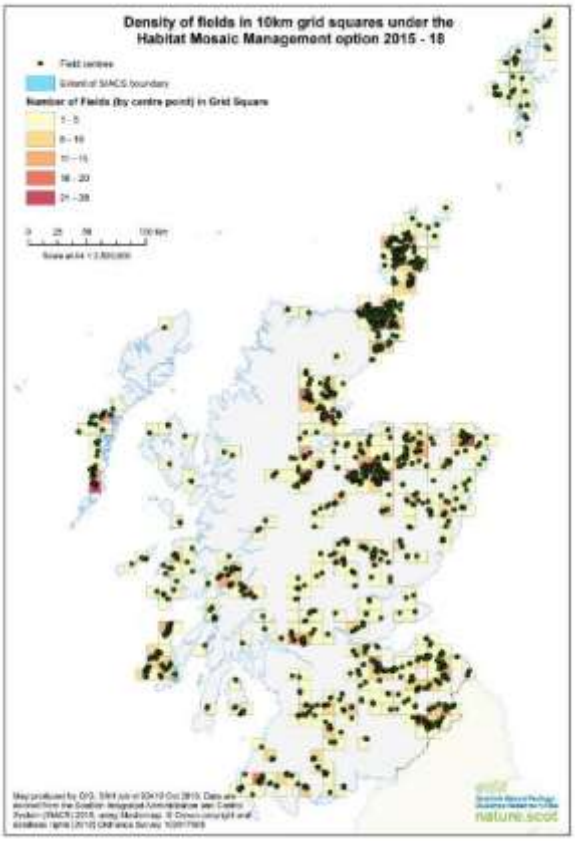
Supporting Lowland Bog Management, Moorland Management, Wetland Management

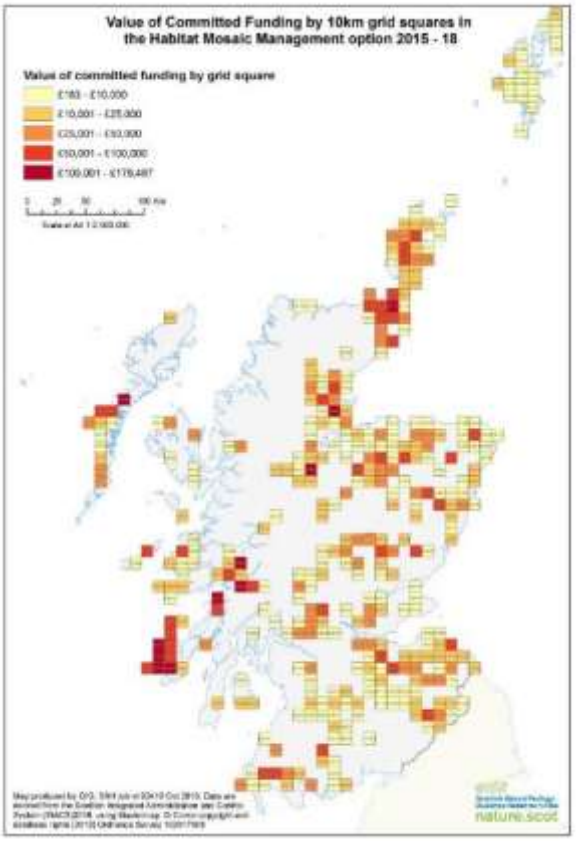
Unless with prior approval as stand alone

Grasslands and Carbon Rich Soils

Habitat Mosaic







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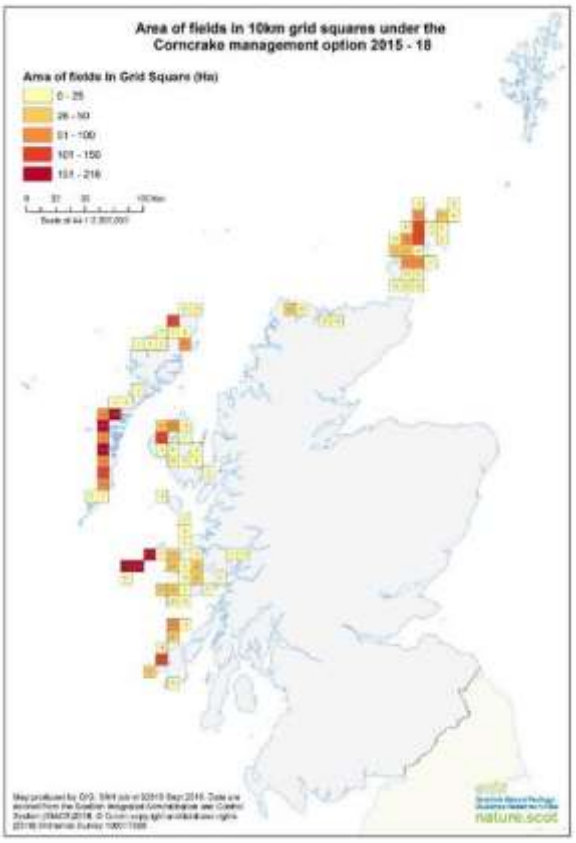
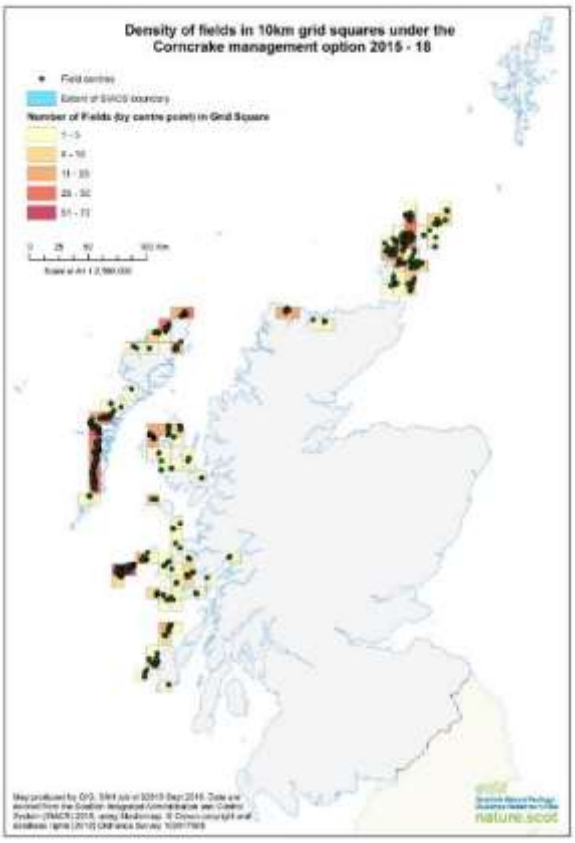
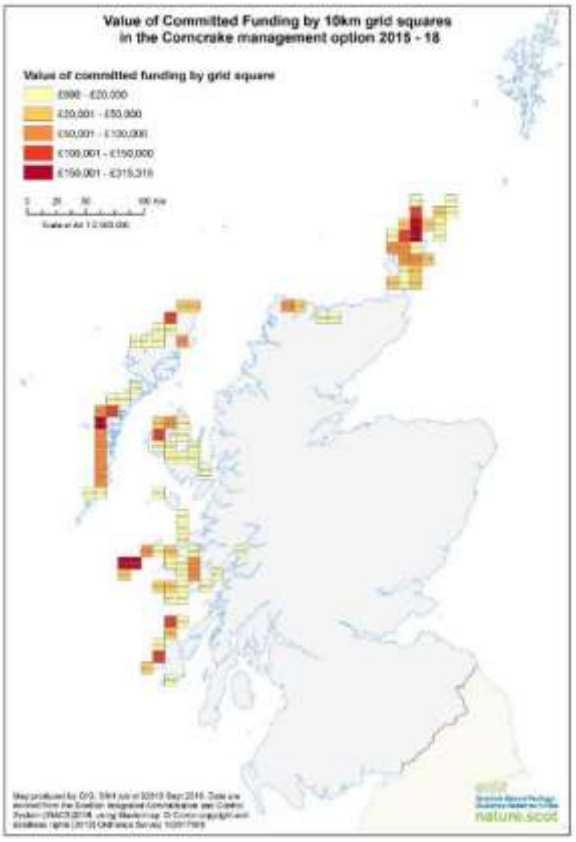
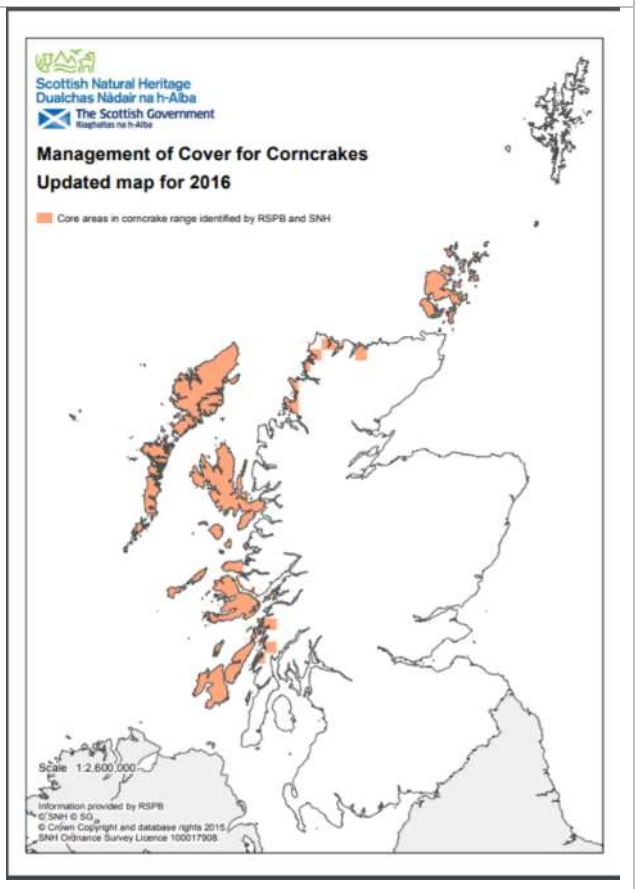
Corncrake Mown Grassland and Management of Cover for Corncrake

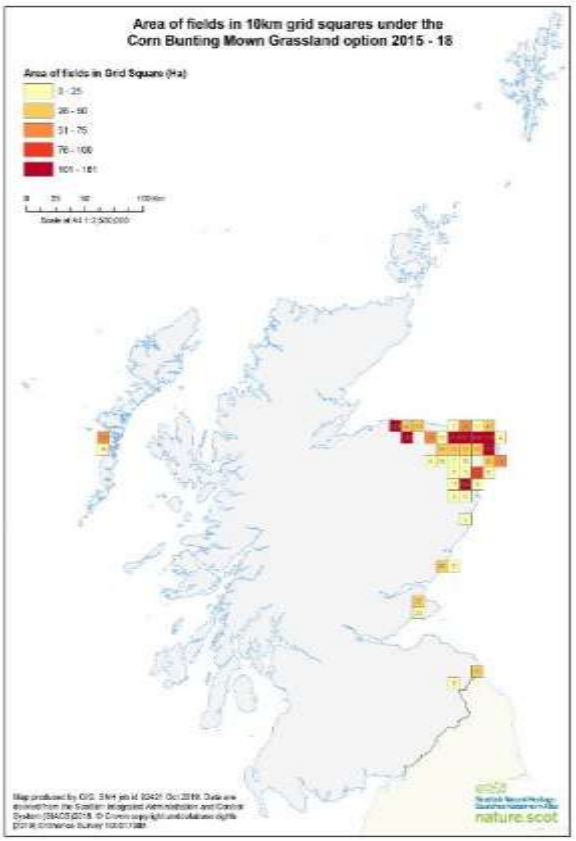


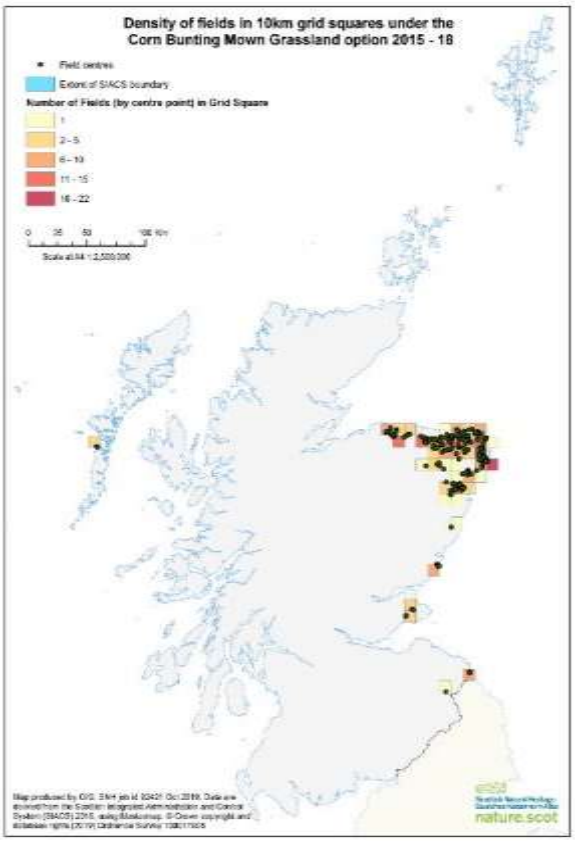


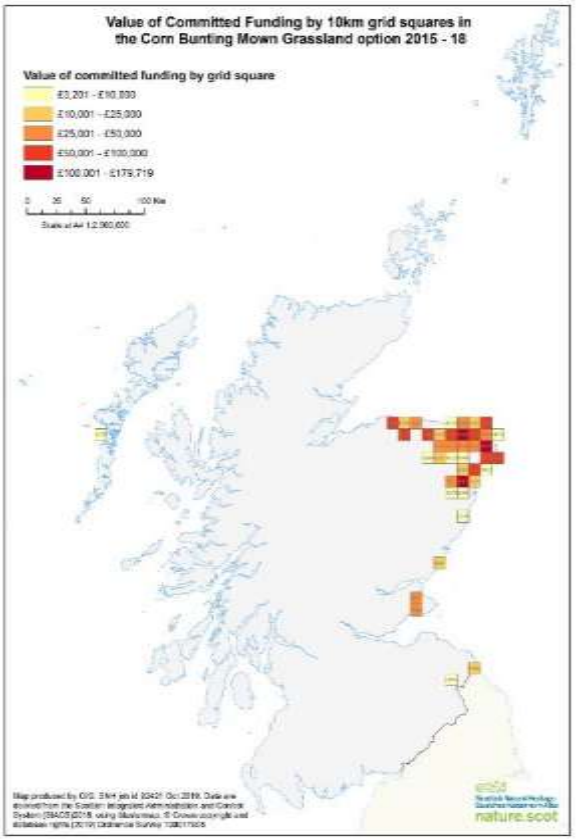


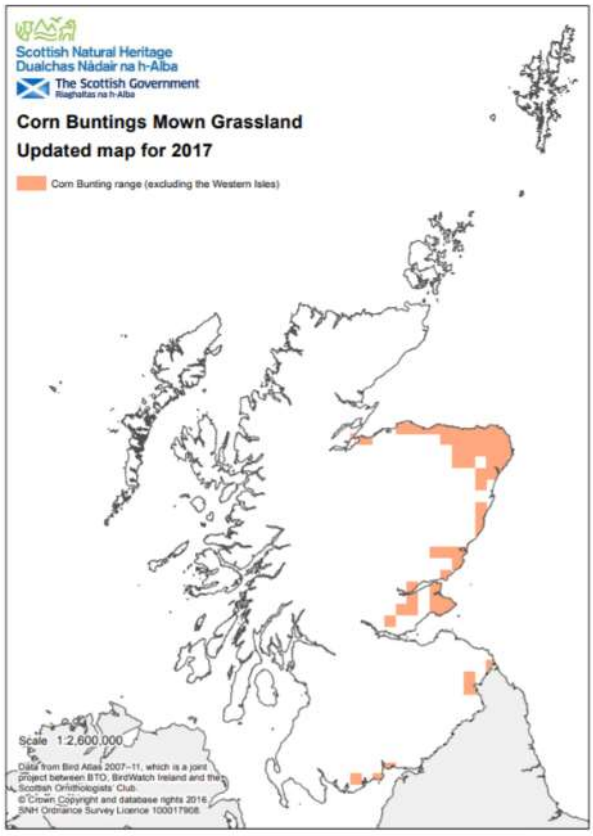


Corn Bunting Mown Grassland



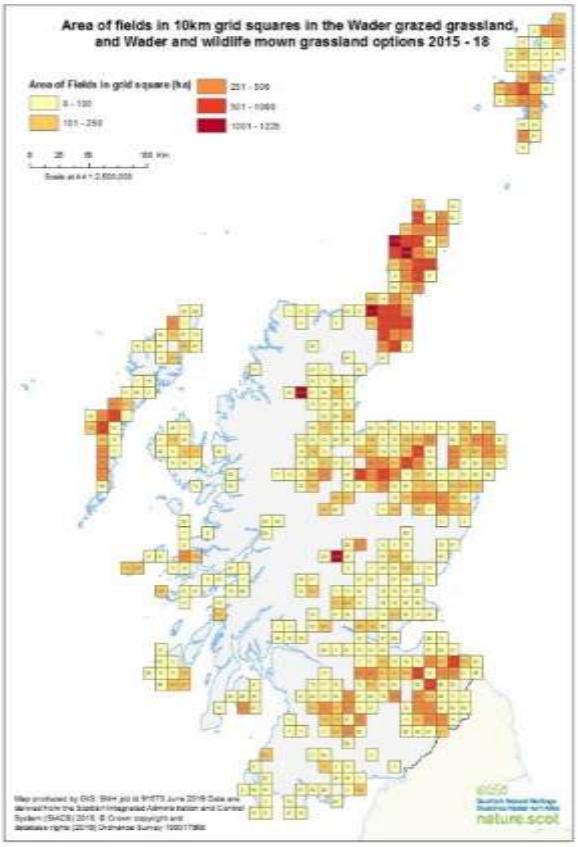


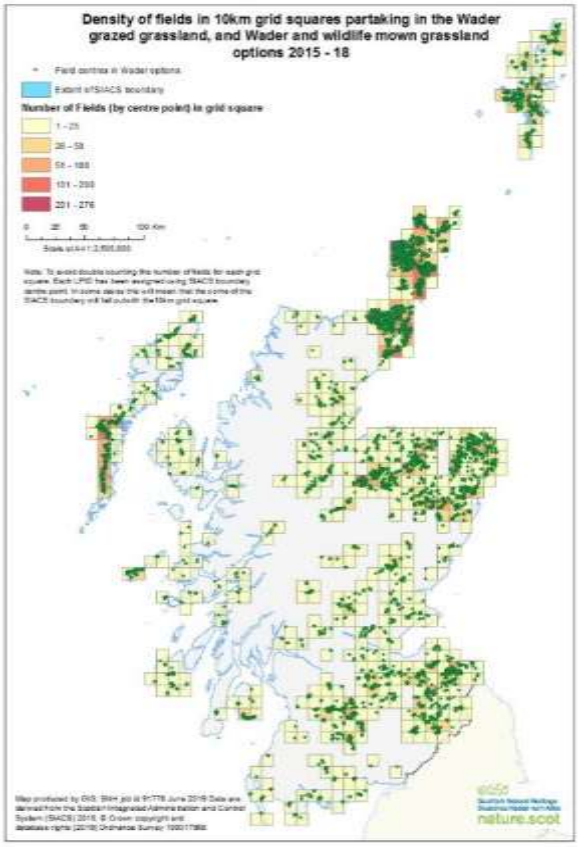


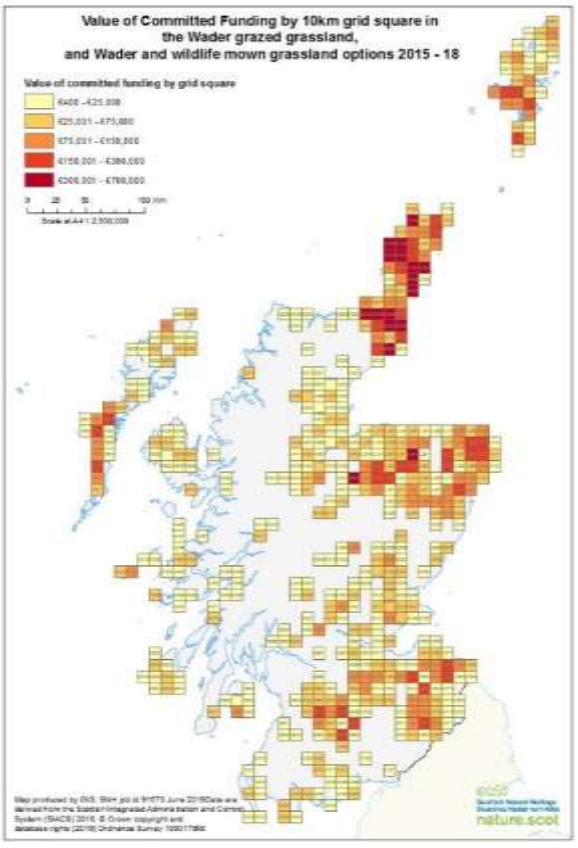


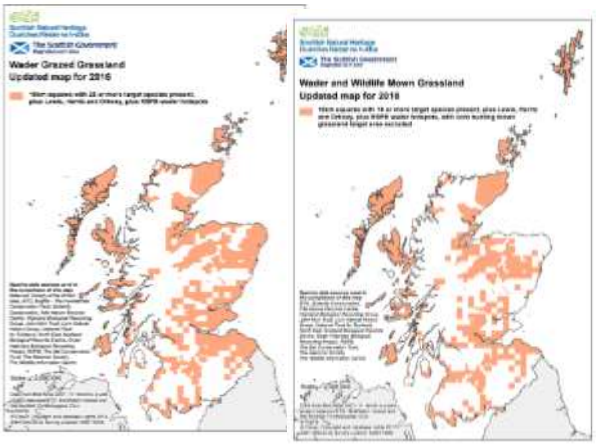
Grasslands and Waders

Wader & Wildlife Mown Grassland and Wader Grazed Grassland combined

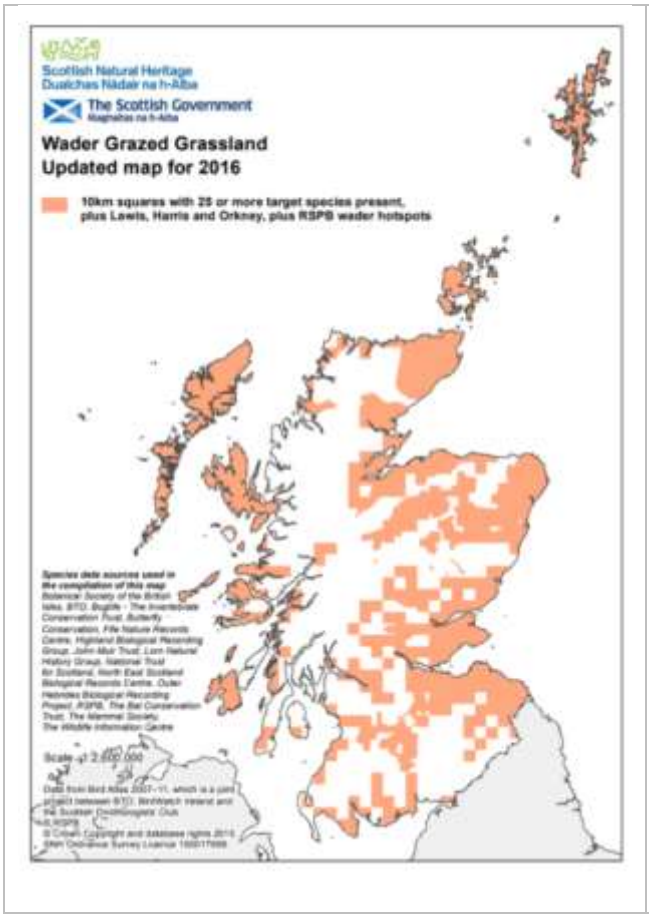


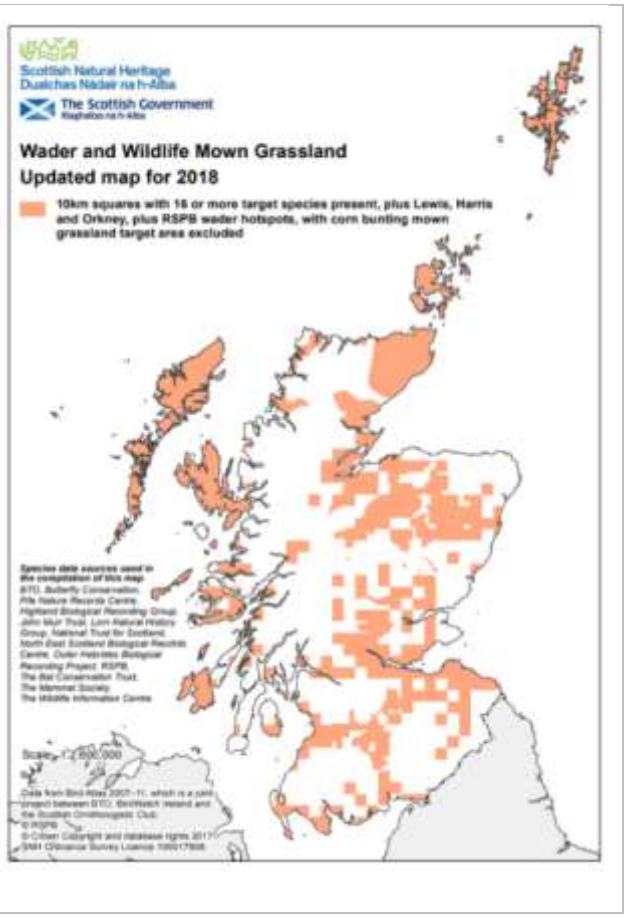




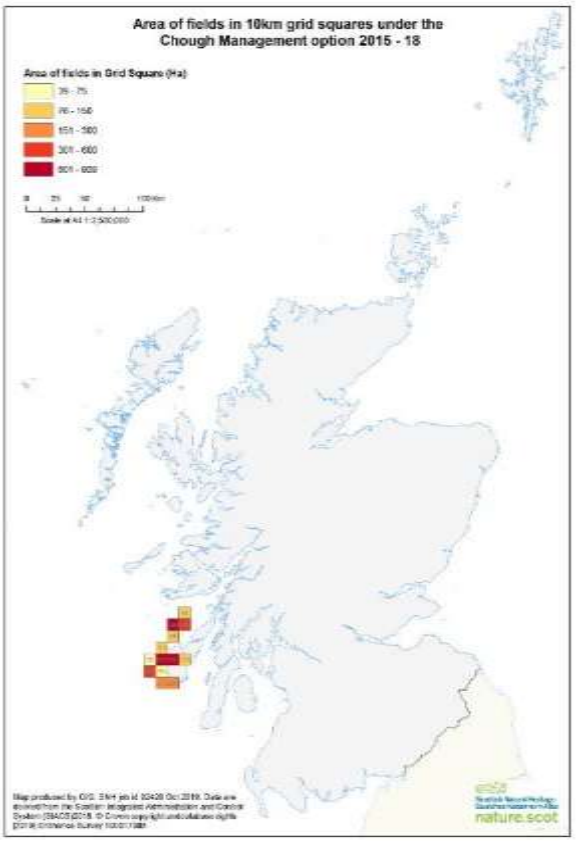


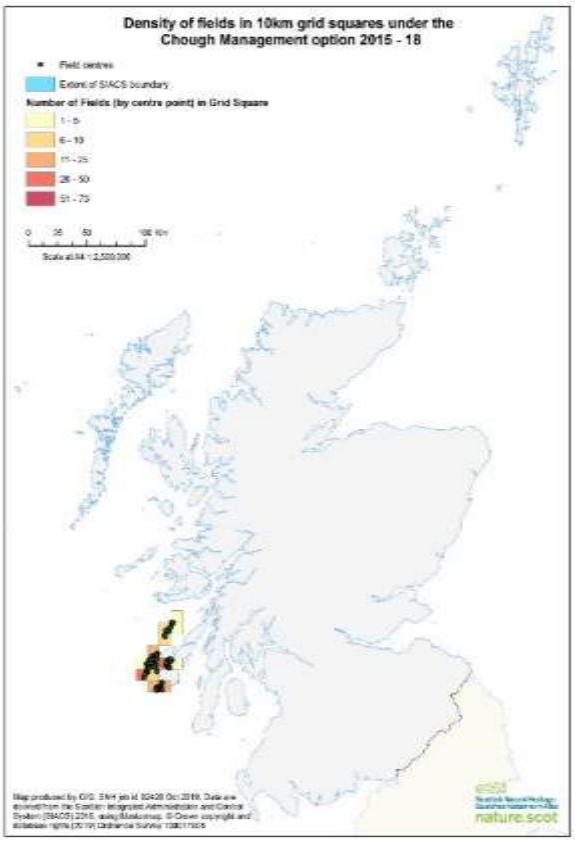
Different target maps

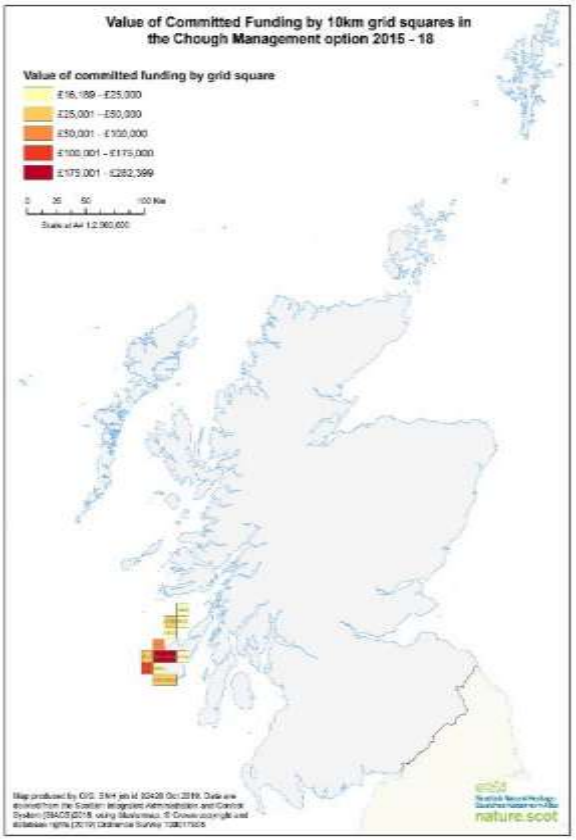

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
The Scottish Government
Riaghaltas na h-Alba
Wader Grazed Grassland
Updated map for 2016
10km squares with 25 or more target species present, plus Lewis, Harris and Orkney, plus RSPB wader hotspots

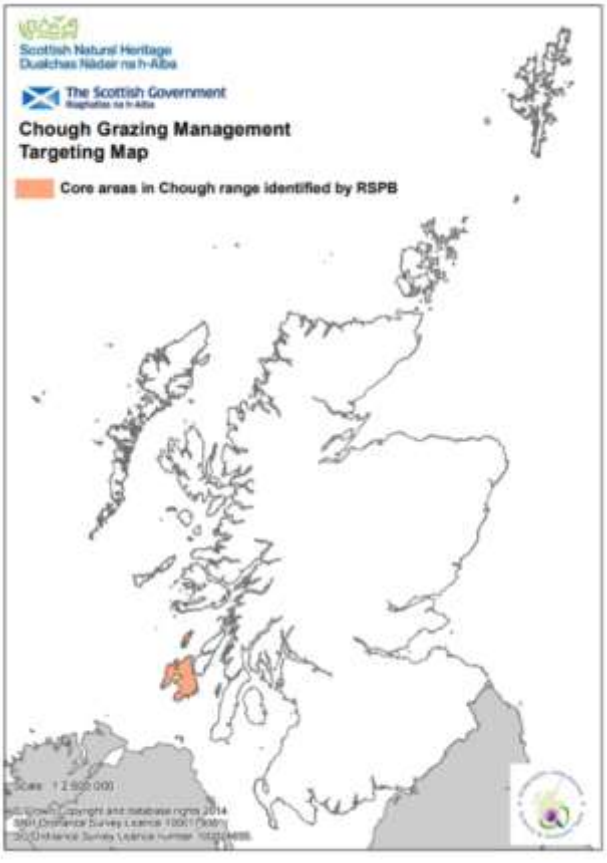

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
The Scottish Government
Riaghaltas na h-Alba
Wader and Wildlife Mown Grassland
Updated map for 2018
10km squares with 15 or more target species present, plus Lewis, Harris and Orkney, plus RSPB wader hotspots, with corn bunting mown grassland target area excluded

Chough Mown Grassland and Chough Grazing Management

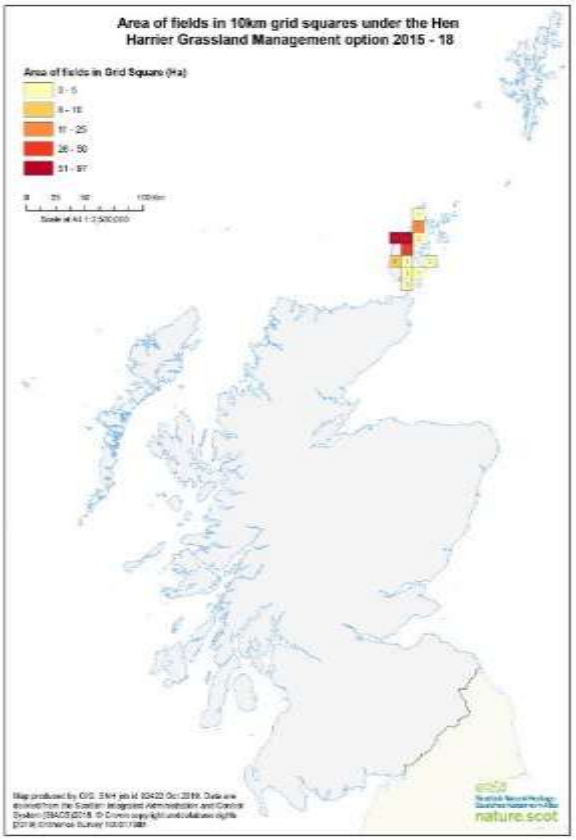


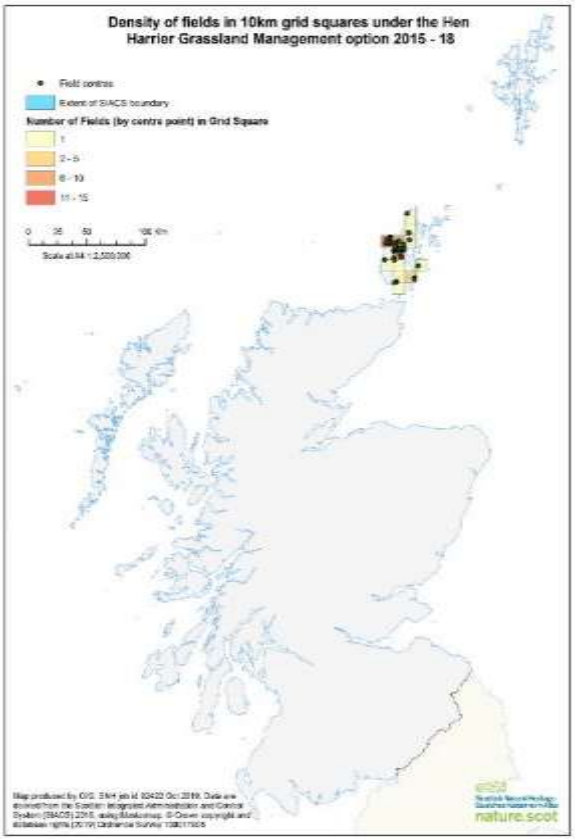


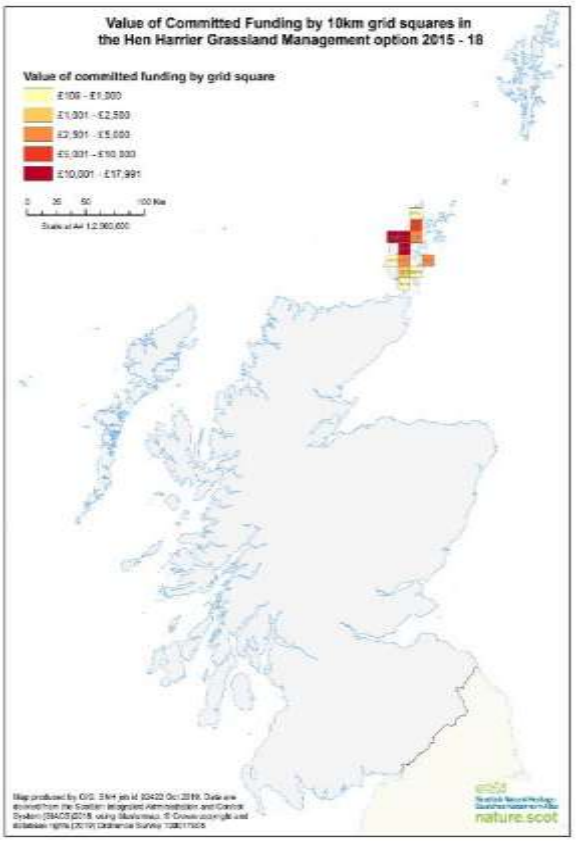




Hen Harrier Grassland Management

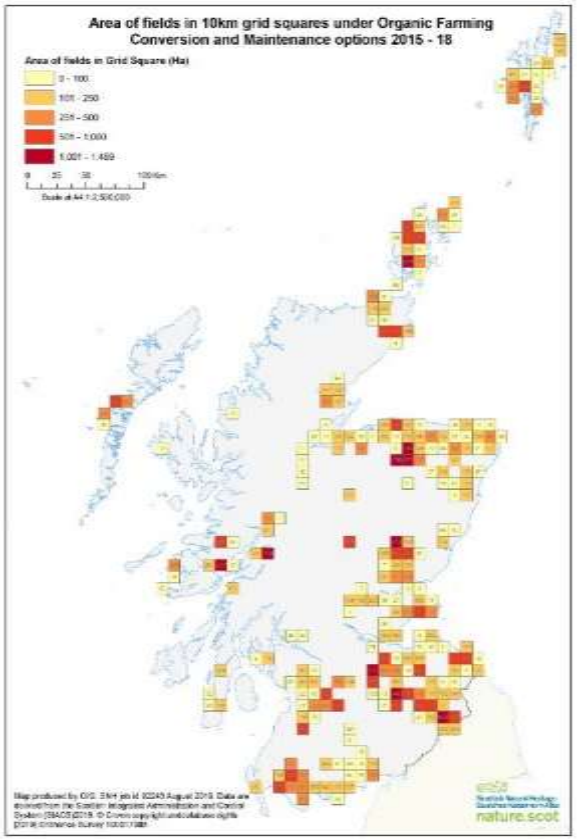


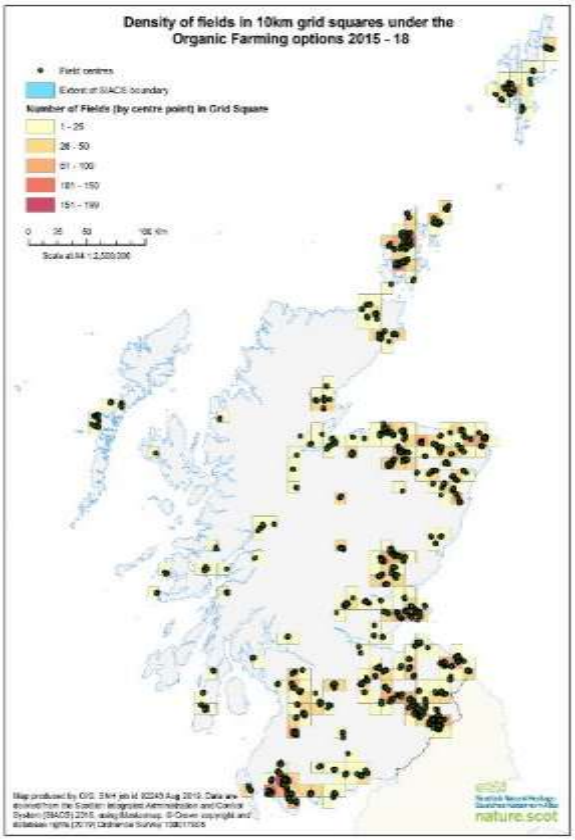


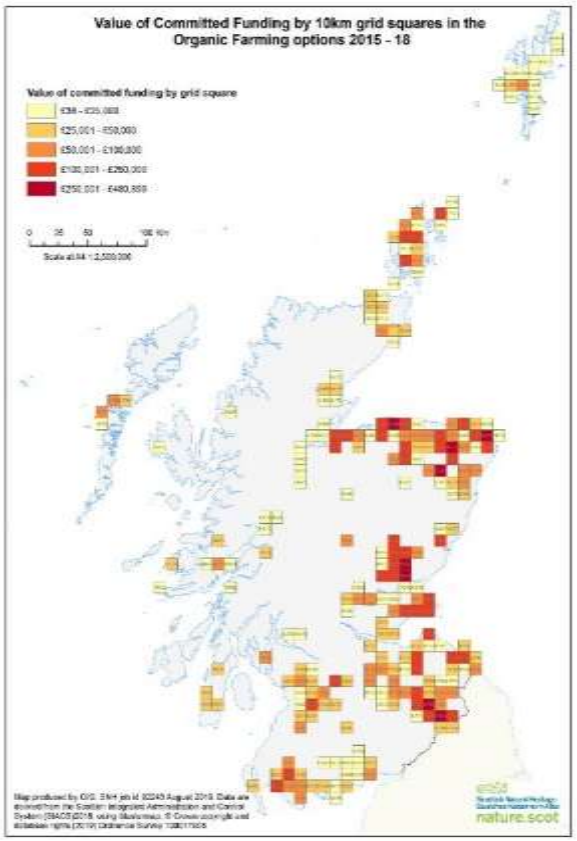


Organic Management

Organic Farming Conversion and Maintenance







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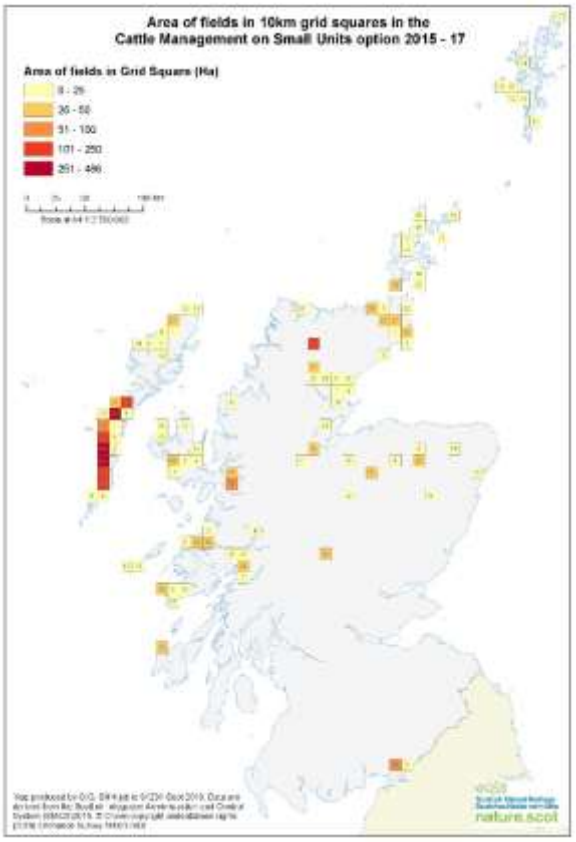
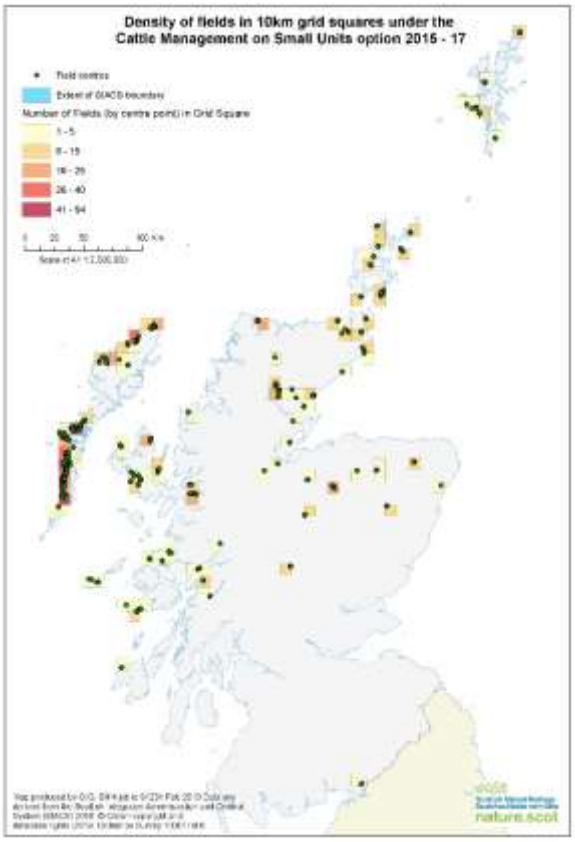
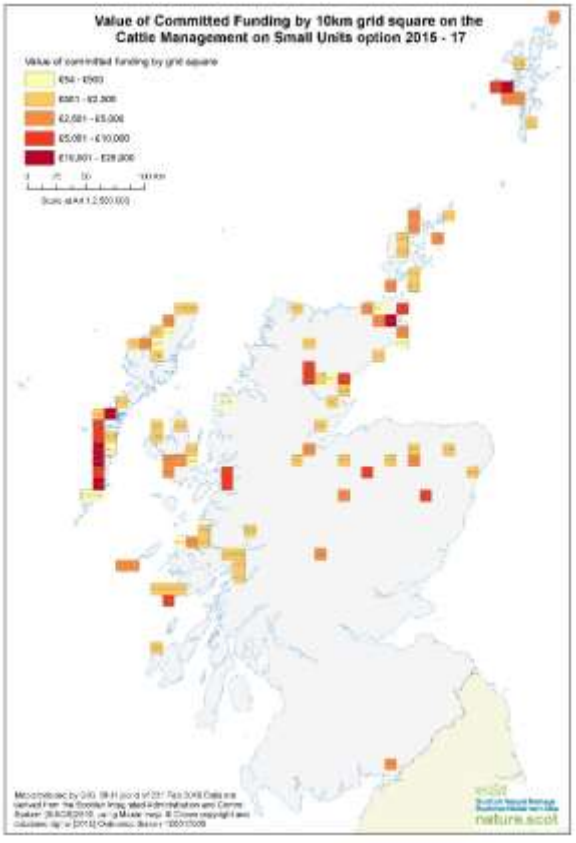
Small Units Option

Small Units Option







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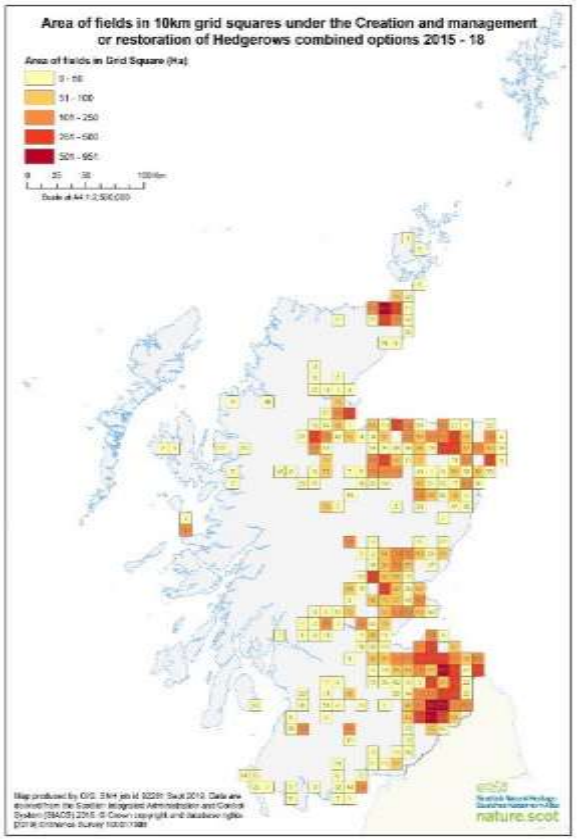
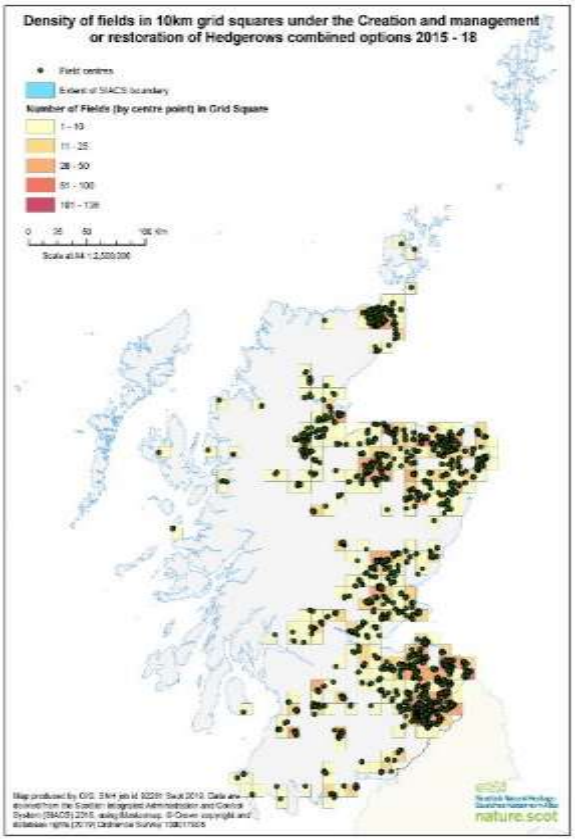
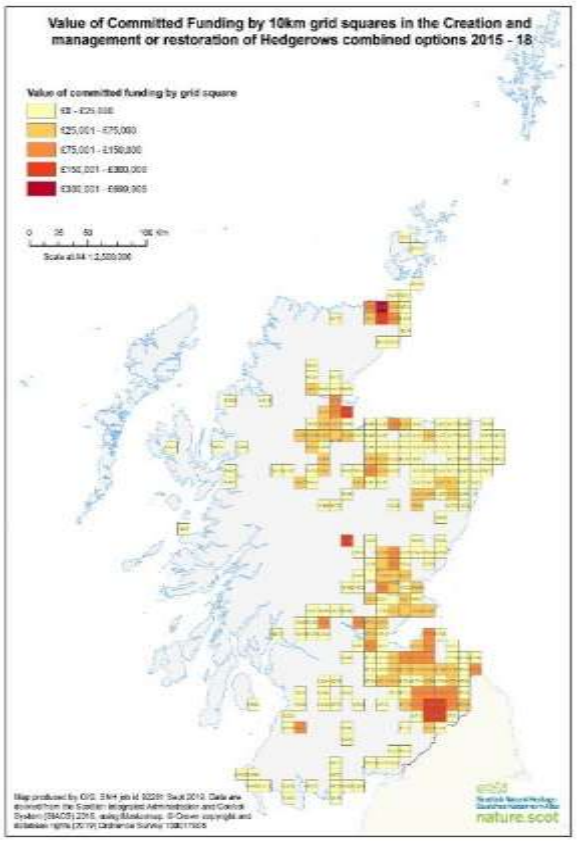
Farmland habitat and feature options

Hedgerows

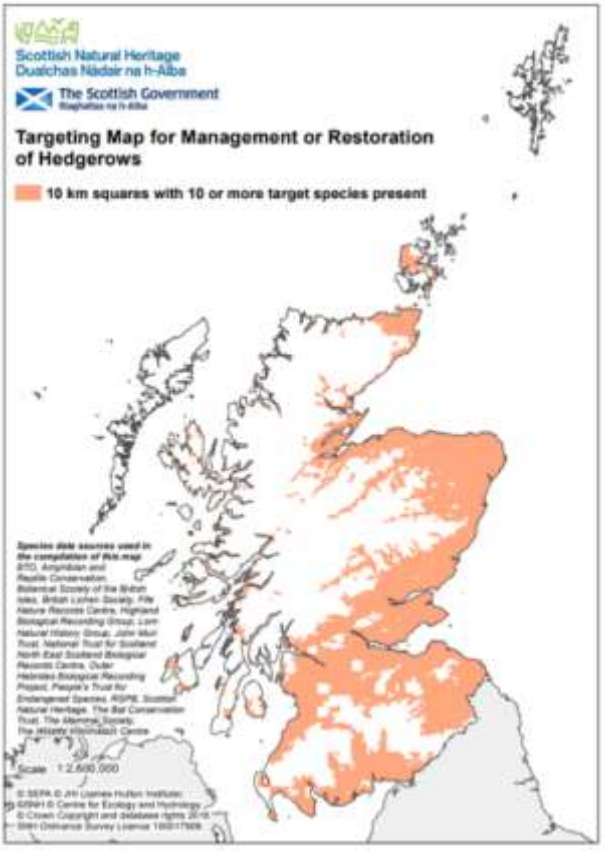
Creation and Management or restoration Hedges combined

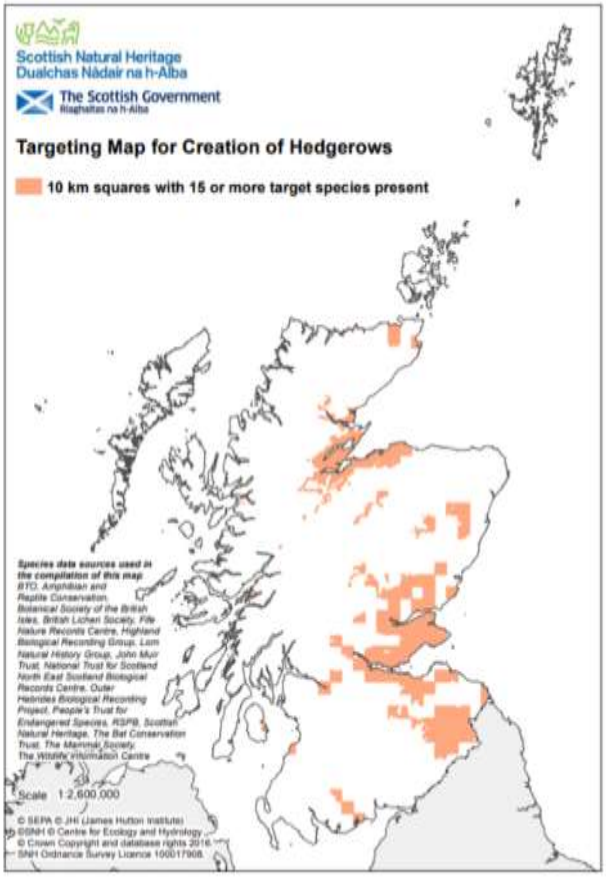




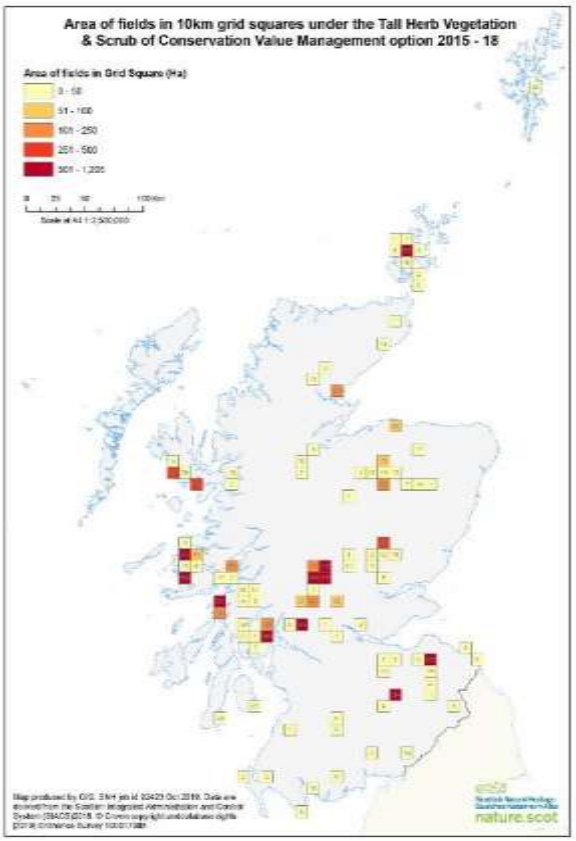


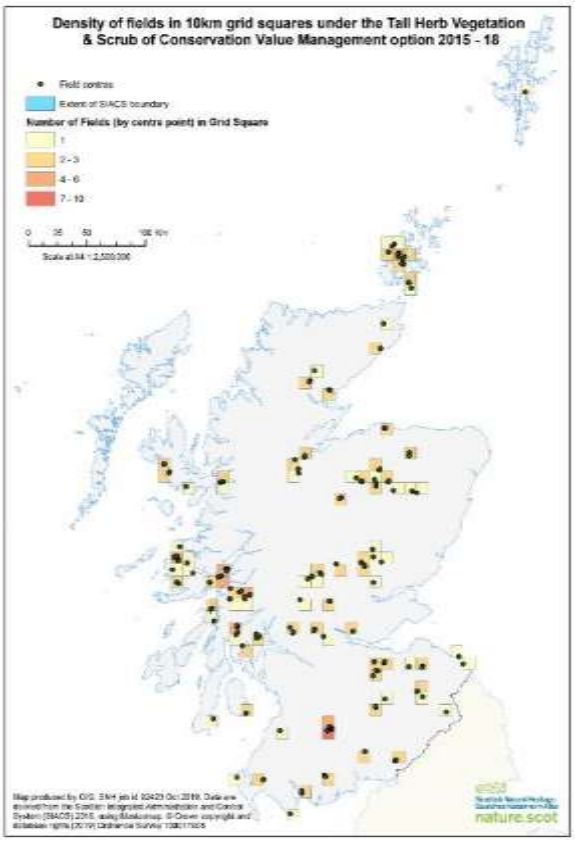
Different target maps

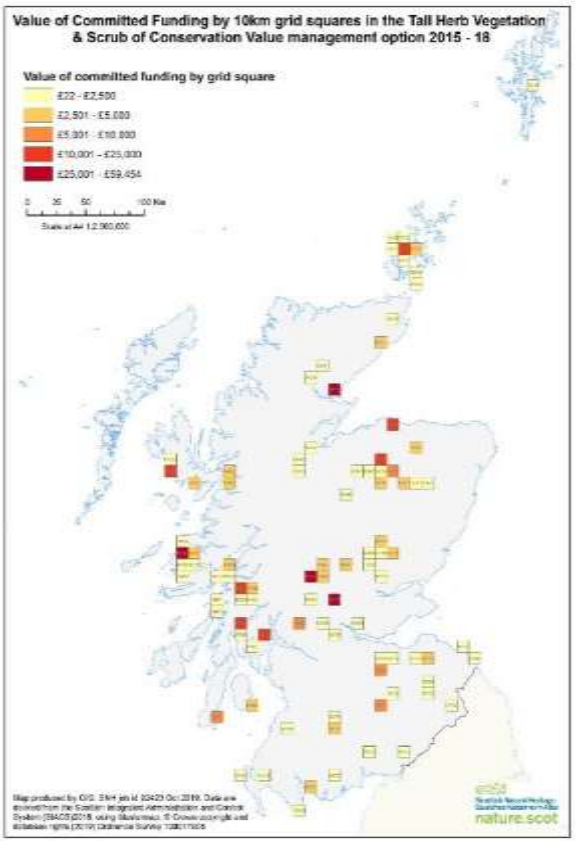

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
The Scottish Government
Riaghaltas na h-Alba
Targeting Map for Management or Restoration of Hedgerows
10 km squares with 10 or more target species present
Species data sources used in the compilation of this map
Scale 1:2,600,000

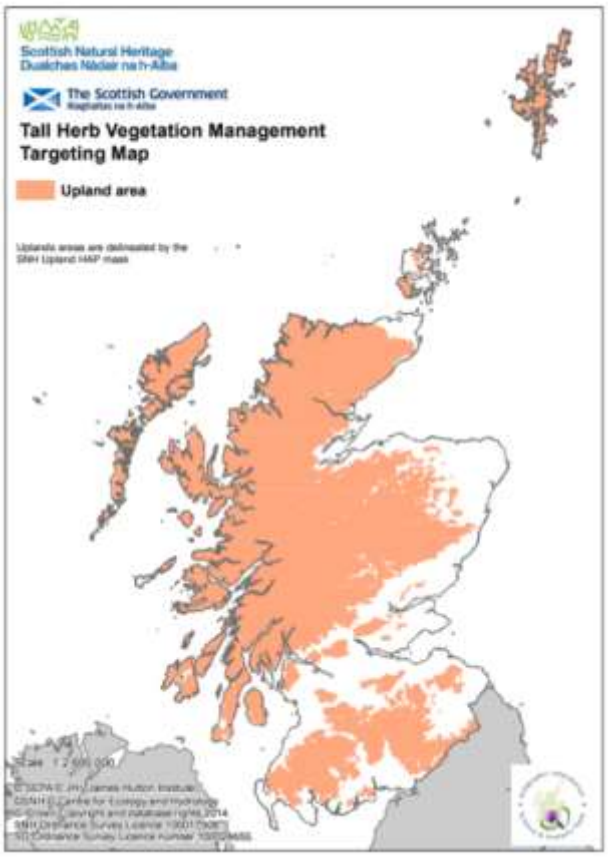

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
The Scottish Government
Riaghaltas na h-Alba
Targeting Map for Creation of Hedgerows
10 km squares with 15 or more target species present
Species data sources used in the compilation of this map
Scale 1:2,600,000

Tall Herb Vegetation and Scrub of Conservation Value[17]



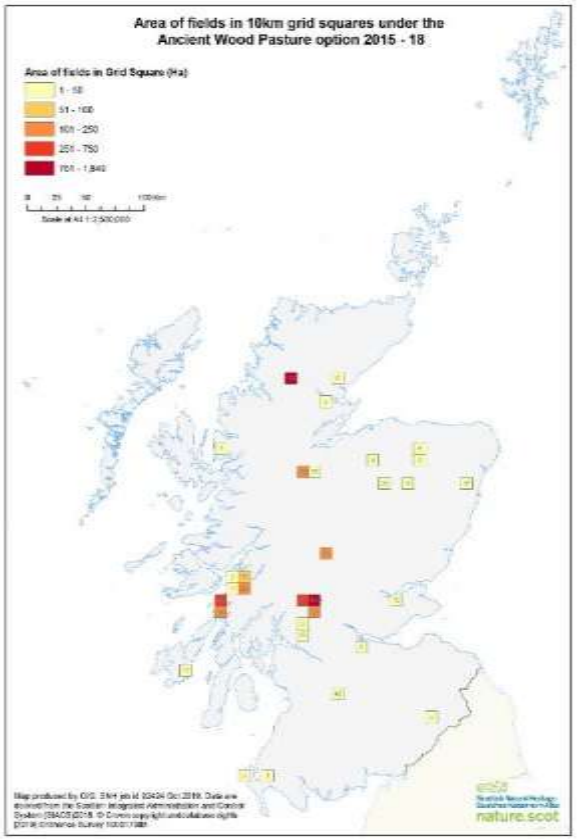


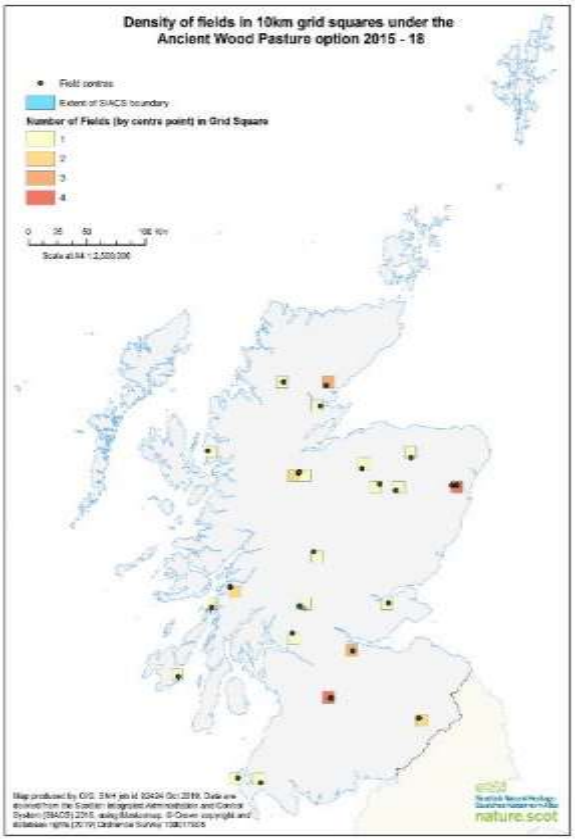


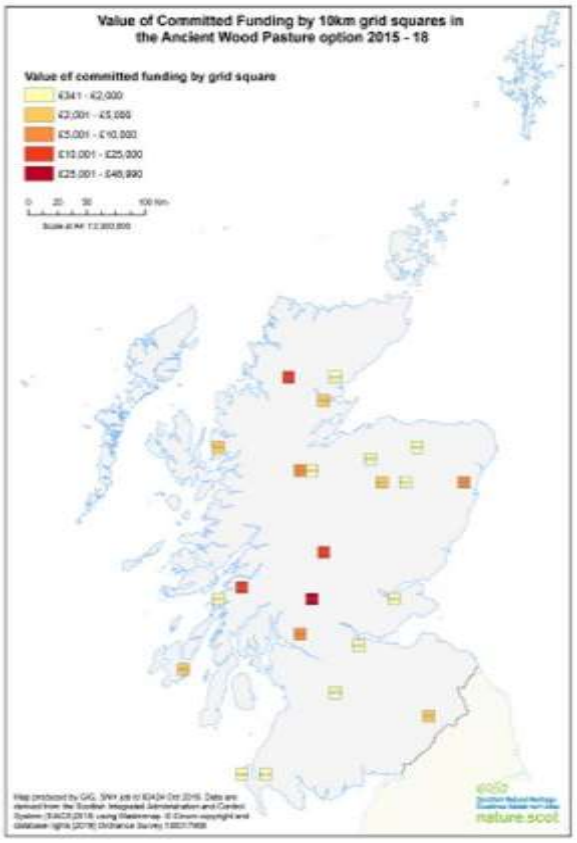


[17] For montane scrub – All Rough grazing with montane scrub is eligible.

Ancient Wood Pasture







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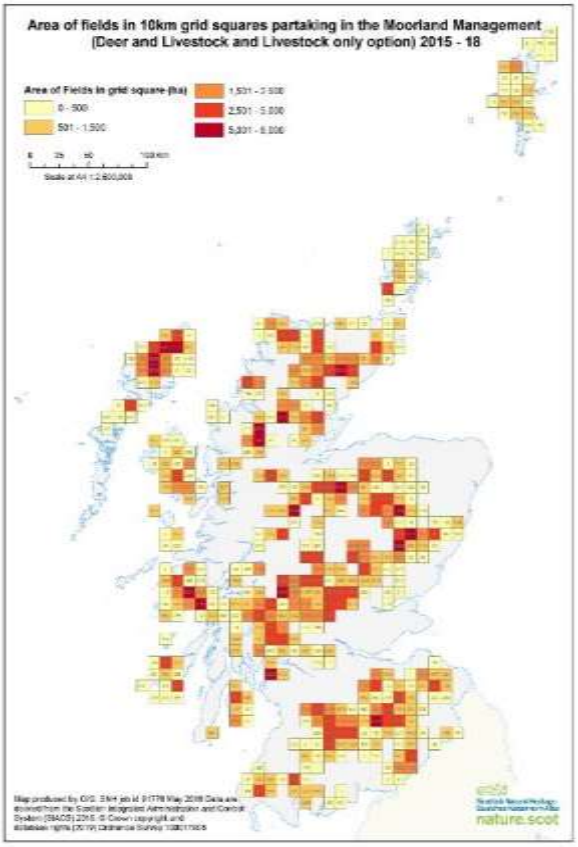
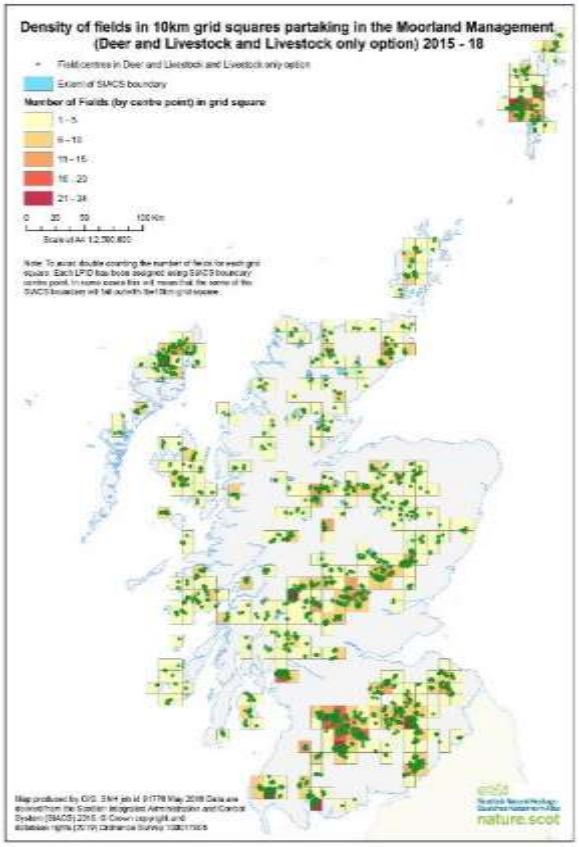
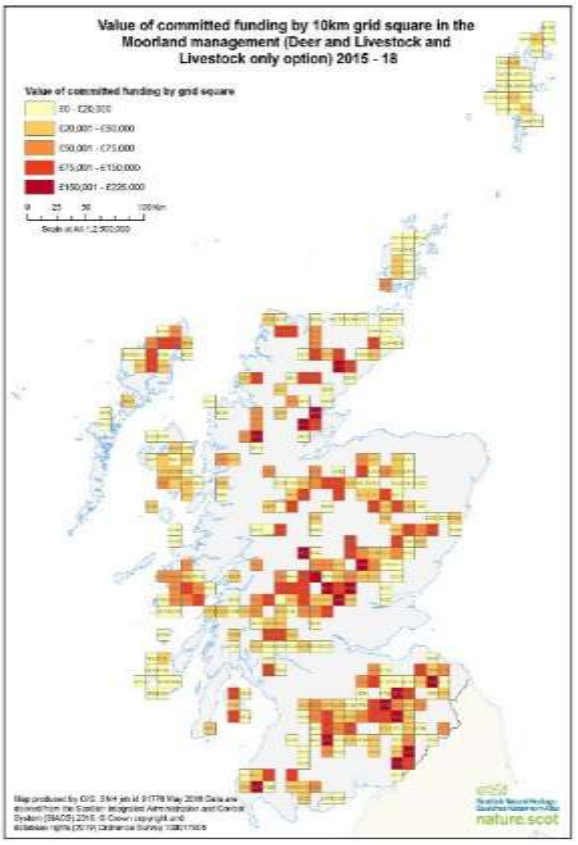
You must provide evidence that veteran trees are currently present and have been present on the site for at least 150 years. The area must be marked as wood pasture on 1st edition six-inch 1860 maps.

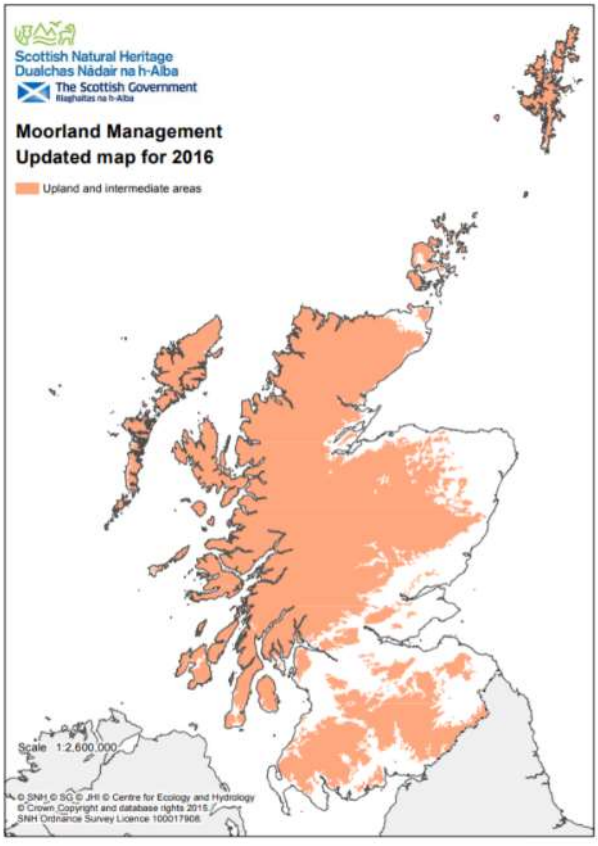
Upland, Peatland, Moorland Management and Heath Options

Livestock and Deer Moorland Management options (all combined)

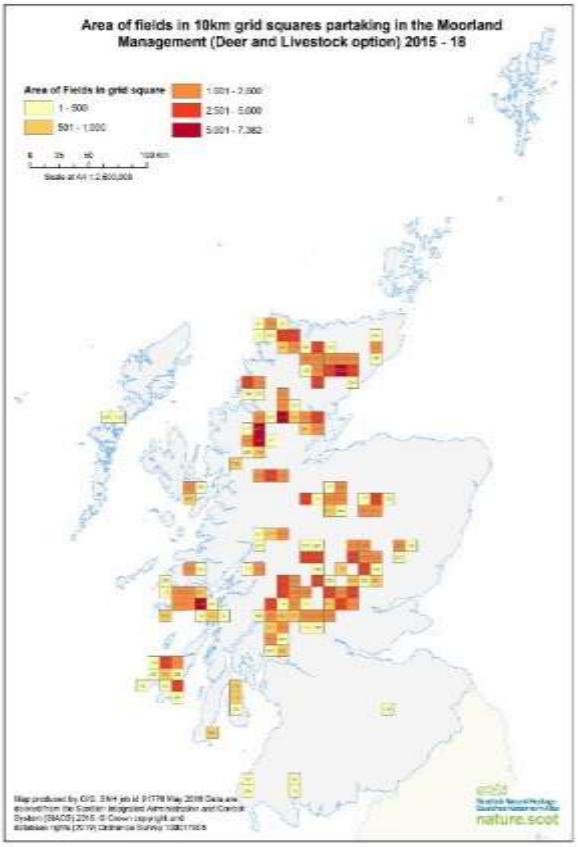


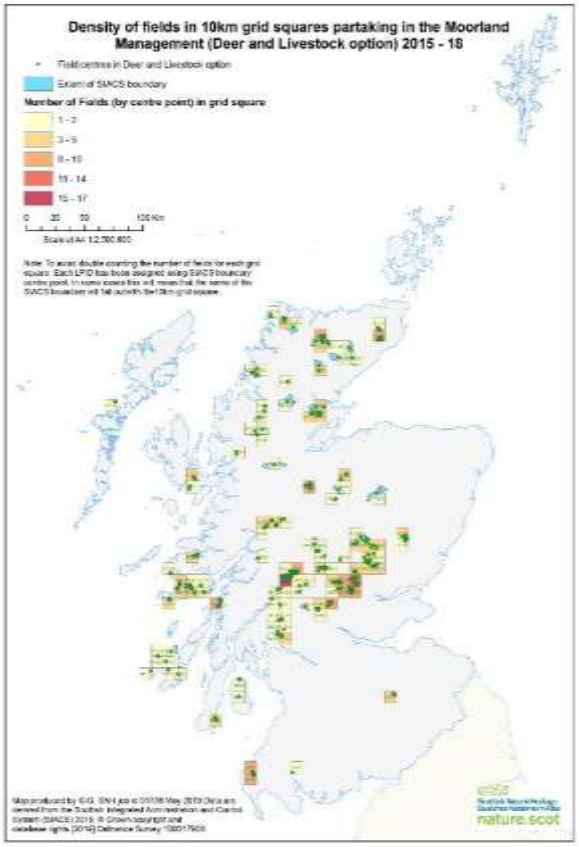


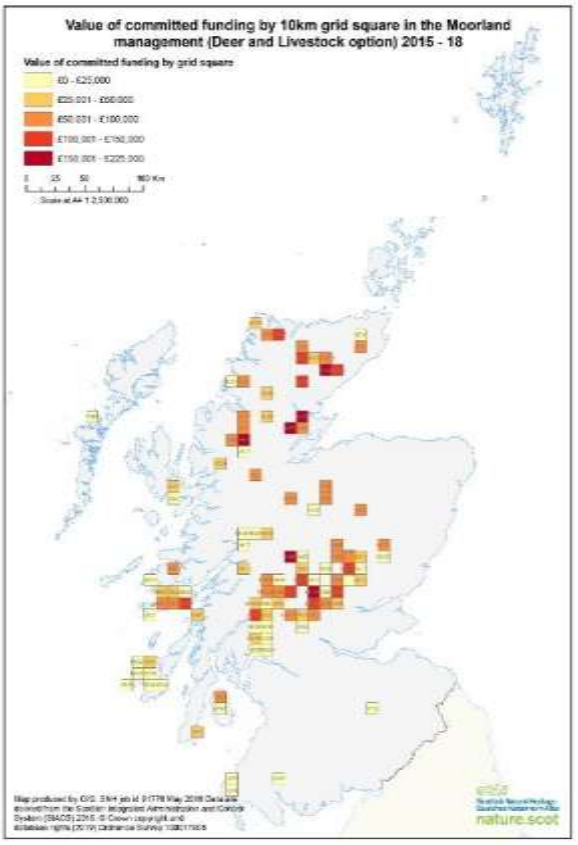


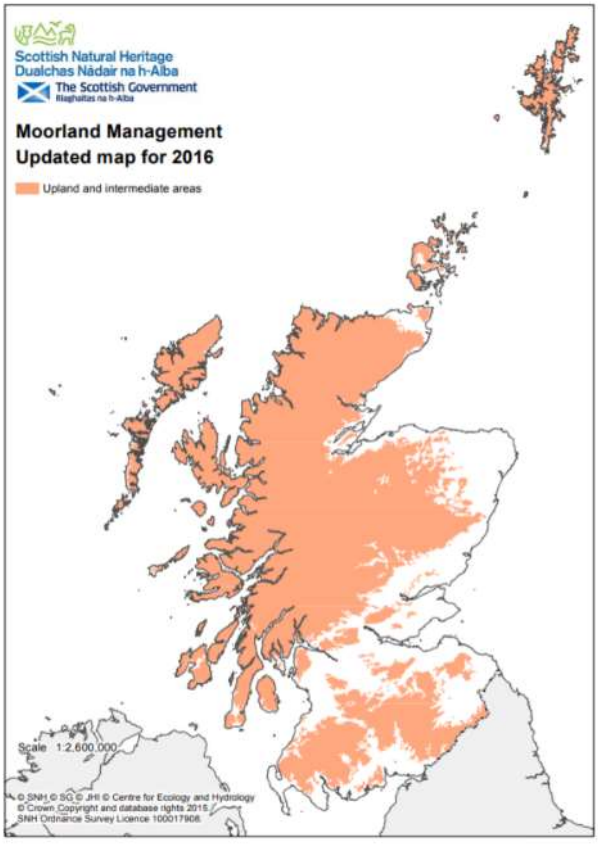


‘Deer and Livestock Moorland Management’ Option

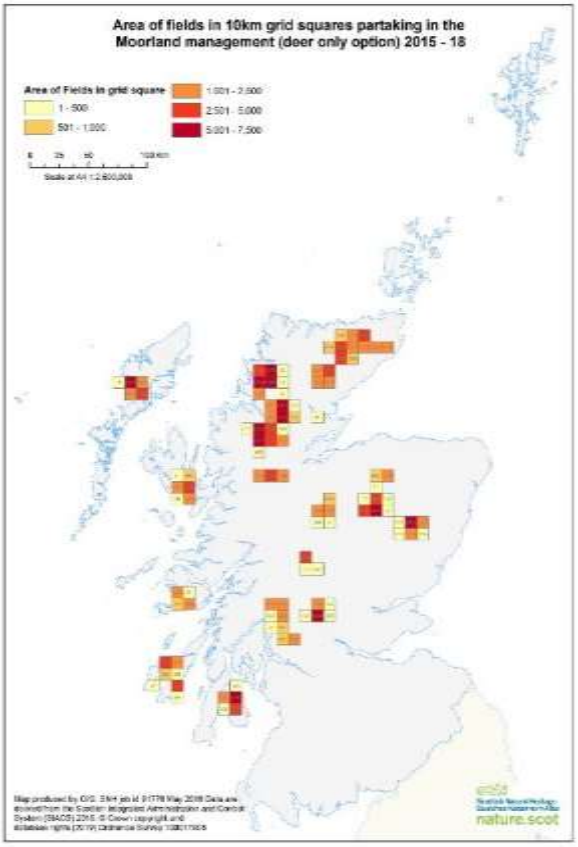


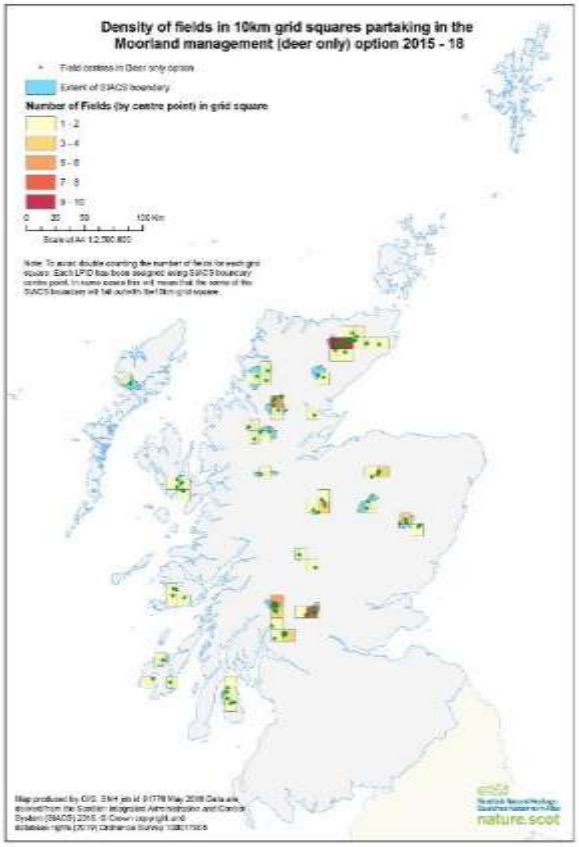


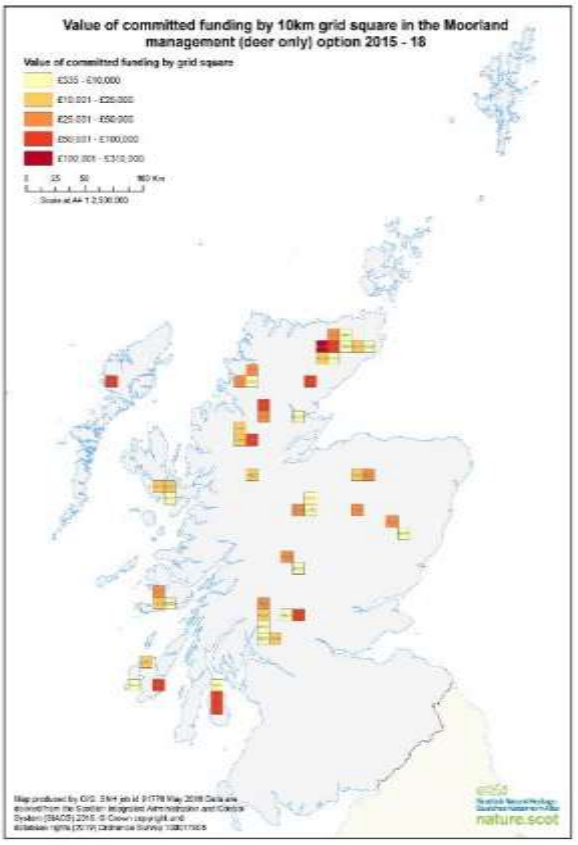


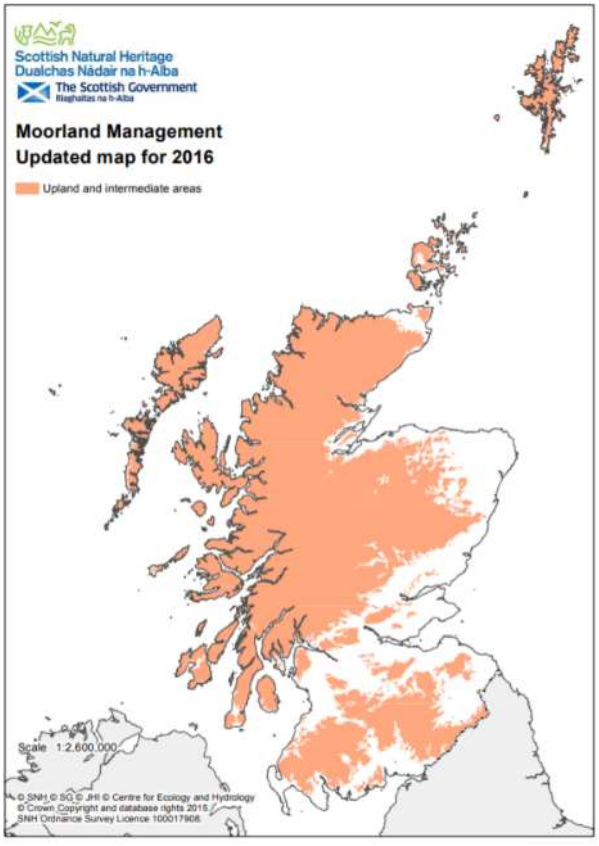


Deer Only Moorland Management Option



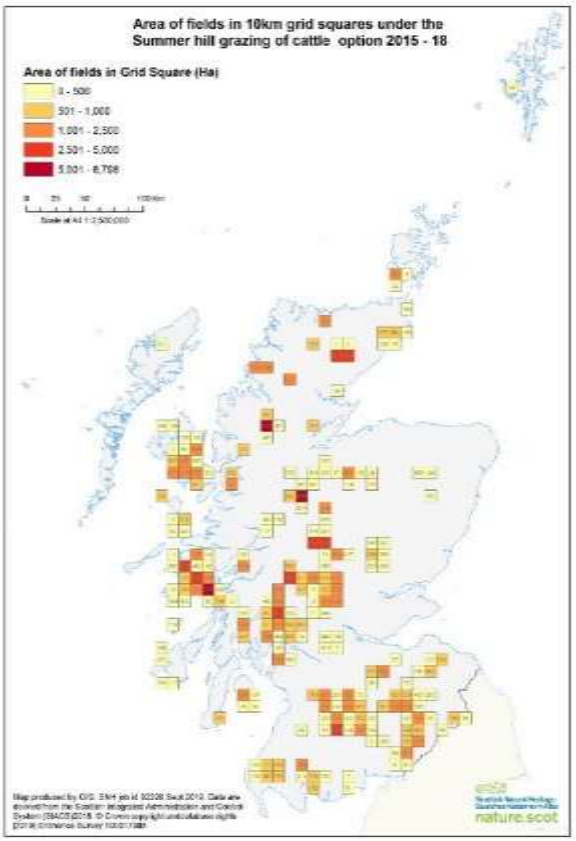


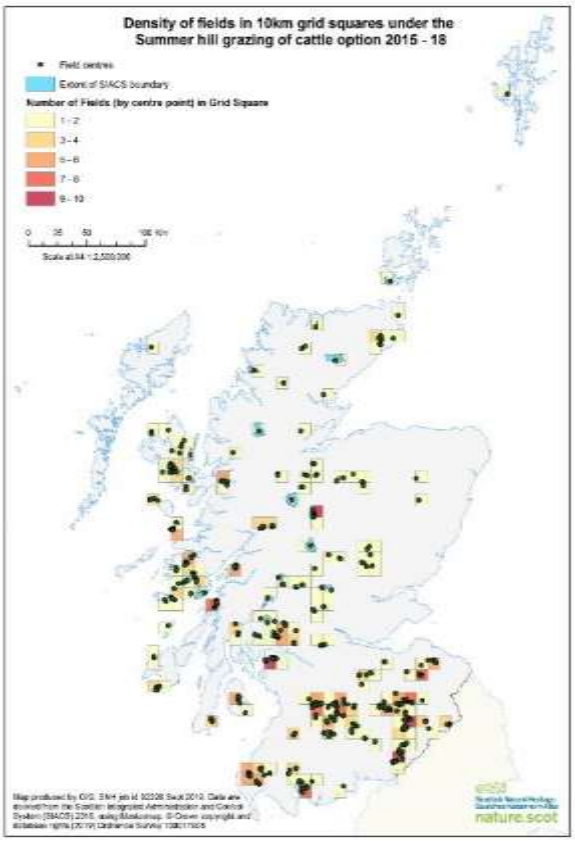


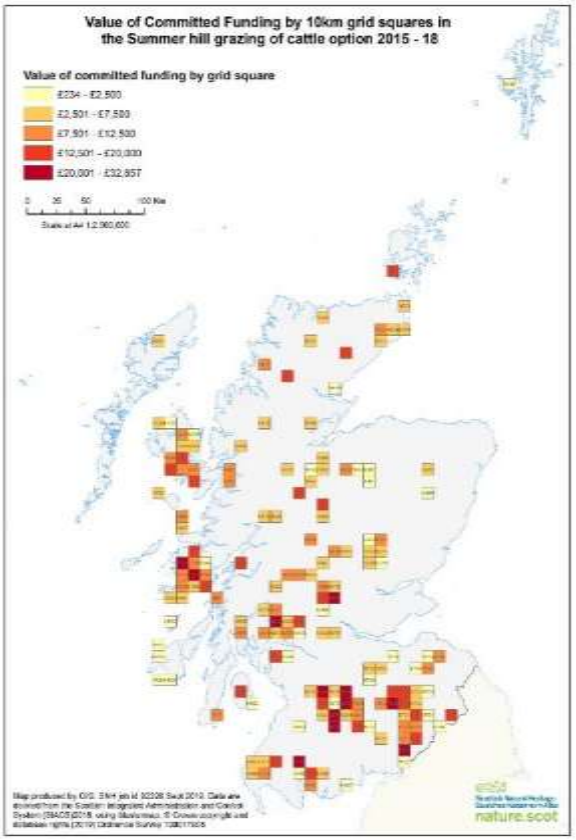


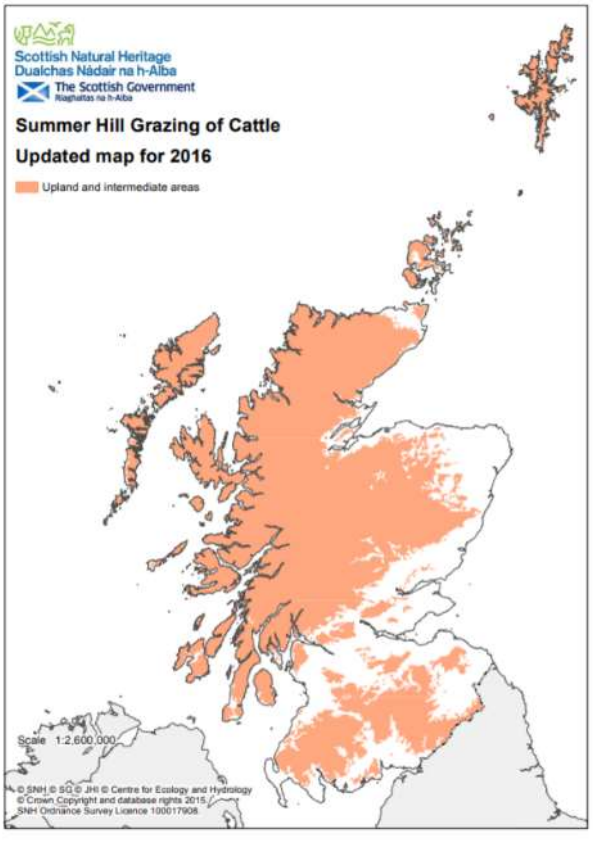
Moorland Management

Summer Hill Grazing of Cattle



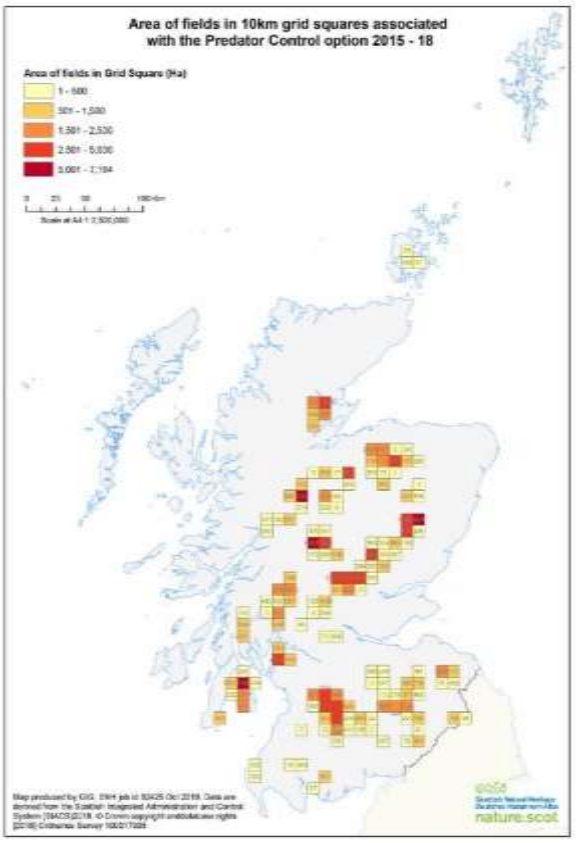


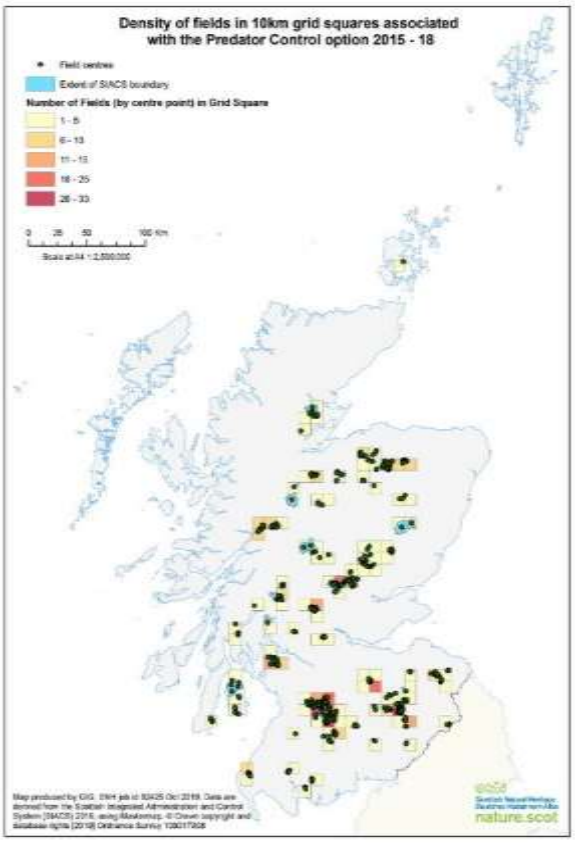


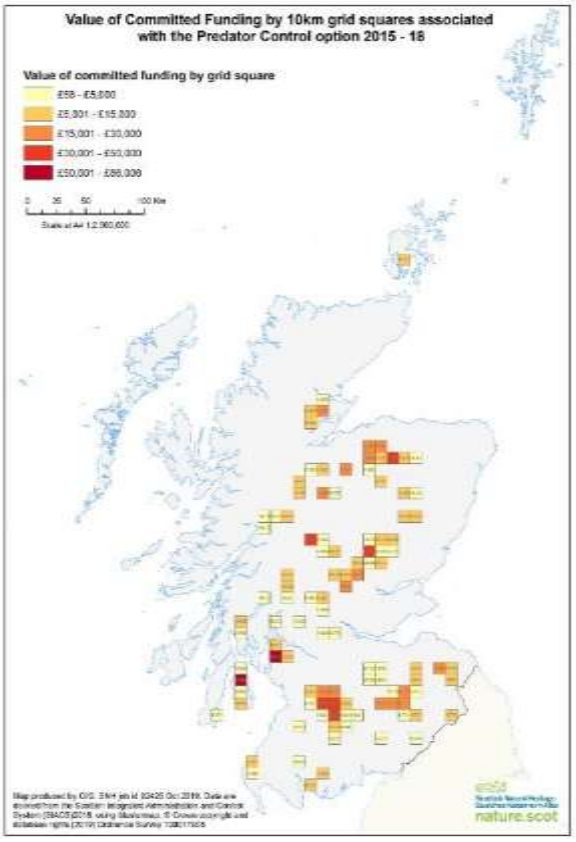


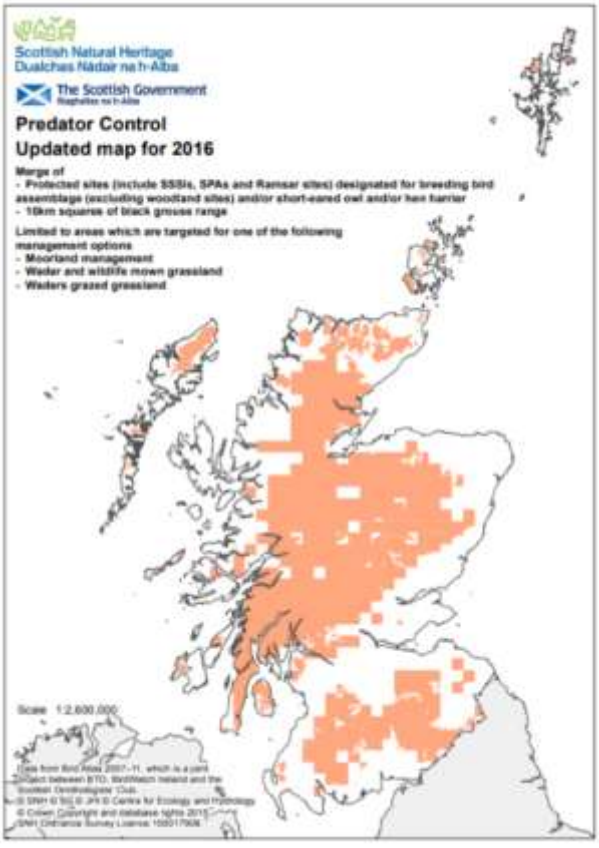
Moorland Management

Predator control



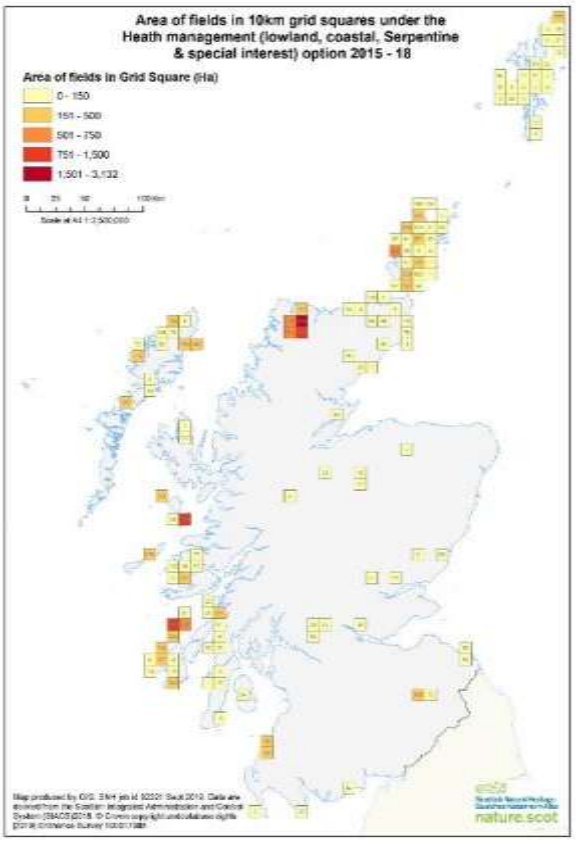


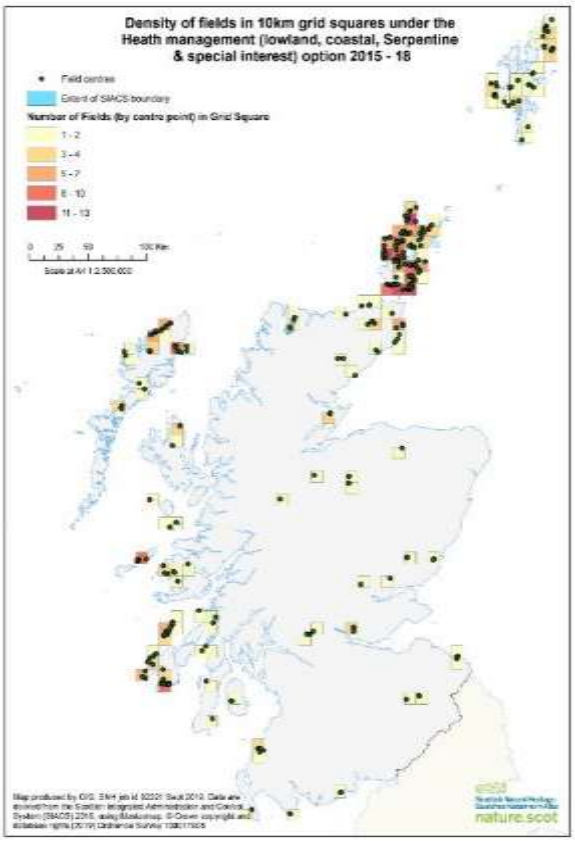


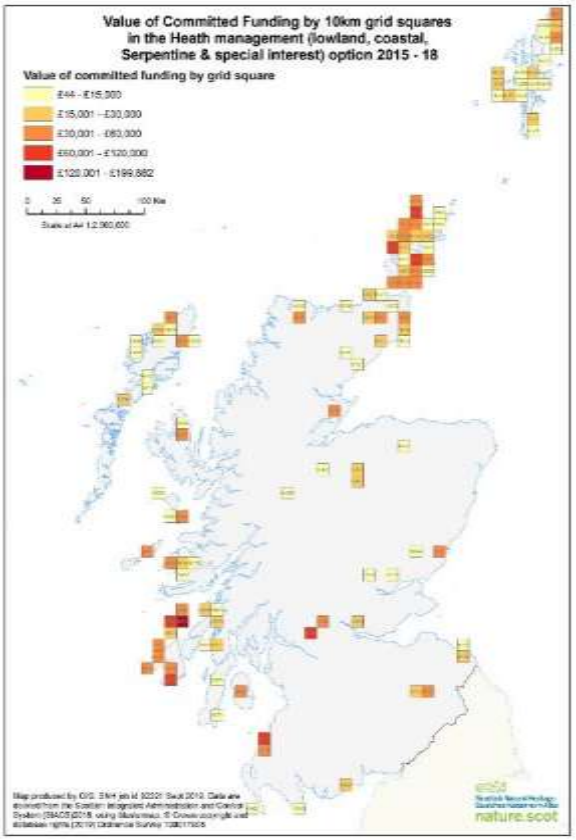


Heathland

Heathland Management





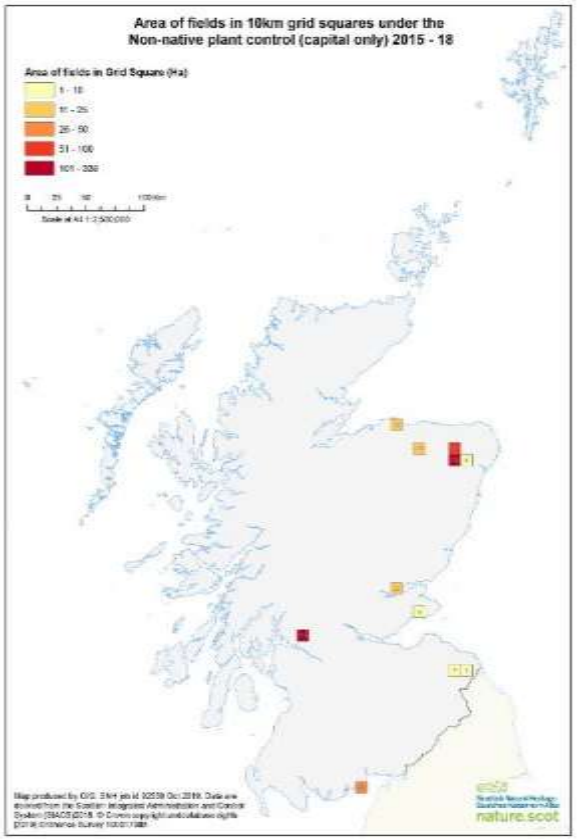


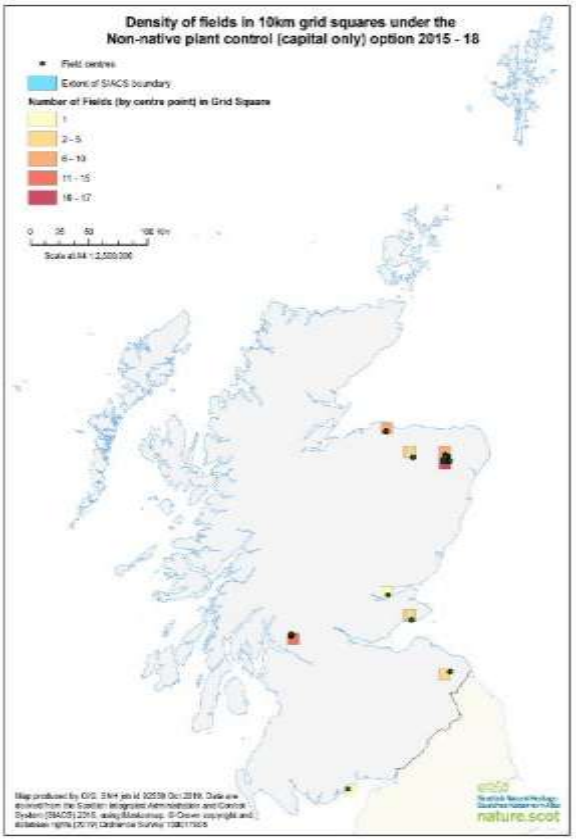
ALL SCOTLAND

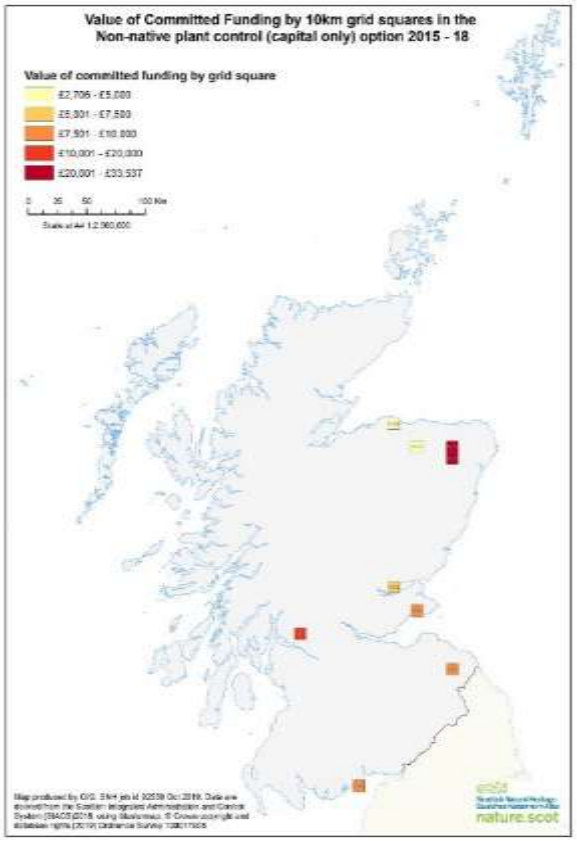
For coastal heath, serpentine heath, special interest heath and lowland heath

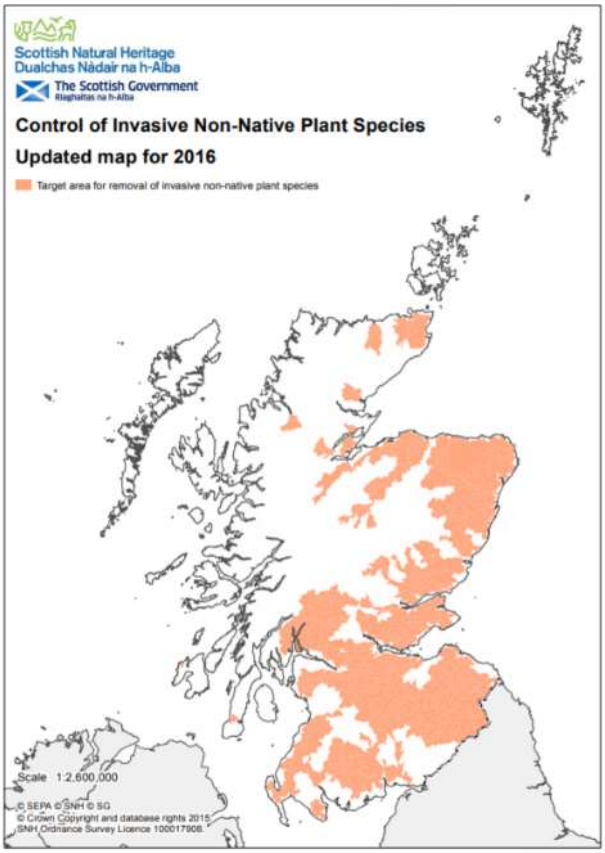
Control of Invasive Non-Native Plant Species

Control of Invasive Non-Native Plant Species









Annex - Methodology for production of SRDP options Maps

There were three types of maps required for the project:

- A density map showing uptake of each scheme by the number of fields in each 10km grid square.
- An area map showing the total number of hectares included in each scheme.
- A map showing the value of committed funding in each grid square.

Datasets used:
The datasets used included a spreadsheet that included the land parcel identifier (LPID), the value of committed funding (or total application cost), the application year, and the Scheme option name. The GIS datasets used included SIACS data from Scottish Government and the Ordnance Survey 10km grid square dataset. The background mapping is from Ordnance Survey Boundaryline.

Analysis:
The spreadsheet was imported into ArcMap and was summarised on LPID and the sum of the total application cost. This was needed because the data ran from 2015 to 2018 so there could be a number of entries for the same LPID, i.e. a field may have more than one contract on it. This project is looking at the number of fields included in a scheme as opposed to the number of times that a field has been included. This was then joined to the SIACS data on the Field Identifier. Note; not all LPIDs joined to a SIACS record, and in these cases limited attempts were made to join the records manually.

The centre point of each field was established using the 'Feature to point' tool. This dataset was then spatially joined to the 10km grid squares. In the resulting feature class the column with the name of the 10km grid square was summarised and the total application cost was also summed to give the number of unique LPIDs in each grid square. This summarised output is a database table so it was joined back to the 10km grid data to give a dataset of 10km grid squares with a total number of fields in that square and the total value of the committed funding.

For the area maps a dataset was needed that intersected the SIACS fields created earlier with the 10km grid squares (as previously it was centre points that were spatially joined with the grid squares; however some LPIDs extend over more than one grid square). The intersected dataset was dissolved on the field containing the name of the 10km grid square. To this output a 'long integer' field was added to calculate hectares using the calculate geometry tool. Then this dissolved dataset was joined to the 10km grid squares on the grid square name.

Map production:
The density maps were assembled using the dataset of field centres, the SIACS boundaries and 10km grid squares that were calculated from the point data. The column with the total number of fields in the grid squares was symbolised. The data ranged in vales between the different options, so the data were grouped into five groups for plotting on a map using a scale of colours ranging from yellow to dark red. The grid squares were labelled with the 10km grid square.

Similarly, the value of committed funding by grid square map used the 10km grid squares that were calculated from the point data and was symbolised on its range of value for the totals of committed funding. Again the data was split into five groups for plotting on a map using a scale of colours ranging from yellow to dark red. The grid squares were labelled with the 10km grid square. The map does not show the actual value of the committed funding in each grid square.

The area maps used the area data as described above, these were labelled with the area of the fields in the grid square. Also the symbology split the areas into 5 groups of values and was plotted on a yellow to red colour ramp.