Rural and Agricultural Development – Maximising the Potential in the Islands of Orkney, Shetland & Outer Hebrides

Environmental Profile

Suggested Citation:
Thomson, S., Pirie, S., Atterton, J., Moxey, A., Sellars, A., Chapman, P., Nelson, B., Naab, F., Jamwal-Fraser, O., MacMillan, I, McCracken, D., Sutherland, J., Macdonald, S., Stevens, J., and Glendinning, J., (2024) **Rural and Agricultural Development – Maximising the Potential in the Islands of Orkney, Shetland & Outer Hebrides.** A SRUC report to Orkney Islands Council, Shetland Islands Council, Comhairle nan Eilean Siar, Orkney Local Action Group, Shetland Local Action Group, Outer Hebrides Local Action Group, and Highlands and Islands Enterprise. DOI: https://doi.org/10.58073/SRUC.26125552

This project was funded by the Scottish Government's Community Led Local Development Fund, as part of the Scottish Rural Development Programme, and was delivered by the Orkney Local Action Group in collaboration with the Shetland Local Action Group, Outer Hebrides Local Action Group, Orkney Islands Council, Shetland Islands Council, Comhairle nan Eilean Siar and Highlands and Islands Enterprise.

8 Environmental Profile

186. Orkney, Shetland, and the Outer Hebrides host many nationally and internationally valued: (a) habitats and species that are important for biodiversity and (b) peatland sites. This section provides an assessment of the greenhouse gas emissions in the Island groupings and then outlines the unique contribution to Scotland's biodiversity afforded by these island groups, highlighting those which are undergoing change or under threat, and giving detail on key issues where humans and animals are in conflict for which we need to seek solutions.

8.1 Greenhouse Gas Emissions

187. The Scottish Government's Net Zero ambitions for 2045 are a major driver of all realms of policy change as Scotland seeks a Just Transition[79]. A new draft Climate Change Plan remains unpublished by the Scottish Government[80] at the time of writing – but it is expected to be laid before the Scottish Parliament for scrutiny in Spring 2024. This will set out sectoral targets and transition pathways, updating the latest version of the plan[81] and it is expected that a Just Transition Plan for Land Use and Agriculture[82] will be published around the same time to which the Just Transition Commission has called for honesty and clarity on the scale of the transition required in the sector and what a just transition pathway looks like, including how it is to be funded[83].

188. Within the National Inventory of Atmospheric Emissions[84] (the so-called National Inventory) emissions from Agriculture are accounted separately from Land use, land use change and forestry (LULUCF). The National Inventory is a series of sectoral models that estimate the impacts of a range of sectoral emissions that lead to global warming. Models rely on the robustness of the underlying assumptions and data and there needs to be greater clarity on these for agriculture and LULUCF in the National Inventory, and the models must be adapted to better reflect regional variations in agricultural and land use practices (e.g. use of rough grazing, winter housing and feeding regimes, animal and plant breeds used) and to better recognise uptake of new technologies (e.g. methane inhibitors) or practices (e.g. improved slurry storage and application).

[79] See https://www.justtransition.scot/ who have been appointed to support the production and monitoring of sectoral Just Transition Plans, providing expert advice on their development.
[80] Minister for Parliamentary Business.dot
[81] Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update - gov.scot (www.gov.scot)
[82] Just transition in land use and agriculture: a discussion paper - gov.scot (www.gov.scot)
[83] Success of net zero transition requires honesty about costs – Just Transition Commission
[84] NAEI, UK National Atmospheric Emissions Inventory - NAEI, UK (beis.gov.uk)

189. Whilst Scottish agricultural policy is undoubtedly being significantly influenced by the targets for reductions in emissions from agriculture and LULUCF there is a danger that the regional emissions profiles, or available mitigation strategies are not fully considered by policy makers.

190. The full National Inventory spans the full economy, divided into various separate sectors and most include electricity related emissions. LULUCF differs from the other inventory sectors as it includes some removals through carbon sequestration from plant growth and soil deposits. The sectors included in the Local Authority database include:

- **Industry** (including electricity-related emissions)
- **Commercial** (including electricity-related emissions)
- **Public sector** (including electricity-related emissions)
- **Domestic** (including electricity-related emissions)
- Transport
- **Land use, land use change and forestry (LULUCF)** (including removals of carbon dioxide from the atmosphere, so that net emissions from this sector can sometimes be negative)
- **Agriculture** (including electricity-related emissions)
- **Waste management** (distributed based on the waste arising in each local authority)

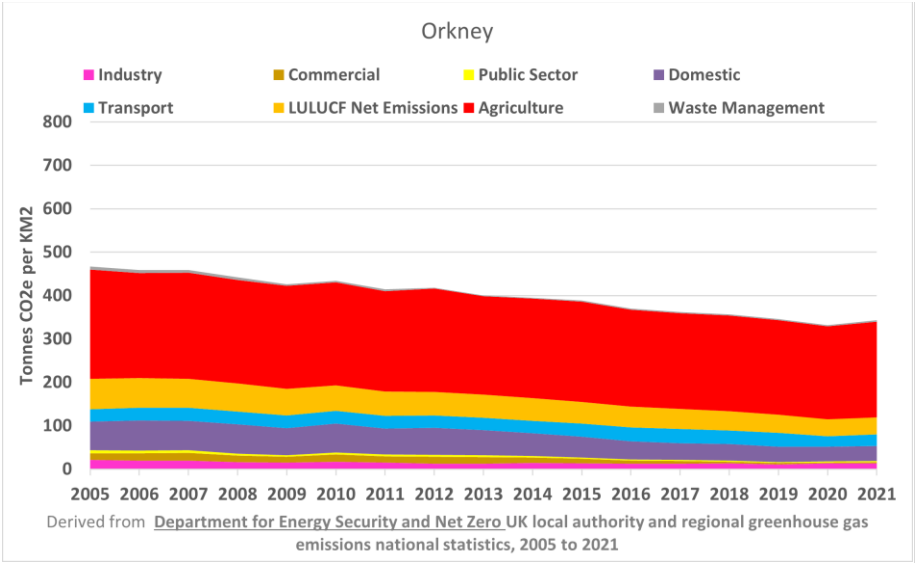
191. The relative contribution of these sectors to emissions varies geographically, reflecting differences in patterns of economic activity. Hence, agriculture and LULUCF are more significant contributors to emissions across the three island groupings than for Scotland as a whole. For example, agriculture dominates for Orkney (mainly enteric methane emissions from cattle) whilst LULUCF (mainly degraded peatlands or grass on peat) dominates for Shetland and the Outer Hebrides, but both are dominated by other sources at the national level. Details of the main emission contribution to each of these sectors is provided in Annex 5 Agriculture and LULUCF GHG Emissions.

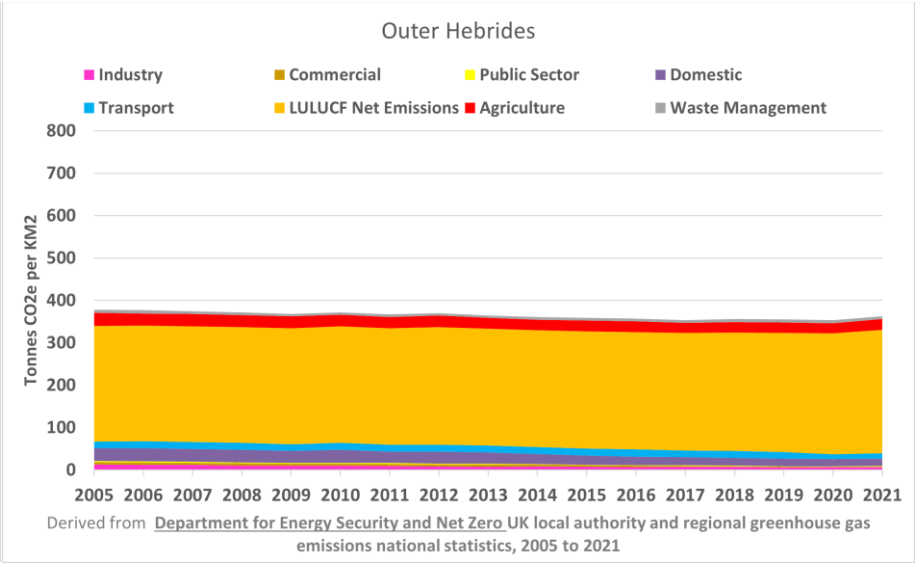
192. Figure 24 shows the trends in emission profiles for each island grouping from 2006 to 2021. The charts reveal the dominance of LULLUCF and agriculture in the island groupings compared to Scotland as a whole, and also that improvements have been gradually made.

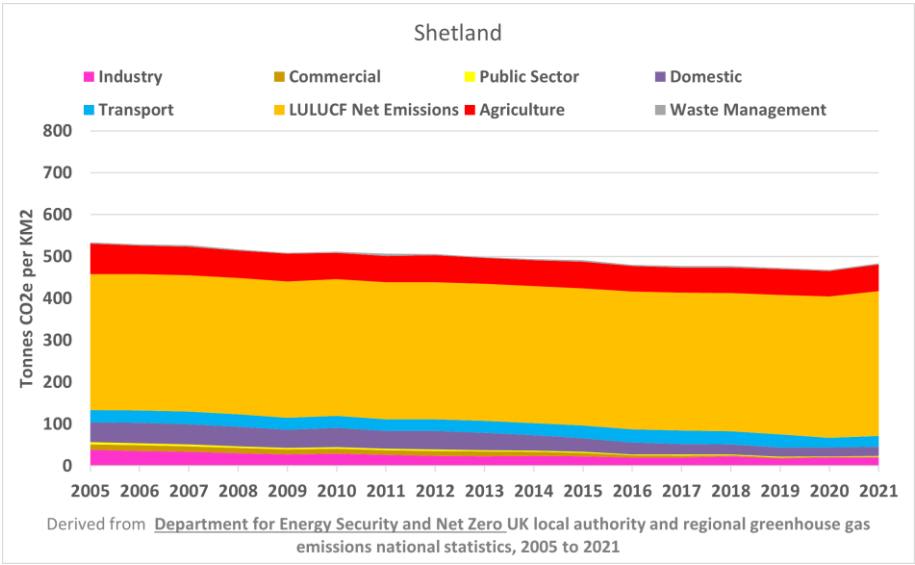
- Reflecting agricultural intensity (particularly of cattle) agricultural emissions amounted to 220 t CO_2e per km^2 in Orkney, down from 252 t CO_2e per km^2 in 2006 (a 12% reduction). This compared to only 25 t CO_2e per km^2 in the Outer Hebrides in 2021 (down 20% since 2006), 64 t CO_2e per km^2 in Shetland in 2021 (12% reduction since 2006) and 100 t CO_2e per km^2 across Scotland in 2021 (down 10% from 2006)

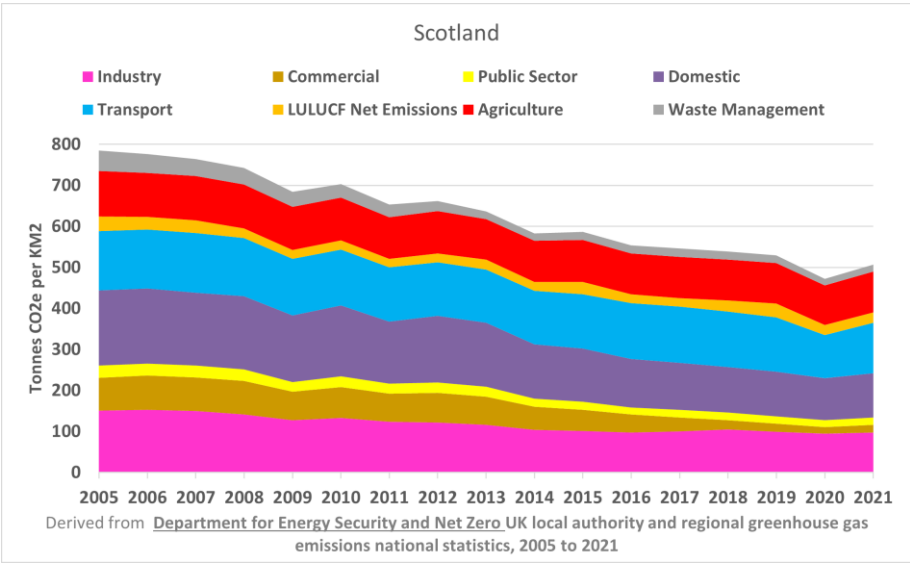
- Reflecting peatlands, and their current condition, LULUCF contributed net emissions (i.e. after sequestration) of 345 t CO_2e per km^2 in Shetland in 2021 (up 6% from 2006). The Outer Hebrides had similarly high net emissions from LULUCF at 291 t CO_2e per km^2 in in 2021 (up 7% from 2006). In contrast Orkney only had net LULUCF emissions of only 39 t CO_2e per km^2 in in 2021 (down 44% from 2006). Across Scotland LULUCF net emissions were only 25 t CO_2e per km^2 in in 2021 (down 30% from 2006), reflecting lower overall peatland, but also higher grassland and timber net sequestration.

Figure 24 GHG emission trends (tonnes of CO2e per KM2) by national inventory sector, 2006 to 2021









193. Figure 25 demonstrates the proportion of total emissions arising from agriculture with Figure 26 showing the contribution to total net emissions from LULUCF and Figure 27 shows the total contribution that LULUCF and agriculture make combined.

- In Orkney agriculture contributed 64% of total island net emissions in 2021 (up from 54% in 2006). This was significantly above the Scottish position of 20%. In comparison, reflecting more extensive agricultural production systems agriculture only contributed 7% of net emissions in the Outer Hebrides in 2021 (down from 8% in 2006) and 13% in Shetland (14% in 2006).
- In Shetland LULUCF contributed 71% of net emissions of the islands in 2021 (up from 63% in 2006) that reflects the significant peat reserves on the islands and their condition / use. Whilst the emissions intensity in the Outer Hebrides was lower from LULUCF than Shetland the sector contributed a higher proportion of overall emissions due to the make-up of the economy. In 2021 LULUCF contributed 80% of net emissions in the Outer Hebrides (up from 72% in 2006). In contrast, LULUCF only contributed 12% of Orkney's net emissions in 2021 (down from 15% in 2006) and only 5% of Scotland's net emissions.
- These islands stand apart from Scotland as whole in terms of combined net emissions. Across Scotland agriculture and LULUCF contributed 26% of Scotland's net emissions in 2021 (up from 19% in 2006). This compares with 76% of net emissions from Orkney (up from 69%), 85% of net emissions in Shetland (up from 74% in 2006) and 87% in the Outer Hebrides (up from 80% in 2006).

Figure 25 Agricultural emissions as proportion of local authority emissions, 2006-2021

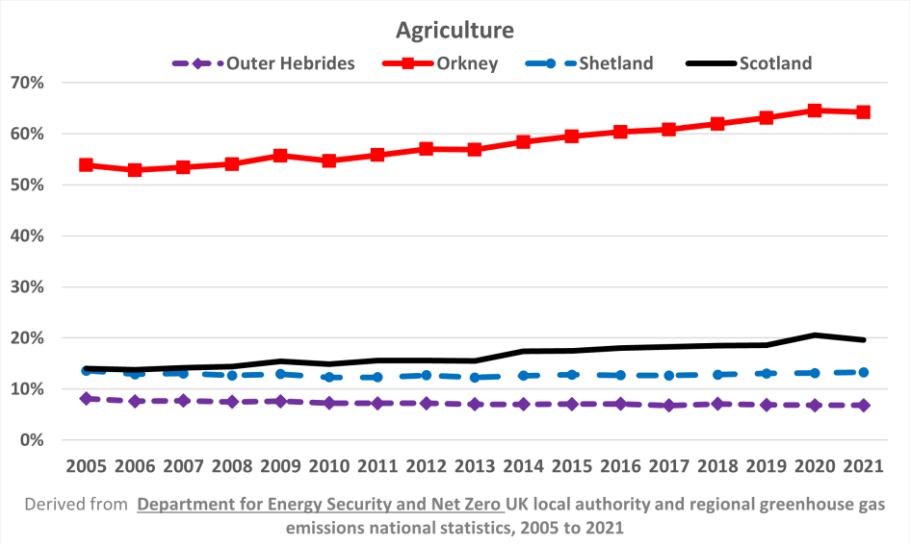


Figure 26 LULUCF emissions as proportion of local authority emissions, 2006-2021

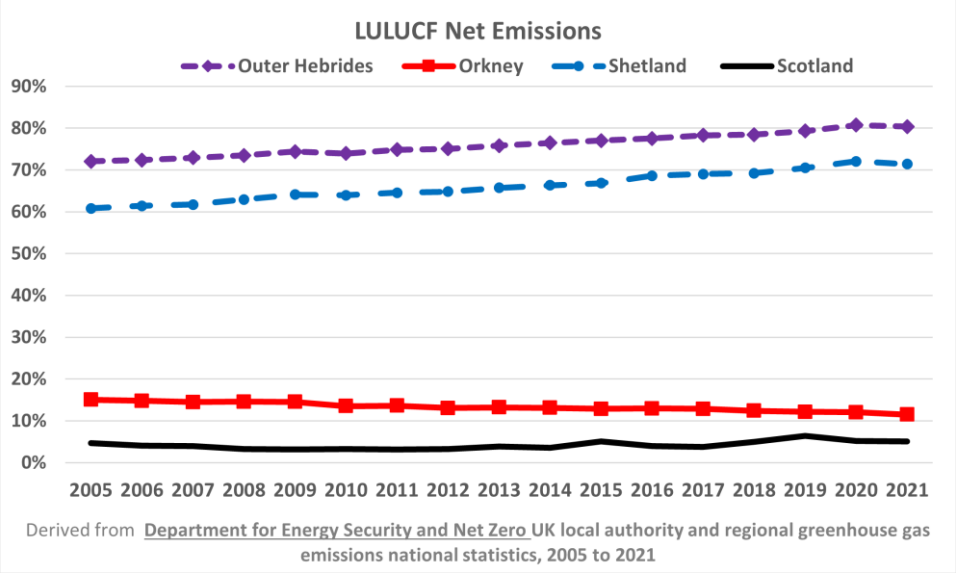
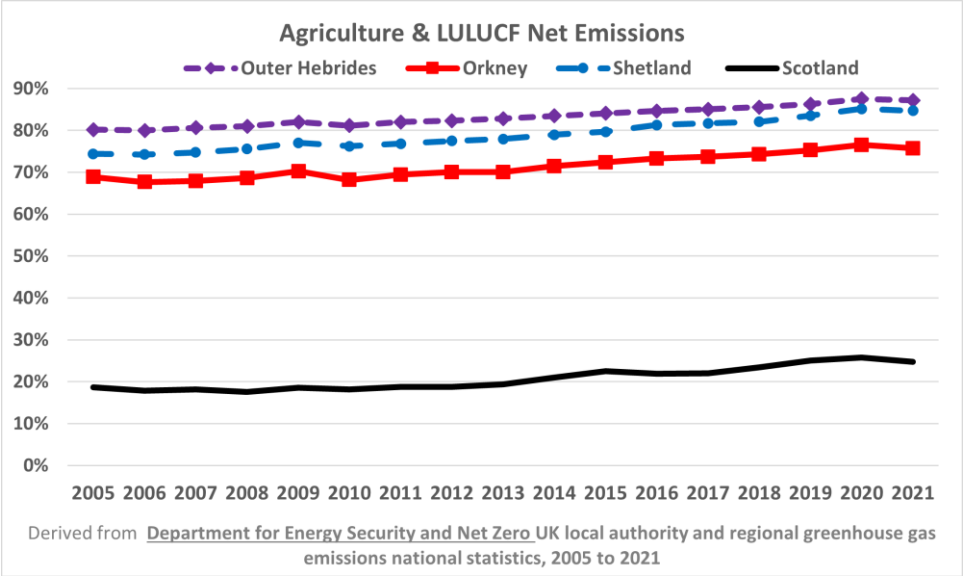


Figure 27 Combined agricultural and LULUCF emissions as proportion of local authority emissions, 2006-2021



194. It is worth emphasising that as other sectors decarbonise the proportion of total net emissions arising from agriculture and LULUCF increase, meaning there is ever increasing pressure to reduce emissions in these sectors.

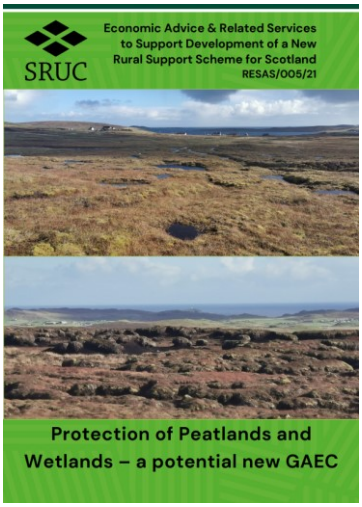
- At Scottish level whilst agricultural and LULUCF net emissions fell by 10% and 30% respectively between 2006-2021, net emissions also fell in all other sectors: Industry (-36%); Commercial (-80%); Public Sector (-39%); Domestic (-41%); Transport (-14%); Waste Management (-67%).

195. The agriculture is very challenging to decarbonise, but high technical efficiency and adoption of new technologies (such as methane inhibitors) and targeted

breeding goals (e.g. for feed efficiency / low methane) can ensure the sector plays its part.

196. For LULUCF emissions from peatlands that have historically been converted to grass remain a significant challenge (the food / economy V climate trade-offs need considered), but degraded peatland restoration must be seen as a priority to reduce net Scottish and specifically Shetland and Outer Hebrides emissions. However, stumbling blocks to more widespread peatland restoration remains in place. Specifically:

- **Crofting legislation:** whilst it may be clear in crofters' or landowners' minds who has the right (and that right may become an obligation in years to come) to restore peatland, this needs clarification in statute. Independent legal advisors currently state that while land managers may have the right to carry out restoration works that does not mean they hold the right to any carbon credits generated through restoration works. Similarly, landowners may hold the right to trade carbon credits but under crofting legislation they do not have the right to carry out restoration works, nor can they force land managers to do so.
- **Stocking Density:** A complaint made by farmers and crofters is about requirements to destock for prolonged periods during and after peatland restoration is completed. During evidence gathering we heard that there was a requirement for full stock withdrawal for bare peat restoration (often unfenced sites within a moor) or reduction to 0.02 livestock units per hectare (an eighth of a sheep per hectare) on other restoration sites. Stock withdrawal and reduction can mean that crofters and farmers would breach the 'activity' eligibility clauses for BPS and LFASS. Peatland restoration does not fund changes in land management (livestock reduction) that are part of the conditions of e.g. Peatland Action. Peatland and nature restoration need to be fully recognised within future definitions of agricultural activity regarding support schemes. Moreover, mechanisms in Tier 2 and Tier 3 to support and compensate active farmers and crofters withdraw stock (if required) during the restoration periods requires consideration (as recommended by Thomson et al, 2023). Investigation of peatland restorations where sheep grazing remained (e.g. Tardoes farm in Muirkirk[85]) would be beneficial for industry and fund administers.



[85] CABB Peatland Project – Useful Data for Irish River Conservation / Water Quality (irishriverproject.com)

- **Inflexible timings:** Peatland restoration contractors bemoan the seasonal nature of the job meaning they often move backwards and forwards between restoration and other machine operation jobs. Other work is often considered more lucrative and easier – particularly in terms of machine operator requirements on red listed species and ground nesting birds, etc., particularly in NatureScot controlled Peatland Action[86] projects. Peatland restoration may require some green V green trade-offs to be explicitly made (e.g. long term emissions reductions v short term habitat damage v long term habitat gain).

197. This highlights that regional emission mitigation priorities should not be uniform across Scotland, but equally that the ease of mitigation is not distributed evenly either. For example, expectations for agricultural mitigation on Orkney and LULUCF mitigation across Shetland and Outer Hebrides need to be tempered by the practicalities of peatland restoration involving crofts and common grazings and the impracticalities of tree planting at scale. Equally, the scope for reducing livestock emissions needs to be considered against the countervailing scope for carbon leakage through imports.

8.2 High Nature Value Farming Systems

198. In spite of their primary function of producing food and fibre, many agricultural landscapes are rich in natural and/or semi-natural vegetation and support species and habitats, often with high conservation value, whose persistence is totally or partially dependent on the maintenance of specific low-intensity farming systems. Known in Europe as high nature value (HNV) farmlands, they contribute significantly to biodiversity conservation and the delivery of a wide range of ecosystem services on which society depends.

199. Work by the Scottish Government in the early 2010s[87] estimated that the area of Scotland under HNV farming ranged between 2.3 and 2.4 million hectares of agricultural land between 2007 and 2013. This equates to a range of between 40% and 44% of the total amount of agricultural land in Scotland. However, this figure rose to 51% in the Northern Isles and 75% in the Outer Hebrides, emphasising the disproportionate importance of the islands in providing and maintaining Scotland's HNV resource.

200. However, in Scotland – as elsewhere in Europe - many HNV farmlands are currently under pressure from biophysical (e.g. remoteness, soil erosion, climate) and socioeconomic factors (e.g. globalization of markets and specialization of agricultural systems, rural population decline, lowering farm income), alongside broader political and cultural changes. As a result, many of the remaining HNV

[86] Peatland ACTION | NatureScot
[87] Indicator 4: Farming and nature | Scotland's environment web

farmlands are currently losing socioeconomic viability due to low farm incomes and poor social infrastructure.

201. Altogether, such socioeconomic drivers are limiting the attractiveness of managing HNV farmlands for younger generations (Lomba et al. 2023[88]). In 2016, a European Innovation Partnership for Agricultural Sustainability & Productivity (EIP-AGRI) short-life-focus-group was formed to consider how to improve the social and economic sustainability of HNV farming without losing the HNV characteristics.

202. The final report from this group concluded (EIP-AGRI, 2016[89]) that the use of innovative technologies and management techniques had an important role to play, a view that has been further emphasised by the HNV Link project (Gouriveau et al., 2019[90]) and Lomba et al. (2020[91]) who emphasise that facilitating technological innovation is an essential part of a wider bundle of measures required to improve the future viability of HNV farming systems.

203. HNV farming and crofting systems across Orkney, Shetland and the Outer Hebrides are heavily dependent on agricultural support funding, especially Less Favoured Area Support and income from Agriculture, Environment & Climate Schemes (AECS). Maintaining elements of that support but also ensuring that funding can be mobilised to allow HNV farmers and crofters across the islands to take advantage of technological advances will be fundamental to maintaining the systems, and associated biodiversity value, in the future.

8.3 Protected Nature Areas

204. The principal statutory protected nature areas in Scotland are Sites of Special Scientific Interest (SSSI), which are nationally important examples of natural heritage, Special Areas of Conservation (SAC), which are sites of European importance for habitats and non-bird species and Special Protection Areas (SPA), which are sites of European importance for birds. In addition, there are also local designations which also impact on agricultural practice that can are established by local authorities.

205. SAC and SPA designations include significant areas of important marine habitats and feeding areas for seabirds. Terrestrial statutory protected areas (SSSIs, SACs and SPAs), which often overlap in area, cover a total of 31.8% of the land area of the Outer Hebrides, 13.6% of Shetland and 24.5% of Orkney. In terms of abundance

[88] https://doi.org/10.5751/ES-14159-280220
[89] EIP-AGRI Focus Group on High Nature Value - farming profitability: Final Report | EIP-AGRI (europa.eu)
[90] D4.3.HNV-Link_Policy-Brief_v2019-3-25.pdf (hnvlink.eu)
[91] https://doi.org/10.1002/fee.2116

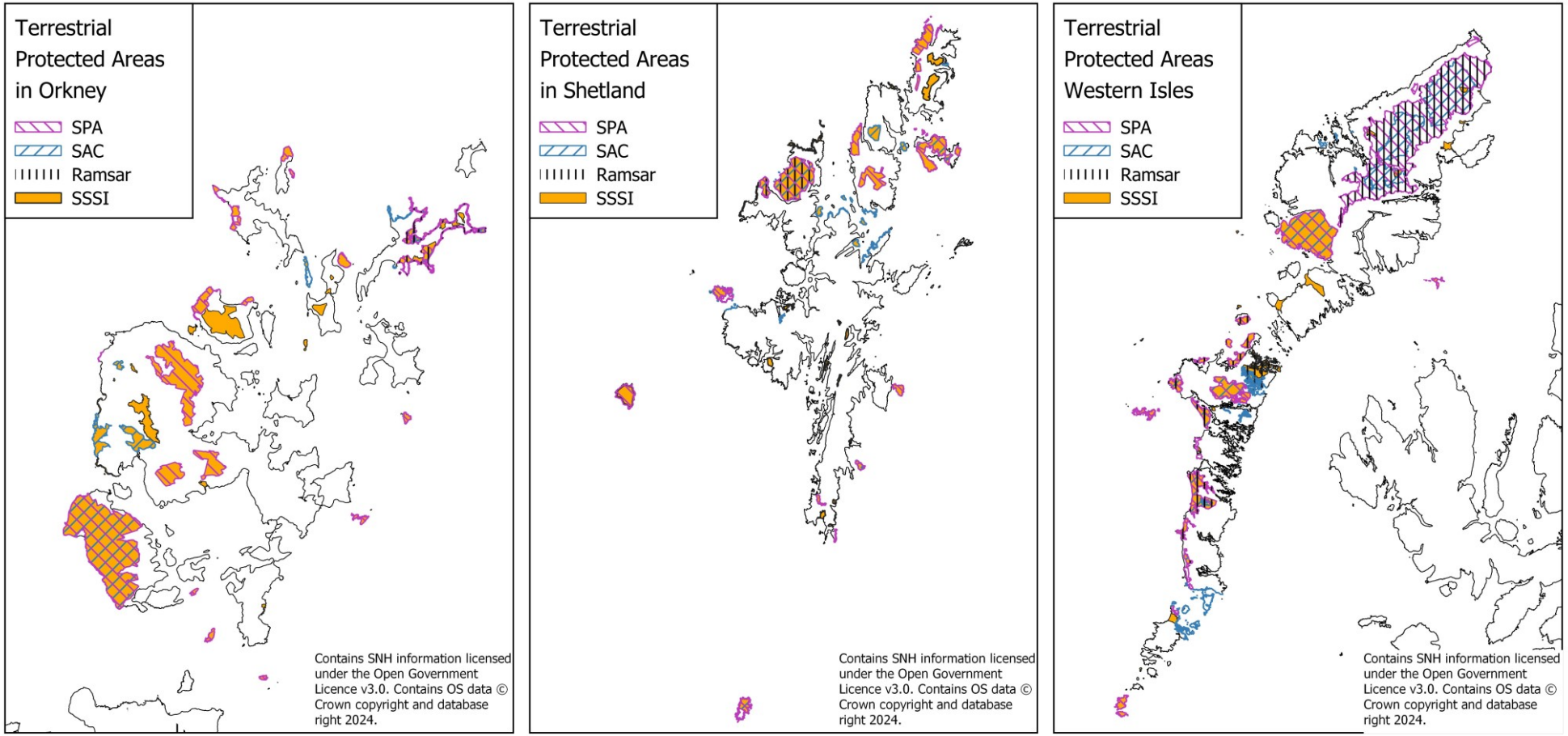
(see Table 37), the three island groupings account for c.12% of Scottish SSSIs (8% of area), c.16% of terrestrial SACs (10% of area), 38% of terrestrial SPAs (10% of area) and 12% of Ramsar sites (24% of area).[92]

Table 37 Estimated number and area of designated sites, including estimated proportion of Scottish terrestrial designations

Area	Metric	SSSI	SAC (Terrestrial)	SPA (Terrestrial)	Ramsar
Orkney	Ha	24,315	12,212	18,312	1,516
	% Scotland Ha	2%	2%	1%	0%
	Sites	36	6	14	1
	% Scotland Sites	3%	3%	9%	2%
Shetland	Ha	19,961	9,428	15,173	5,474
	% Scotland Ha	2%	1%	1%	2%
	Sites	78	14	17	1
	% Scotland Sites	5%	7%	11%	2%
Outer Hebrides	Ha	37,035	54,357	91,183	71,254
	% Scotland Ha	4%	7%	7%	22%
	Sites	52	14	27	4
	% Scotland Sites	4%	7%	18%	8%

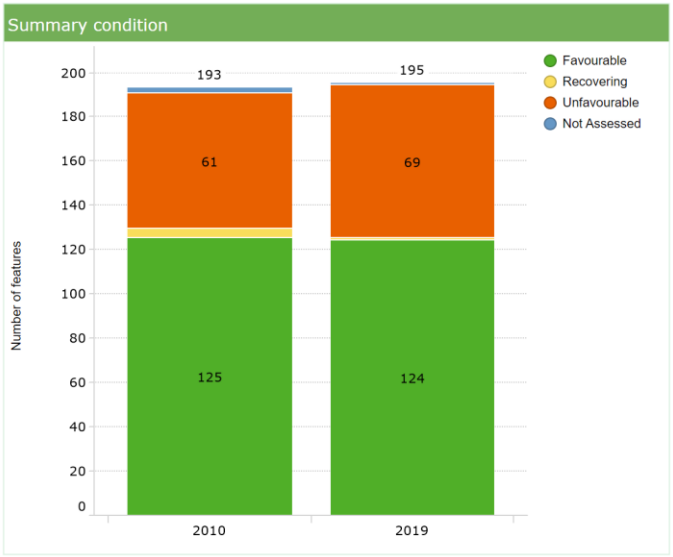
[92] Estimates based on GIS extracts https://sitelink.nature.scot/home

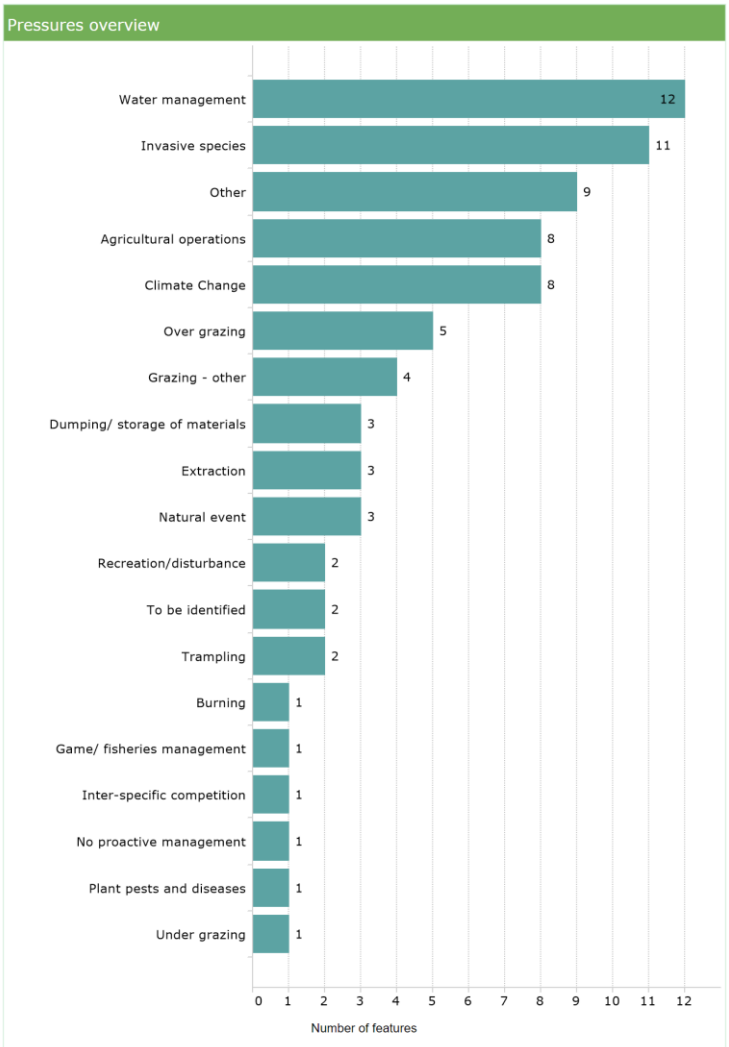
Figure 28 Extent of selected terrestrial designated areas in Orkney, Shetland and Outer Hebrides



206. A significant proportion of the land area of each of the three island areas is under some form of conservation designation. While these designations, and the biodiversity associated with them, are a significant tourist draw to the islands, farmers and crofters receive no direct market income streams from having these designations on the land that they manage. Indeed, the designations can act as a constraint on some land management choices. In addition, while the majority of features across these protected areas are in what is known as either Favourable or Recovering condition, where the status of those features are deemed to be Unfavourable then this can lead to pressure to address the factors leading to that status (see Figure 29 to Figure 31).

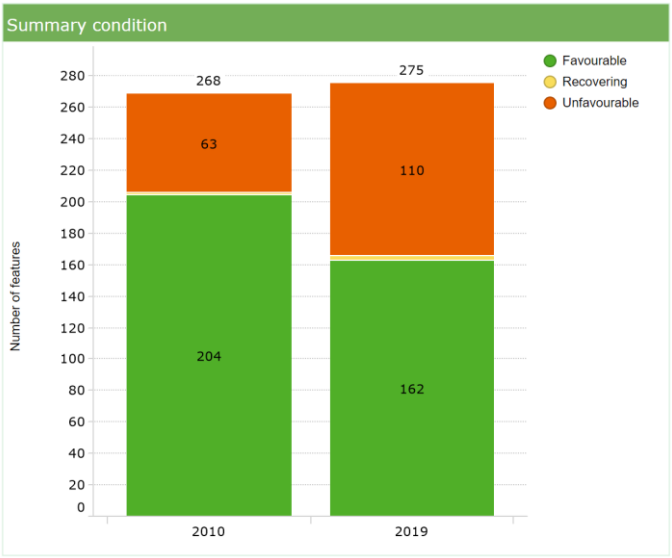
Figure 29 Summary condition of protected nature areas in Orkney and overview of pressures on protected features.[93]

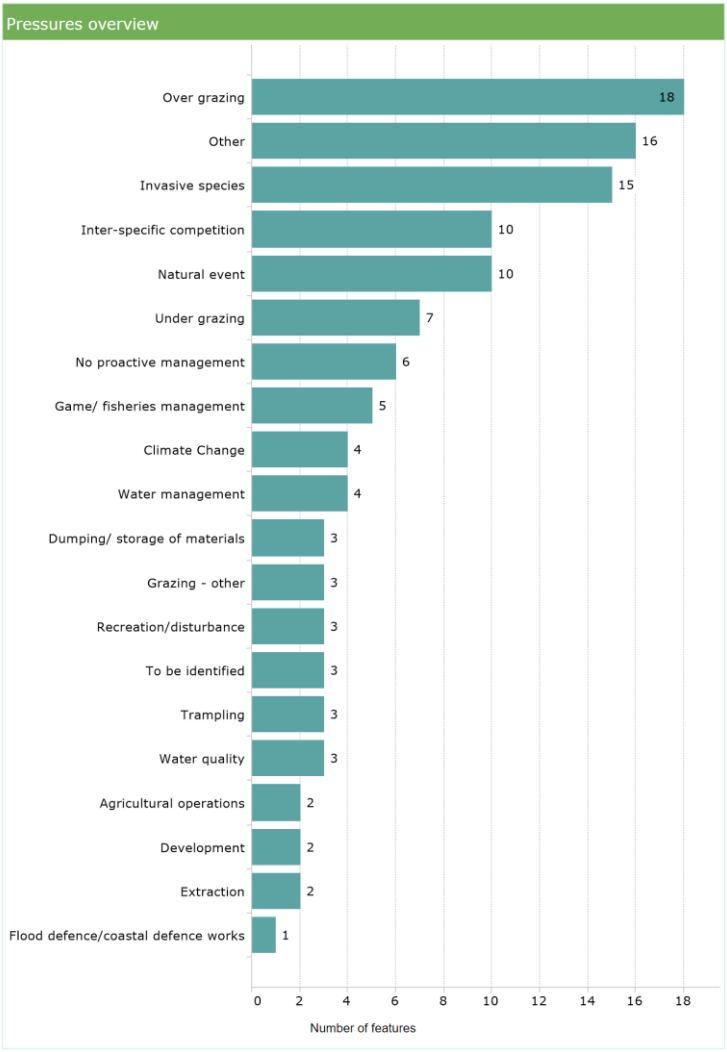




[93] [93] These data are provided by Scottish Natural Heritage (SNH) and downloaded from informatics.sepa.org.uk/ProtectedNatureSites. Data last updated: 12-Mar-2024

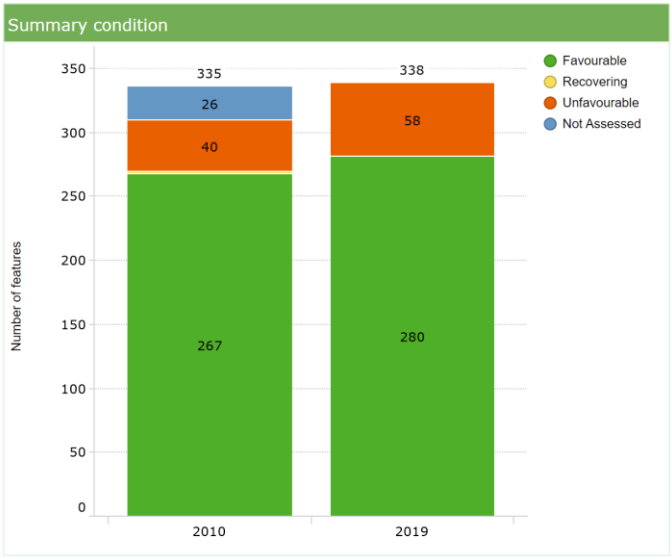
Figure 30 Summary condition of protected nature areas in Shetland and overview of pressures on protected features[94].

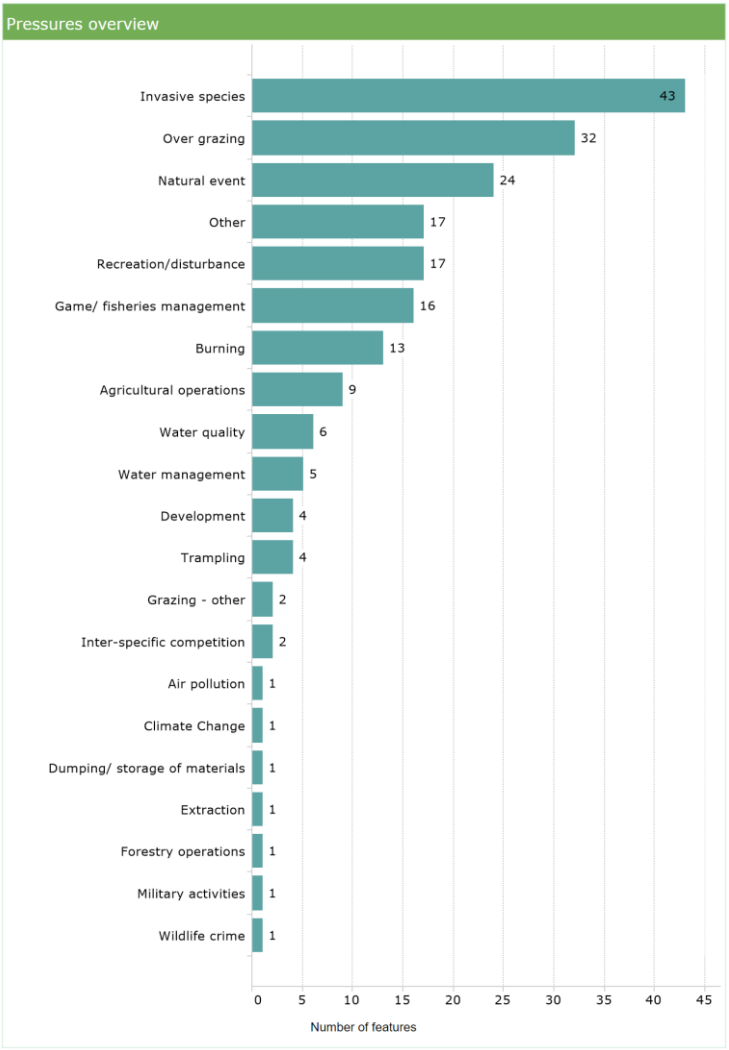




[94] These data are provided by Scottish Natural Heritage (SNH) and downloaded from informatics.sepa.org.uk/ProtectedNatureSites. Data last updated: 12-Mar-2024

Figure 31 Summary condition of protected nature areas in the Outer Hebrides and overview of pressures on protected features[95].





8.4 Priority species

207. Under the current Scottish Rural Development Programme, the main agri-environment scheme is the Agri-Environment Climate Scheme (AECS), which has been operational since 2015. AECS guidance identifies 15 vulnerable priority species that are a key target for management payments and capital works under this scheme and it is reasonable to assume that most or all of these species will remain priorities under future agri-environment support schemes. Ten of these 15 priority species are found across one or more of the three island groups, some in nationally important numbers.

[95] These data are provided by Scottish Natural Heritage (SNH) and downloaded from informatics.sepa.org.uk/ProtectedNatureSites. Data last updated: 12-Mar-2024

8.4.1 Farmland waders: curlew, lapwing, redshank, snipe and oystercatcher

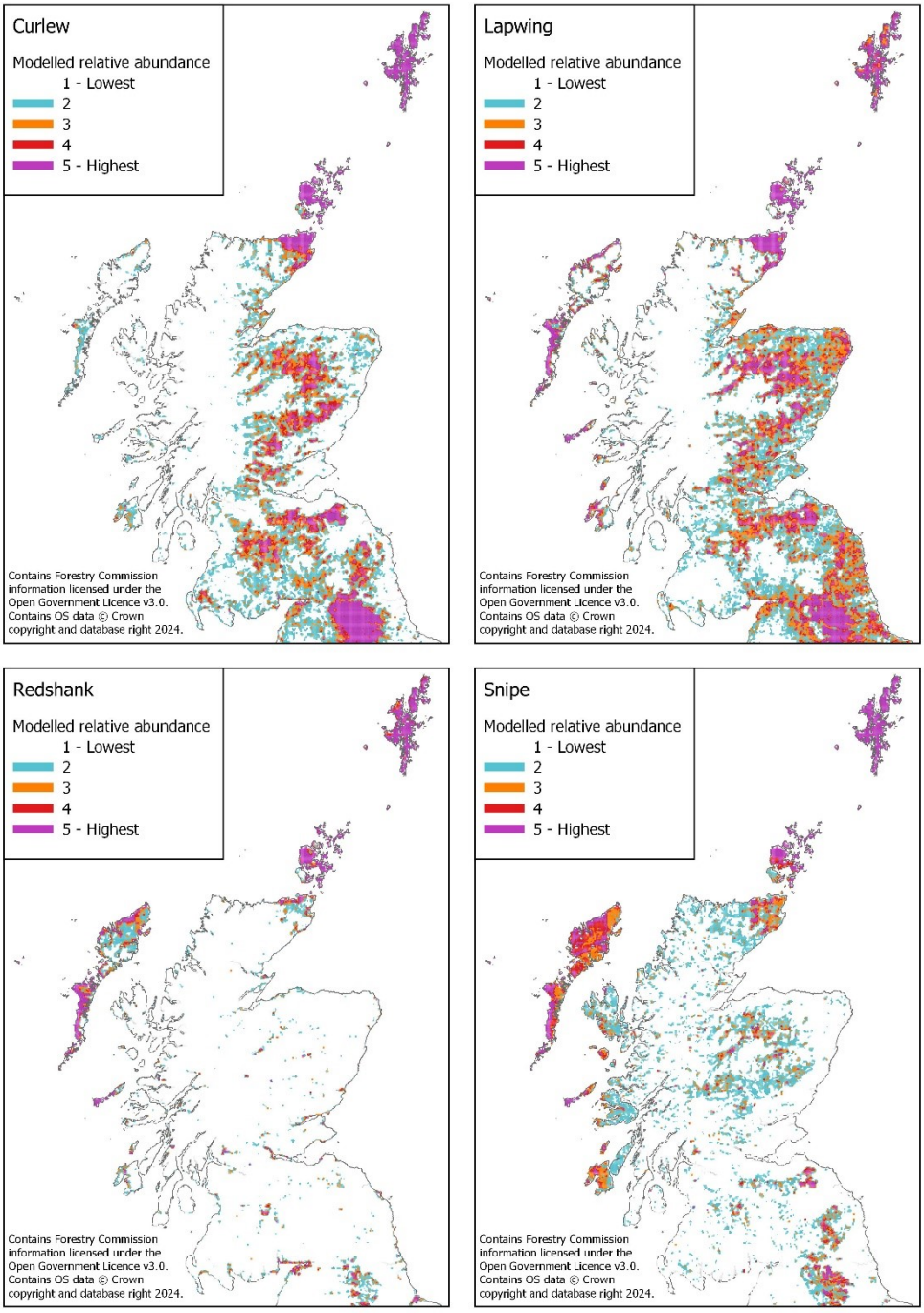
208. Formerly widespread throughout Scotland, these five species of wading bird that are strongly associated with farm management have declined significantly across the country. Wader zonal maps were produced by the British Trust for Ornithology in 2022 to model the predicted relative abundance of breeding waders across England, Scotland and Wales. These maps[96] (see Figure 32) highlight the national importance of Shetland, Orkney, and the Outer Hebrides for these species. A very large proportion of the Scottish Redshank and Snipe populations are restricted to the three island groups.

209. The importance of the islands for these birds can be explained by two key factors: the presence of low intensity farming and lack of mammalian predators. Agricultural activity provides key habitats for these species, so abandonment of farmland is a threat. However, intensive agricultural activities such as high stocking rates, drainage of wetlands, early mowing of grassland have contributed to declines on the mainland and agriculture as practised throughout much of the islands provides the 'sweet spot' between too little and too much disturbance that provides ideal conditions for wading birds.

210. Although native egg predators such as the otter and several species of seabird are present throughout the islands, key egg predators that may impact on mainland wader populations, such as fox and badger, are absent. However, introduced hedgehogs in the Outer Hebrides (since 1974) and stoats in Orkney (since 2010) are a threat to ground-nesting birds, leading to extensive, and sometimes controversial, efforts to eradicate both species. Interestingly, both stoats and hedgehogs were also introduced to Shetland (in the 17th and 19th centuries respectively) but appear to have been less problematic there. This may be due to the machair in the Outer Hebrides supporting higher populations of worms and other hedgehog prey, and the Orkney vole providing an abundant food supply for stoats on Orkney. Introduced American Mink were also previously a threat to ground–nesting birds in the Outer Hebrides but are believed to have been eradicated under a NatureScot project. Monitoring has continued since 2013.

[96] Breeding Wader Sensitivity Map produced by the British Trust for Ornithology (BTO) in partnership with the Forestry Commission and the Cairngorm National Park Authority.

Figure 32 Modelled relative abundance of wading birds associated with farmland habitats.



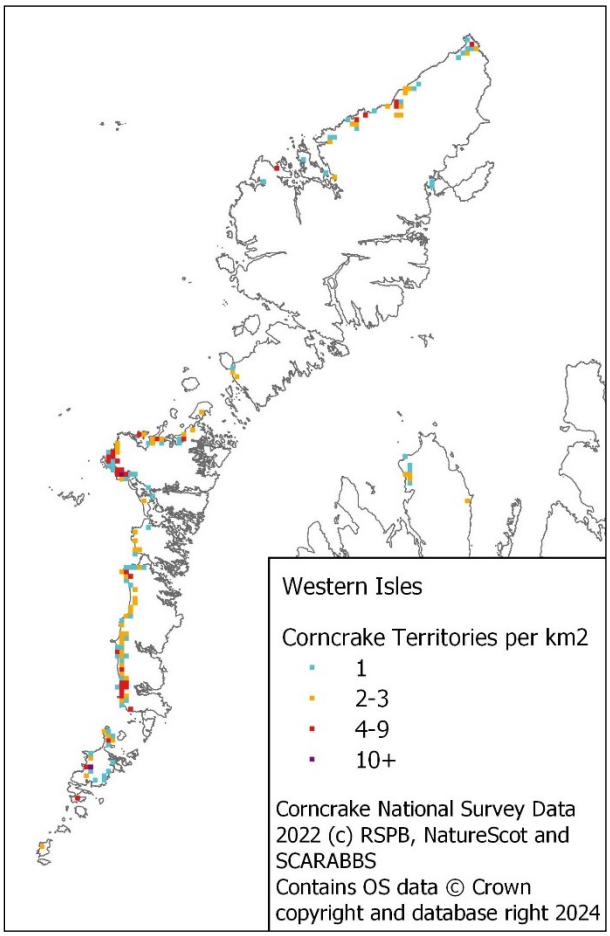
8.4.2 Corncrake

211. The corncrake has been one of the highest profile conservation priorities in the Outer Hebrides. Formerly widespread throughout Britain, it was driven to the brink of extinction by the mechanisation of grass cutting, reaching a low point of 480 singing males in 1993. Subsequent research-led and targeted agri-environment measures allowed the population to increase to 1289 males in 2014, before a further decline to 824 males in 2022. The most recent survey in 2023 showed a

slight recovery to 870 males. Continued payment for corncrake management is essential for this species to continue to survive. The threat is not just from early grass cutting, but from abandonment of grass cutting for hay and silage altogether. This is therefore a key species where support for small-scale, nature-friendly farming is essential to deliver the conditions required. In some areas, the threat of abandonment of hay or silage cutting may be in part driven by the impact of high resident greylag goose numbers on grass growth, meaning these two biodiversity issues are inter-linked.

212. In the latest national survey for which detailed data are available (2022), the Outer Hebrides supported 47.3% of the UK corncrake population, concentrated mainly along the western coast of the Uists and Barra and north-west Lewis (see Figure 33). In 2022, Orkney held 17 male corncrakes (2.1% of the national population) concentrated mainly on Westray and Papa Westray but with individuals also on Sanday, North Ronaldsay, Flotta and Burray. Although corncrakes are sometimes found in Shetland (particularly in the south mainland), their occurrence there is sporadic.

Figure 33 Outer Hebrides corncrake distribution



ISLAND	Number of males	% national population
Lewis	74	9.0%
Harris	6	0.7%
Berneray	3	0.4%
Vallay	7	0.8%
North Uist	106	12.9%
Baleshare	2	0.2%
Benbecula	10	1.2%
South Uist	132	16.0%
Barra	45	5.5%
Vatersay	5	0.6%

8.4.3 Other Species

213. The other priority species for agri-environment schemes that occur in the three island areas are:

- ***Corn Bunting:*** Most of the Scottish population of this very scarce seed-eating bird is concentrated in the arable farmland of eastern Scotland, but there is a tiny remnant population remaining in North Uist in the Outer Hebrides. Conservation efforts in eastern Scotland have been successful in increasing populations in Fife and Angus, but it may be too late to save the last of the west coast population, Low intensity farming and cereal growing in the machair provided the conditions required for this species.
- ***Twite:*** There are estimated to be fewer than 8000 pairs of this small, seed-eating finch breeding in the UK, with more than 30% of the population occurring in the Northern and Outer Hebrides. Research by the RSPB found that the distribution of moorland nesting twite on the Outer Hebrides was concentrated close to adjacent farmland, where the mix of extensively grazed pastures and cultivated fallows provide a variety of habitats rich in weeds for adults provisioning nestlings with seed food throughout the breeding season.
- ***Hen Harrier:*** Orkney supports around 40% (80 pairs) of the Scottish breeding population of this raptor, and the Outer Hebrides support around 15%. As a species that favours open moorland and grassland habitats, the Orkney vole (which is larger than field voles in other parts of the country) provides an important food source.
- ***Great Yellow Bumblebee:*** Flower-rich machair is the main habitat for this rare species. Orkney and the Outer Hebrides support a significant proportion of this insect's UK range.

8.5 Priority habitats

8.5.1 Peatland

214. Peatland is one of the most important habitats in Scotland, providing benefits for biodiversity, water quality, natural flood management and carbon storage. NatureScot produced the Carbon and Peatland map for Scotland in 2016[97], using soil and land cover data from the James Hutton institute. This categorises Scotland into different classes, with nationally important carbon-rich soils comprising Class 1 and Class 2 peatland areas and are shown for the three island groups in Figure 34.

215. Class 1 peatland is defined as nationally important, carbon-rich soils, deep peat and priority peatland habitat, likely to be of high conservation value. Class 2 peat

[97] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/

is sometimes degraded but represents potentially high conservation value and restoration potential.

216. Across Scotland there is 18,604 km^2 of nationally important carbon-rich soils (10,022 km^2 Class 1 peatland and 8,582 km^2 class 2 peatland). The Outer Hebrides contains 11.2% of the nationally important carbon-rich soils (and 13.2% of the Class 1 peatland) in Scotland, despite the islands making up less than 4% of Scotland's total land area. Shetland contains 2.8% of the nationally important carbon-rich soils (virtually all Class 1 peatland) on 1.9% of the country's landmass. Orkney, by contrast, has less peatland, with 0.5% of the nationally important carbon-rich soils on 1.3% of the landmass.

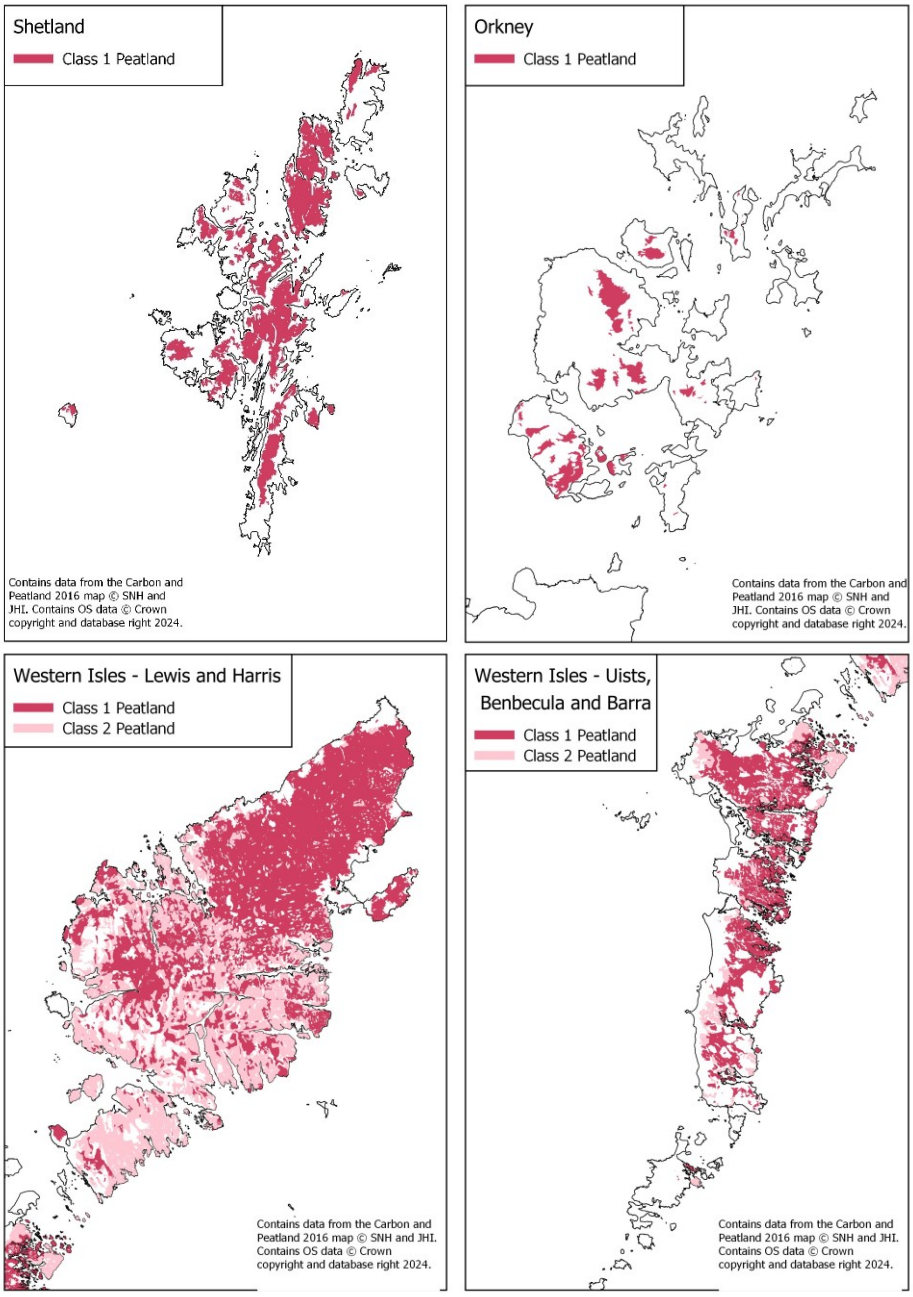
217. Peatland ACTION[98] is the key resource through which land managers in Scotland can access the resources required to fund costly peatland restoration on their land holdings. Peatland ACTION provides funding for suitable restoration projects, including multi-year projects, and up to 100% of capital costs. Peatland ACTION has delivered many restorations on Scottish islands, which have delivered positive outcomes for environment, land managers, and local economies.[99]

218. However, it is clear that the public funding available via Peatland ACTION is insufficient to deliver the pace and scale of restoration required to achieve the Scottish Government goal of 20,000 hectares per year or the Climate Change Committee 'balanced pathway' goal of 45,000 ha per year. Indeed, it is estimated that only around 7,000 hectares were restored in 2022-23.[100] To bridge this gap, the Scottish Government expect land managers to access funding by implementing projects under the Peatland Code[101], which channels private finance into peatland restoration through the sale of carbon credits. Credits are generated because restoring peatland avoids GHG emissions, that would occur in the absence of a restoration project taking place. Projects registered with the Peatland Code[102] can still access public funding (i.e. Peatland ACTION), which can cover up to 85% of the project's lifetime costs (capital costs plus ongoing maintenance) and still retain all resultant carbon credits. Projects being registered and validated under the Peatland Code have been scaling rapidly in Scotland in the years since its launch, and now a total 196 projects cover 26,612 hectares of

[98] https://www.nature.scot/climate-change/nature-based-solutions/peatland-action
[99] NatureScot (2023) Peatland ACTION case study: What's the connection between peat and innovation? Taits Park and Lochend, Shetland. <https://www.nature.scot/doc/peatland-action-case-study-whats-connection-between-peat-and-innovation>
[100] Scottish Government (2023) Climate change monitoring report 2023. https://www.gov.scot/publications/climate-change-monitoring-report-2023/pages/8/
[101] How it works | IUCN UK Peatland Programme (iucn-uk-peatlandprogramme.org)
[102] Markit Environmental Registry - Public Reports

peat in Scotland (as of 19 Feb 2024).[103] The steep rate of uptake must continue to bring peatland restoration in line with Scottish Government targets. However, there are some key barriers in place for potential peatland restoration projects on Scottish islands with regards to engagement with private finance.

Figure 34 Areas of Nationally important carbon-rich soils on Shetland, Orkney, Lewis & Harris, and Uists, Benbecula and Barra[104].



[103] IUCN (2024) Peatland Code Projects Summary. https://www.iucn-uk-peatlandprogramme.org/peatland-code/peatland-code-projects-summary

[104] (Carbon and peatland 2016 map © SNH and JHI Available under a Non-Commercial Government Licence)

219. A significant proportion of the Class 1 & 2 peatland lies on land held under common grazings (Table 38 to Table 40). In the Outer Hebrides, almost 70% of nationally important peat resources are on common grazings while in Shetland it is just over 50%. By contrast only 6% of nationally important peatland on Orkney is on common grazings.

220. This provides a potential opportunity for crofting communities, but it can also complicate peatland restoration because:

- Common grazings are often managed by local common grazing committees appointed by shareholders, who would be the ones to take the decision whether to move forward with a peatland restoration project. While this does not rule out projects going ahead, it is a more complex governance structure, especially considering turnover, than a single landowner scenario.
- The management of common grazings is the result of individual decisions of the many shareholders. As a result, all livestock managers would need to understand and comply with the conditions compatible with restoring peat, which include maximum stocking densities.
- Bringing in private investors to help finance peatland restoration on common grazings, incurring debt which would be serviced by returns from carbon credits, presents major hurdles to a Common Grazings Committee. Making informed decisions throughout the implementation of a project aimed at engaging carbon markets requires significant topic knowledge and time commitment. Common grazing shareholders will require significant support from trustworthy mediators, as well as de-risked or guaranteed schemes, if including private finance is to be an option for enabling peatland restoration.[105]
- The legal position on the rights to peatland restoration remain opaque, whether it is the right of crofters or the right of landlords. This is important as stakeholder engagement suggests that this is a major stumbling block to common grazing engaging in peatland restoration. This may require amendments to the Crofters (Scotland) Act 1993 to clarify rights to engage in peatland restoration and ownership of carbon.

[105] Reed et al (In press). Overcoming barriers to supply-side actors' engagement in Scotland's peatland natural capital markets: Report to Scottish Government.

Table 38 Extent of nationally important carbon-rich soils in Orkney[106]

Parish	Class 1 Peatland		
	Total km²	Common Grazings km²	% on Common Grazings
Birsay	11.24	0.00	0%
Harray	3.69	0.00	0%
Evie	6.09	0.00	0%
Rendall	0.57	0.00	0%
Firth	4.67	0.02	0%
Holm	2.25	0.00	0%
Kirkwall and St Ola	0.58	0.00	0%
Orphir	9.96	1.78	18%
St Andrews	0.85	0.00	0%
Deerness	0.03	0.00	0%
Stenness	4.63	0.00	0%
Orkney Mainland	**44.55**	**1.80**	**4%**
Eday	2.12	0.16	8%
Hoy & Walls	33.60	1.72	5%
Flotta	2.85	1.93	68%
Rousay	7.21	0.13	2%
South Ronaldsay	0.36	0.00	0%
ORKNEY	**90.69**	**5.74**	**6%**

Table 39 Extent of nationally important carbon-rich soils in the Outer Hebrides[107]

Parish	Class 1 Peatland			Class 2 Peatland			Total Class 1 & 2 Peatlands		
	Total km2	Common Grazings km2	% on Common Grazings	Total km2	Common Grazings km2	% on Common Grazings	Total km2	Common Grazings km2	% on Common Grazings
Barvas	326.25	314.47	**96%**	13.98	11.19	**80%**	340.23	325.67	**96%**
Lochs	172.24	118.48	**69%**	229.51	119.88	**52%**	401.75	238.36	**59%**
Stornoway	198.71	190.75	**96%**	7.02	5.73	**82%**	205.73	196.47	**95%**
Uig	273.66	181.75	**66%**	186.41	124.58	**67%**	460.07	306.34	**67%**
Lewis	970.86	805.45	**83%**	436.92	261.38	**60%**	1407.78	1066.83	**76%**
Harris	63.68	35.58	**56%**	257.12	157.87	**61%**	320.80	193.45	**60%**
North Uist	152.31	75.37	**49%**	41.04	23.07	**56%**	193.35	98.45	**51%**
South Uist	137.05	76.35	**56%**	30.14	10.70	**35%**	167.19	87.05	**52%**
Barra	0.79	0.38	**48%**	1.64	1.61	**98%**	2.42	1.99	**82%**
Outer Hebrides	**1,324.69**	**993.14**	**75%**	**766.85**	**454.63**	**59%**	**2,091.54**	**1447.77**	**69%**

[106] Carbon and peatland 2016 map © SNH and JHI Available under a Non-Commercial Government Licence

[107] Ibid

Table 40 Extent of nationally important carbon-rich soils in Shetland[108]

Parish	Class1 Peatland		
	Total km²	Common Grazings km²	% on Common Grazings
Northmavine	48.6	32.3	66%
Delting	70.9	17.8	25%
Lunnasting	22.8	12.3	54%
Nesting	30.8	16.2	53%
Aithsting	28.6	16.8	59%
Weisdale	22.7	4.3	19%
Sandness	8.5	6.8	80%
Walls	9.5	6.2	65%
Sandsting	29.3	10.0	34%
Tingwall	18.3	3.8	21%
Whiteness	2.6	0.0	0%
Lerwick	9.8	4.1	42%
Cunningsburgh	19.7	15.2	77%
Sandwick	15.5	10.5	68%
Dunrossness	2.7	2.1	80%
Shetland Mainland	**340.2**	**158.3**	**47%**
Unst	18.0	13.7	76%
Yell	151.0	89.3	59%
Fetlar	1.7	1.7	100%
Bressay	9.1	5.8	64%
Whalsay	1.2	1.0	83%
Foula	3.7	2.2	60%
Total Shetland	**524.8**	**271.9**	**52%**

8.5.1.1 Potential for Peatland Restoration

An indication of the potential for peatland restoration can be determined from estimates of bare peat in each area, as recorded by remote sensing (Table 41 to Table 43). Bare peat is usually a result of erosion, often initially caused by over-stocking with sheep and/or deer and exacerbated by rainfall (refer to high historic sheep numbers Section 6.1.5 Sheep). The data indicates that Shetland is relatively more badly affected by peatland erosion than the Outer Hebrides.

221. However, it should be noted that some eroded peatland will remain vegetated, and the extent of bare peat should therefore be treated as an index of peatland erosion rather than the total area in need of restoration, which will have a much larger footprint. In addition, the data does not include the extent of peatland affected by artificial drainage, which also has potential for restoration.

[108] Carbon and peatland 2016 map © SNH and JHI Available under a Non-Commercial Government Licence

Table 41 Orkney: area (ha) of bare peat estimated by remote sensing[109]

Parish	Common grazings	Other land	Total
Birsay	0	0.01	**0.01**
Evie	0	0.01	**0.01**
Firth	0	0.15	**0.15**
Orphir	0.04	0.01	**0.05**
Orkney Mainland	**0.04**	**0.18**	**0.22**
South Ronaldsay	0	0.06	**0.06**
Stronsay	0	0.02	**0.02**
Orkney Total	**0.04**	**0.26**	**0.3**

Table 42 Shetland: area (ha) of bare peat estimated by remote sensing[110]

Parish	Common grazings	Other land	Total
Northmavine	0.88	0.26	**1.14**
Delting	25.63	8.71	**34.34**
Lunnasting	23.53	1.84	**25.37**
Nesting	94.87	25.74	**120.61**
Aithsting	3.06	1.35	**4.41**
Weisdale	3.53	4.2	**7.73**
Sandness	24.21	0.5	**24.71**
Walls	17.04	4.23	**21.27**
Sandsting	2.42	0.71	**3.13**
Tingwall	0.6	1.98	**2.58**
Whiteness	0	0.44	**0.44**
Lerwick	2.47	2.6	**5.07**
Cunningsburgh	28.3	8.91	**37.21**
Sandwick	1.9	1.17	**3.07**
Dunrossness	5	0.15	**5.15**
Shetland Mainland	**233.44**	**62.79**	**296.23**
Unst	0.75	0.04	**0.79**
Yell	12.21	1.4	**13.61**
Bressay	10.44	0.03	**10.47**
Shetland Total	**256.84**	**64.26**	**321.1**

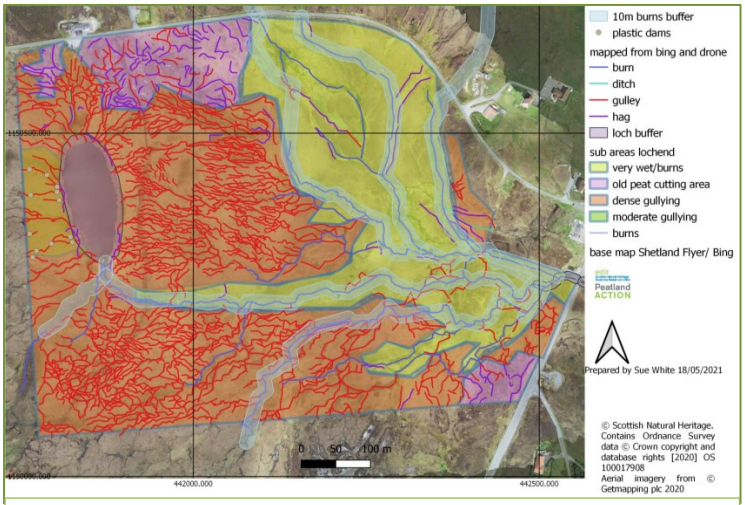
[109] Data based on 2018 satellite imagery and produced by NatureScot Geographic Information Group Earth Observation team for the Peatland Action project and available under the Open Government Licence

[110] Ibid

Table 43 Outer Hebrides: area (ha) of bare peat estimated by remote sensing[111]

Parish	Common grazings	Other land	Total
Barvas	40.85	0.08	**40.93**
Lochs	0.58	0.18	**0.76**
Stornoway	3.67	0.55	**4.22**
Uig	5.65	0.49	**6.14**
Lewis Total	**50.75**	**1.3**	**52.05**
Harris	0.67	0.22	**0.89**
North Uist	0.43	0.66	**1.09**
South Uist	0.29	0.22	**0.51**
Outer Hebrides	**52.14**	**2.4**	**54.54**

222. Completed peatland restoration projects under the publicly funded Peatland ACTION programme extend to 101ha in Shetland (including Girlsta site[112]), almost all on common grazings, and 249ha in the Outer Hebrides (40% on common grazings). Additional privately funded peatland restoration is ongoing as part of the Viking windfarm in Shetland and aims to restore over 260ha of peatland there.



Example of Peatland Action restoration project Girlsta, Shetland – 39 ha, emitting 703.2 T CO2e/y

Box: 2 Shetland Peatland Partnership

Shetland Peatland Partnership's aim is to develop a Shetland peatland strategy and foster more joined up, collaborative working between stakeholders. The current partnership members are the RSPB, Shetland Amenity Trust, Shetland Islands Council, SEPA, SAC Consulting, NFUS, Crofting Commission, NatureScot, HIE, the National Trust, and Scottish Water. Peatland action funding is delivered by the Shetland Amenity Trust.[113] The model has been helpful to create a forum to explore the challenges and opportunities of peatland restoration in Shetland. Work has been done to draft an initial strategy, but more work is needed to create a document which is co-built with communities and can be shared with a wider public.

[111] Data based on 2018 satellite imagery and produced by NatureScot Geographic Information Group Earth Observation team for the Peatland Action project and available under the Open Government Licence

[112] PowerPoint Presentation (shetlandamenity.org)

[113] Peat restoration strategy to be released by the end of the year | The Shetland Times Ltd

There is broad consensus that peatland restoration and potentially carbon markets represent an area of opportunity for Shetland (see Table 72 for a SWOT of Natural Capital Markets). There is broad consensus that Shetland would be better placed to deliver more and faster, if administration of funds to achieve peatland restoration targets were devolved to the local authority or some similar local body as is the case for the Cairngorms National Park Authority. The current iteration of the Peatland Partnership is not well placed to act as a fund managing body as the current partners are almost exclusively representatives of stakeholder organisation who could not sign-up as members of a fund managing partnership. That said, there is clear potential for it to be opened up to other types of community organisations and individuals so that it can be developed in that direction.

In the meanwhile, there are several barriers that are slowing or preventing restoration work at scale.

- Lack of skilled labour to carry out the work. As in other parts of the country, there is a shortage of labour across all sectors. Shetland is currently the focus of multiple large-scale developments (renewables, redevelopment of Sullom Voe, decommissioning, etc), all of which are competing for the limited number of skilled workers available locally. The shortage is most critically evident for skilled excavator operators. Local contractors who specialise in restoration are struggling to recruit and retain new operators. This is partly due to the small pool of available workers and limited accommodation availability for workers from elsewhere but also due to the very nature of restoration work. Most operators will be used to development contracts where both timescale and objectives are well defined. Contractors report that many new recruits struggle with the 'cathedral builder' mindset which is needed for restoration works. In addition, if restoration works are to be scaled up, we lack enough people on the ground to carry out site assessments, project design, monitoring and so on as well.
- There is a widespread perception that carbon markets will enable land managers/owners to capitalise on the carbon credits produced by peatland restoration but on closer examination there are various difficulties with the existing Peatland Code model. Firstly, if the capital works are 100% funded by Peatland Action, you cannot apply for Peatland Code accreditation. If you pay for part of the works or future monitoring costs to be able to access Peatland Code accreditation those costs as well as the costs of Peatland Code accreditation and future monitoring have to be covered. Costs are high and potential returns are currently uncertain. The length of contracts proposed involve lifetime commitments and beyond for potential risks and liabilities which are, as yet, unclear and which will almost certainly be aggravated by climate change. There is also a fear that once carbon credits have been sold something of value will have been lost forever. A contributive and regulated investment model, perhaps based on leasing carbon credits, which fosters long-term ethical investment in communities would be much more palatable.
- Crofting regulations have not been designed to promote equitable, workable solutions for peatland restoration works. Land managers on common grazings

and/or large areas of tenanted hill suitable for restoration, hold decisional power over whether work can take place on the land or not, but landowners essentially own the right to trade any carbon credits resulting from the work. This is clearly a recipe for discord in fragile rural communities. There are already live examples of significant community tension where restoration works have gone ahead with the full support of local crofters, only for them to find themselves potentially stripped of the right to access carbon markets by their landowner.

Further, there is not currently a consistent approach to ensuring that agricultural support mechanisms are fully aligned with environmental policy aims. In the same case, once the restoration work had been carried out, the crofters also found that they were also potentially at risk of breaching current requirements to access agricultural support under BPS and LFASS as the agencies who had delivered the restoration work called for them to completely destock the restoration site and fence it off from the rest of the hill. Their local RPID team were quick to point out that they would no longer be able to claim support on an area which was not being grazed.

Common grazings face an ulterior challenge where there are high levels of inactivity. They will still need inactive shareholders to agree on work going ahead.

There is a lack of good, reliable, and affordable data to carry out site assessment and monitoring. Methods for peat condition assessment, risk assessment seem to differ and there is no consensus on what data we should be collecting. There does not even seem to be consensus on something as simple as whether we should routinely be monitoring water table on restoration sites, though one of the oft cited benefits of restoration is water quality and hydrological management. For individual sites it is time consuming and costly to gather quality data. Getting that data is much more affordable at regional or national scale by using Lidar and/or satellite data collection techniques, which could then be combined with ground truthing techniques and water table data. There is also a data gap in being able to provide locally relatable proof of the effectiveness of peatland restoration as a tool for reducing emissions, this makes it very difficult to convince people of the relevance of peatland restoration in a world where we often seem to be focusing on the wrong things if society is really to deal with climate change effectively.

8.5.2 Machair

223. Machair is a distinctive type of coastal grassland found in the north and west of Scotland, and in western Ireland. It is associated with calcareous sand, blown inland by very strong prevailing winds from beaches and mobile dunes. The Gaelic word machair is the only name for this major habitat type in Britain. In the strict sense, machair refers to short-turf grasslands, often rich in wild flowers, growing on relatively flat sand plains. However, wider machair systems include a variety of associated sand dune habitats as well as rotationally cultivated areas. It is estimated that the Outer Hebrides, Orkney and Shetland contain around half of the world's machair habitat.

224. Estimates of the extent of machair systems can be calculated using The Sand Dune Vegetation Survey of Scotland 2012[114] (part of NatureScot's Habitat Map of Scotland), with the extent of machair grassland estimated from those areas in the survey that are dominated by the key dune grassland National Vegetation Classification (NVC) communities SD8 and SD17.[115]

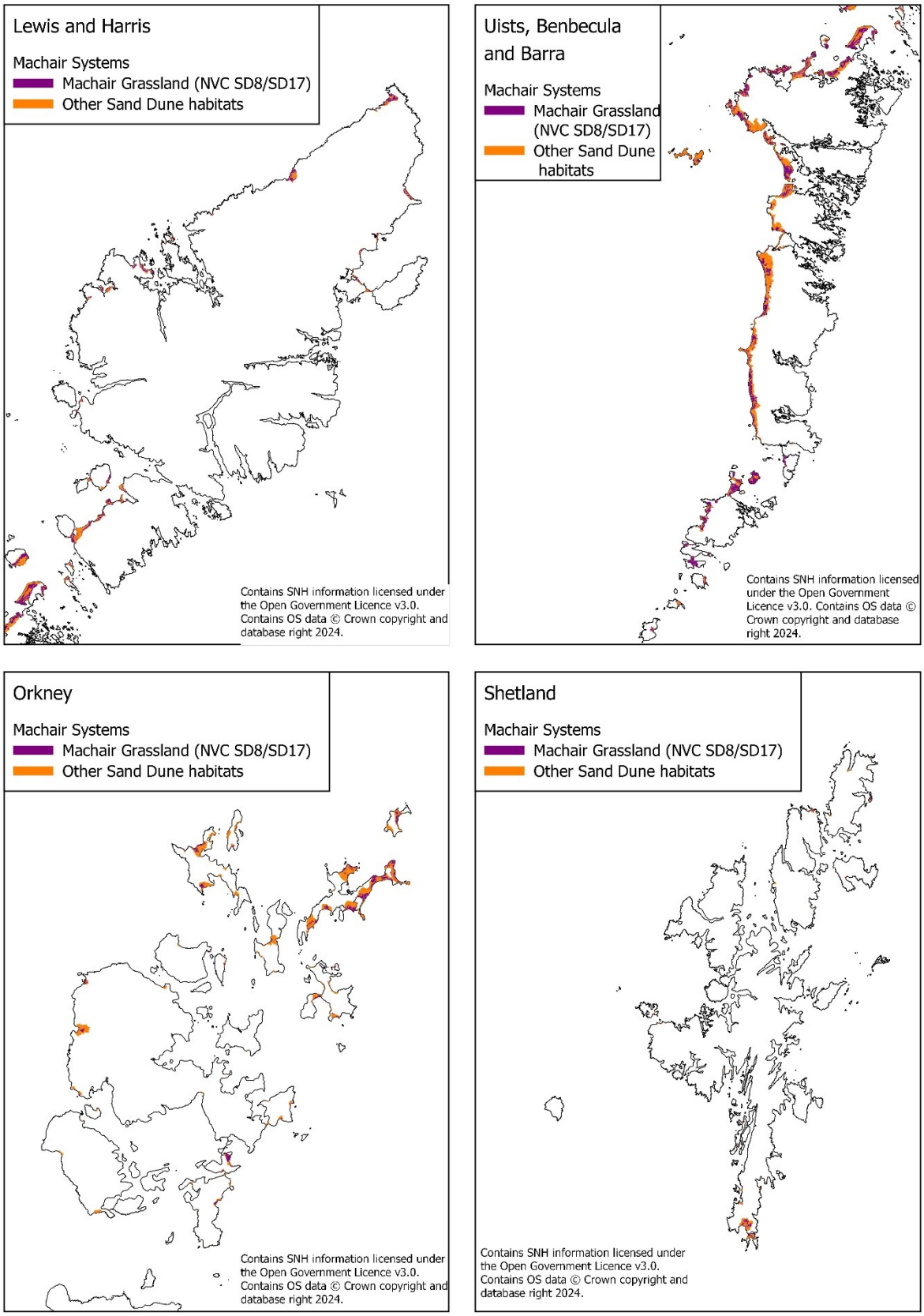
225. Table 44 and Figure 35 show that the Outer Hebrides support the largest area of machair habitats, particularly along the west coast, although there are also significant areas in Orkney, particularly on Sanday and Westray. There is less machair in Shetland, although small areas are present, particularly around the south end of the mainland.

Table 44 Extent of machair systems and machair grassland

Island	Area of Machair System (ha)	Area of Machair Grassland (ha)
Lewis	1,038	495
Harris	984	377
North Uist	4,639	1,972
Benbecula	828	196
South Uist	2,794	889
Barra	1,267	848
Outer Hebrides	**11,550**	**4,775**
Orkney	**4,670**	**1,090**
Shetland	**1,040**	**309**

[114] https://marine.gov.scot/maps/1435#
[115] https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/

Figure 35 Machair and other sand dune locations



8.6 Nature-farming conflicts

8.6.1 Goose Management

226. Conflicts between geese and agriculture occur in many areas throughout Scotland but the Outer Hebrides and Orkney are two areas where this issue impacts more severely than in most other parts of the country. Grazing by overwintering geese in late winter and early spring removes early grass growth that is important for livestock production. It is estimated that the grazing of a flock of 1,000 geese is equivalent to 200 sheep. Where goose numbers are particularly high, grazing and trampling by geese can lead to destruction of grass swards and prevent the establishment of grass reseeds. These problems are mostly associated with Pink-footed, Greylag and Barnacle geese, although localised impacts from Greenland White-fronted geese occur in some areas.

227. The increasing resident population of Greylag geese in the Outer Hebrides (c.8,000 birds) and Orkney (c.24,000 birds) means that conflict with agriculture has now become a year-round problem including damage to silage and cereal crops during spring and summer. Heavy goose grazing can also impact on other wildlife of high conservation value by removing cover for ground-nesting birds such as Corncrake and waders and it includes risks to the long term future of growing landrace crops such as Machair corn / black oats that SASA[116] identify as having "*cultural value*" that "*make an important contribution to biodiversity conservation of the machair*". Moreover, faecal contamination of pastures from geese leads to higher incidence of cryptosporidiosis infection and risks to human health through public water supplies. Cryptosporidiosis is the main cause of diarrhoea in young calves. Recent research concluded that "*high levels of C. parvum evident in calves, geese and water samples tested represents a significant risk to water quality and public health*" in Orkney.[117]

228. Most goose populations in Scotland were reduced to very low levels in the mid-20th Century and the subsequent increases due to legal protection, reduced hunting pressure and the increased availability of productive grassland, represent a significant conservation success story. However, it is important to remember that Scotland supports a very high proportion of the global population or distinct migratory sub-populations of several species, and there is an international obligation to manage them sustainably. The Greenland White-fronted geese

[116] Scottish Landraces | SASA (Science & Advice for Scottish Agriculture)

[117] Wells B, Paton C, Bacchetti R, Shaw H, Stewart W, Plowman J, Katzer F, Innes EA. Cryptosporidium Prevalence in Calves and Geese Co-Grazing on Four Livestock Farms Surrounding Two Reservoirs Supplying Public Water to Mainland Orkney, Scotland. Microorganisms. 2019 Oct 30;7(11):513. doi: 10.3390/microorganisms7110513

remain a globally small and vulnerable population, around half of which winters in Scotland.

229. There is evidence that the population increases of most wintering goose populations have peaked and even declined slightly in recent years. The appearance of High Pathogenicity Avian Influenza (HPAI) is also a new and significant threat. Measures to manage goose impacts must therefore be adaptive and change in response to population changes to ensure that the conservation status of species is not harmed.

230. To balance the needs of agriculture and conservation, a National Goose Policy Framework[118] has been in place since 2000, overseen by a National Goose Forum[119] involving key stakeholders representing conservation and farming interests. The core objectives of the policy are to:

- Meet the UK's nature conservation obligations for geese, within the context of wider biodiversity objectives.
- Minimise economic losses experienced by farmers and crofters caused by geese.
- Maximise the value for money of public expenditure on geese management.

231. Local Goose Management Groups[120] help to co-ordinate and implement action under the National Goose Policy framework in areas of greatest conflict, often through government funded Goose Management Schemes. Schemes focusing on conflicts with over-wintering geese have operated in the following key locations: (i) Uist, Coll and Tiree (Barnacle Goose); (ii) South Walls, Orkney (Barnacle Goose).

232. These goose management schemes have mainly focused on providing payments for farmers and crofters to provide undisturbed refuge fields for geese to feed in, fertiliser to make these more attractive to geese and non-lethal scaring to discourage the use of non-refuge fields.

233. In contrast, culling to reduce populations to a sustainable level has also been the focus of pilot adaptive management schemes aimed at resident Greylag geese in (i) Orkney, (ii) North Uist & South Uist and (iii) Lewis & Harris.

234. In these areas population targets were set and annual cull targets were set based on careful monitoring of population levels and annual breeding productivity. Culling has been carried out by volunteers and paid marksmen.

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[118] https://www.gov.scot/publications/scottish-government-goose-management-policy-review-2022/pages/2/

[119] https://www.gov.scot/groups/national-goose-forum/

[120] https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-geese

235. While many of these schemes have been successful in reducing conflict and goose populations, there are many challenges to overcome. The level of culling required to control highly productive breeding populations of Greylags can be very high and beyond the available resources of volunteers and farmers, while surviving birds can become more wary and difficult to control. Culling by volunteer and paid marksmen in the autumn and winter can also sometimes simply displace existing sport shooting, reducing the benefit. Monitoring of populations and co-ordination of action within local areas also requires resources. Public funding has an important role to play in supporting goose management schemes due to these challenges.

8.6.2 Sea Eagles

236. Since its re-introduction in 1975 on Rum, white-tailed eagles (WTE), or sea eagles as they are often known, have re-colonised much of the coastline of the Outer Hebrides. The first pair established on Harris in 1983 but the population grew slowly at first and it was not until the mid-1990s when pairs established on Lewis and South Uist. Since 2000, new pairs have established in most years and by 2021 the Outer Hebrides population had reached 42 breeding pairs.

237. Sea-eagles first bred successfully in Orkney (on the island of Hoy) in 2015 and by 2021 there were 2 breeding pairs across the islands. Small numbers of individual birds – primarily non-breeding immatures but occasionally adults - have been seen regularly visiting the Shetland Isles over the last decade, and it is likely to only be a matter of time before a breeding pair settles on the islands.

238. The number and home ranges of breeding raptors like WTE are studied annually by the Scottish Raptor Monitoring Scheme (SRMS). Table 45 is drawn from their 2021 & 2022 Report[121] and shows the distribution of breeding WTE across Scotland in 2021 (where "–" indicates that SRMS does not hold any previous records).

Table 45 The number of home ranges of sea eagles checked in 2021 that were submitted to the Scottish Raptor Monitoring Scheme (SRMS)

Argyll	Central Scotland	Dumfries & Galloway	Highland	**Lewis & Harris**	**Uist**	Lothian & Borders	North-East Scotland	**Orkney**	**Shetland**	South Strathclyde	Tayside & Fife	**Total**
41	2	-	67	**28**	**14**	-	2	**2**	**-**	-	3	**159**

239. The reintroduction of WTE has been a conservation success story. The reintroduction, however, has not come without challenges and it is widely

[121] Annual Report | Scottish Raptor Monitoring Scheme

acknowledged that sea eagle predation of livestock is a serious issue for farmers and crofters in some areas. Sea eagle predation of livestock is a complex wildlife management issue and the *Sea Eagle Management Scheme* (SEMS) started in 2015 and run by NatureScot, attempts to better understand this issue and mitigate impacts where they occur.

240. The SEMS provides support for livestock farmers and crofters who suffer impacts across the sea eagle breeding range. The scheme supports management to help sheep managers manage their flocks in the presence of WTE. It includes options for flock health management measures, such as fluke and tick treatments, which aim to ensure that flocks are in good condition and to try to reduce incidences of weaker lambs which might be more prone to predation. It also includes options for support to adjust or change management, including the development of lambing parks and improving ground through liming to better support grazing in certain places. The scheme can also provide the loan of scaring equipment such as gas guns and scary men scarecrows where appropriate.

241. The SEMS scheme now operates on a rolling 1-year basis due to the current budget management process within NatureScot. Since 2022, there have been a number of changes to the SEMS:

- Setting a minimum payment of £500 per annum to address the issue of small holdings such as crofts, not qualifying for worthwhile payments due to the hectarage limits in the previous scheme.
- Maintaining the basic management options of the previous scheme, with the same hectarage limits on payments and capped at £1500 per annum.
- Introducing enhanced options, such as enhanced shepherding, which supports increased shepherding activity/human scaring but introduces an element of "citizen science" to build up knowledge of WTE interactions with sheep flocks. Payments for enhanced options can be up to £5,000 per annum.
- Introducing enhanced support for capital works which can mitigate the impact of WTE. This includes lambing sheds, fencing and liming and can be supported with a 60% contribution to a maximum grant of £10,000. The contribution is in line with similar schemes such as the Crofting Counties Agricultural Grant Scheme (CCAGS).

242. An important part of the SEMS remains the use of independent call-off contractors, experienced in eagle behaviour and sheep management, to make contact with individuals to gain a better understanding of how individual farms and crofts manage their sheep, understand sea eagle activity in the locality and advise on the most appropriate scheme options to farmers and crofters. In 2022 there were seven members of the call off contractor team, each covering a broad geographical area across the core areas where the SEMS is working - principally

Argyll and Lochaber, Skye & Lochalsh, the Outer Hebrides, Sutherland and Wester Ross.

243. In 2022, 158 holdings covering an area greater than 143,000 hectares, and with responsibility for over 66,500 breeding ewes and gimmers, received Management Agreement (MA) support from the SEMS[122]. In addition to MA support, NatureScot provided support to farmers and crofters through its Call-off Contractor and Observer team in 2022, with a range of fieldwork carried out. Total spend on the SEMS and associated work in 2022 was £291,035. [123]

244. The continuation of such type and levels of support into the future will be essential for those farmers and crofters already impacted by WTE in the Outer Hebrides, but also should impacts start to occur as WTE numbers increase on Orkney and Shetland.

8.6.3 Deer densities and management

245. Red Deer were introduced by people to the Outer Hebrides and Orkney in neolithic times, although they subsequently became extinct in Orkney. The current population in the Outer Hebrides is concentrated in North Harris, North Uist and South Uist and are an important part of the natural heritage, particularly as they are thought to be some of the most genetically pure Red Deer in Scotland. Unlike mainland populations of Red Deer there has been no hybridisation with the introduced non-native Sika Deer.

246. However, in the absence of natural predators, high deer densities can have negative impacts on other aspects of natural heritage, particularly sensitive upland habitats such as peatland, which can be damaged by trampling, and woodland regeneration. There are also socio-economic impacts such as damage to livestock grazing land and gardens, road collisions and the risk of Lyme disease which can spread to humans from ticks carried by deer. This issue has been a particular focus of concern in South Uist[124], where there were proposals, subsequently voted down[125], to eradicate deer from the community-owned estate.

247. The independent Deer Working Group appointed by Scottish Ministers and reporting in 2019 recommended 10 red deer per km^2 as an upper benchmark for acceptable densities of red deer over large areas of open range in the Highlands. Figure 36 shows that in the Outer Hebrides official deer count data by NatureScot where many pockets of deer densities over 10 per km2 are observed.

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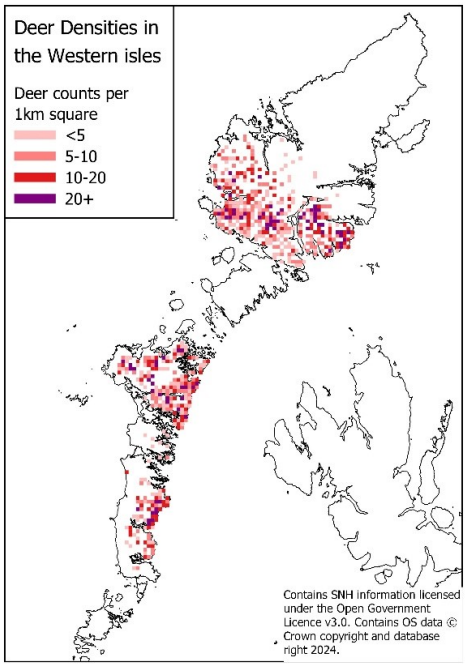
[122] Sea Eagle Management Scheme - Annual Report 2022 | NatureScot
[123] See Sea Eagle Management Scheme | NatureScot for more details
[124] DEER CULL PLAN: Uist community to vote on proposal to eradicate species from the island – West Highland Free Press – www.whfp.com
[125] Islanders in South Uist vote against mass deer cull - BBC News

Figure 36 1km Grid data showing the density of deer [126]



8.7 Biodiversity conclusions

248. The traditional farming and crofting regimes present across much of these island groupings maintain important habitat for farmland species. The continuation of this type of agricultural activity should be recognised and supported, ensuring there is an avoidance of both significant intensification (which is associated with lower nature value) and agricultural exit and abandonment of agricultural activity. The later can result in vegetation communities unsuitable for the species currently prioritised through agri-environment schemes.

249. There are opportunities for peatland restoration and improved peatland management in across the island groupings, but there needs to be legislative clarity over peatland restoration and peatland carbon rights on common grazings, and future policy design must include measures to support managed grazing regimes post restoration across all Tiers (as discussed by Thomson et al 2023).

250. Future tiered support should take consideration of the existing positive biodiversity and environmental outcomes being achieved in these island groupings – as well as where management needs improving. Positive actions should inform the types of conditional measures (Tier 2) and targeted scheme design (Tier 3) of future agricultural support – with training needs and support identified to facilitate a just transition through Tier 4.

[126] Recorded on counting operations undertaken by or with assistance from Scottish Natural Heritage (or the Deer Commission for Scotland as was).