
**BEN MOR COIGACH
HABITAT MANAGEMENT APPRAISAL**

Client: Coigach and Assynt Living Landscape Partnership

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Summary

In October 2021, the project team was commissioned to undertake an appraisal of moorland habitats on the Scottish Wildlife Trust Ben Mor Coigach Reserve. The resulting management suggestions are intended to inform further consultations and discussions with key stakeholders, including The Scottish Wildlife Trust and the crofters that manage the site in addition to NGOs and governmental bodies.

Site visits, previous surveys and information provided by crofters and the Scottish Wildlife Trust were used to inform the recommendations set out in this report.

The report identifies key priorities including support for crofting activities while managing for biodiversity and climate change impacts. The report also highlights potential funding opportunities.

Given the relatively low-level of agricultural activity on the site, the suggestions made in this report and supplementary materials focus on developing larger scale-projects such as peatland restoration and woodland creation. Both can contribute significantly to mitigating climate change impacts while increasing the mosaic of habitats on the site and boosting the diversity and abundance of species it can support. If combined with a reduction in deer numbers, some degree of natural ecological restoration could occur with increased levels of native tree regeneration and better protection for some of the extremely fragile, high priority habitats on the site.

Funding is available for most of the suggested activities from, for example, Peatland Action, woodland grant schemes, agri-environment schemes and the Peatland and Woodland Codes.

The land covered by this report extends to 5,949 hectares and is made up of a number of crofting common grazings. This work forms part of the Coigach and Assynt Living Landscape Scheme project which ran from 2016 to 2021.

Section 1. Site Information

Site Description (Summary)

The Scottish Wildlife Trust's Ben Mor Coigach reserve is 5,949 hectares in size and located north-west of Ullapool on the north-west coast of Scotland (Map 1). Most of the area owned by the Trust is under either common grazings managed by the Achiltibuie Common Grazings Committee or in-bye crofting tenure. Deer stalking and fishing are the only significant rights pertaining to the Trust. The area has received substantial input from the Coigach and Assynt Landscape Partnership scheme in recent years.

Ben Mor Coigach -Site Location Map



Ben Mor Coigach Reserve boundary - © Scottish Wildlife Trust [year]. Contains OS Data. © Crown copyright and database right [2021].

Map 1: Ben Mor Coigach - site location

The site contains primarily unenclosed hill ground with mountainous peaks, the highest of which is Ben Mor Coigach at 743 m above sea level. Rocky outcrops and cliffs from the underlying Torridonian Sandstone bedrock are evident on the higher ground but peat habitats cover many of the lower and shallower slopes (Averis, 2005).

Priority habitats and species on the site include blanket bog; oceanic heath; northern, oceanic liverwort assemblages; prostrate juniper; dwarf birch; bryophyte rich oceanic woodland; and a designated, flower-rich fen at Rubha Dunan Site of Special Scientific

Interest. An NVC survey in 2005 recorded over 117 vegetation and habitat types, 249 vascular plants and 196 bryophytes (Averis, 2005).

Other species of note on the site include water voles, freshwater pearl mussel, black-throated divers, raptors and, it is expected, breeding upland waders.

In addition to supporting important species and habitats, the site has the potential to deliver mitigation for climate change impacts at a substantial scale.

A 1686 ha woodland creation project was undertaken on the site in the late nineties in conjunction with the Strathcanaird Grazing Committee. Another woodland creation project has been scoped for the remainder of the north-eastern border with the aim of connecting up pockets of remnant native woodland. In addition, scoping work is underway for peatland restoration projects across the site.

Currently, the site is grazed by sheep and deer. While deer numbers are not considered to be excessively high at just over 3.7 per km² (based on a 2016 helicopter counts by NatureScot (then SNH), concentrations in some areas are causing damage to some priority habitats, inhibiting tree regeneration and causing conflicts with crofters.

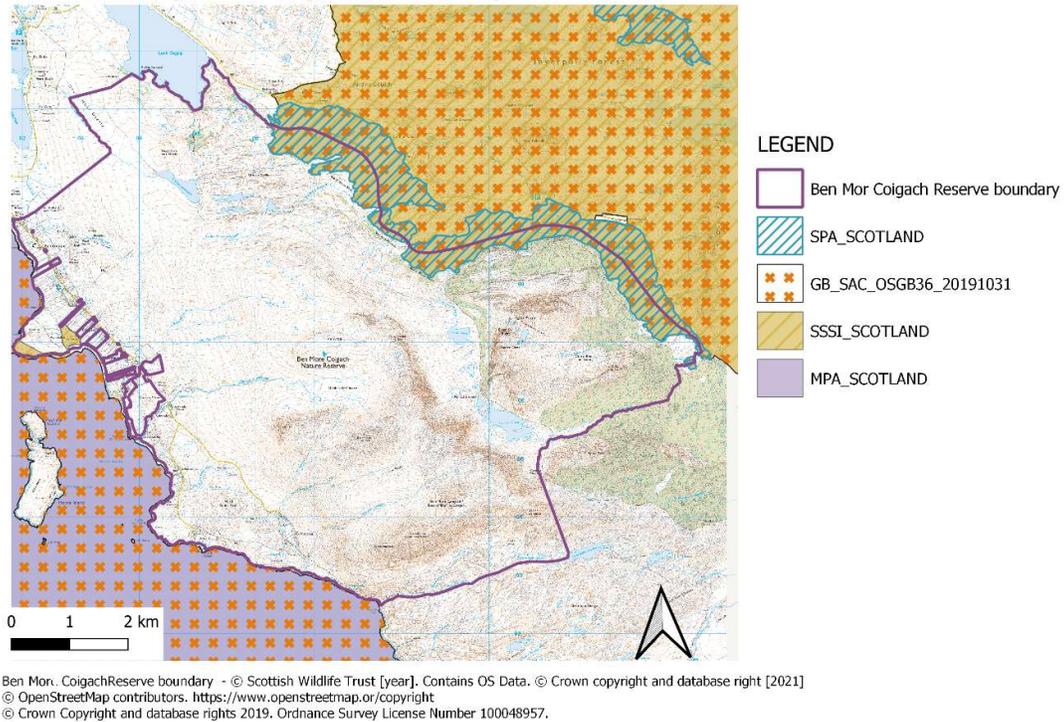
Ownership

The land is owned by the Scottish Wildlife Trust. However, most of the area is either crofting common grazings or under in-bye crofting tenure. It includes grazings for the crofters from Achiltibuie, Acha-Braighe, Ach-An-Inbher, Achduart, Achlochan and Achnacarnan. These are sometimes known collectively as the '*Achiltibuie etc*' common grazings. Deer stalking and fishing are the only significant rights pertaining to the Trust.

Designations

Most of the site is undesignated. However, as shown in Map 2 there are protected areas along the north-eastern and south-western boundaries.

Ben Mor Coigach - Designated Sites Map



Map 2: Ben Mor Coigach designated sites.

Narrow bands of the Inverpolly SAC and the Inverpolly, Loch Urigill and nearby lochs Site of Special Scientific Interest (SSSI) fall within the north-eastern boundary of the Scottish Wildlife Trust Ben Mor Coigach reserve

To the west, two small blocks of land within the reserve, covering roughly 45 hectares, are protected under the Rubha Dunan SSSI.

The coastal waters to the west of the reserve are protected under the Inner Hebrides and the Minches Special Protection Area (SPA) and the Wester Ross Marine Protected Area (MPA).

Designated features relevant to this plan and their condition as last assessed are shown in Table 1.

Protected features for consideration as part of this management plan include:

- The Rubha Dunan fen (SSSI), which, in 2008 was recorded as supporting water rail, corncrake, sedge warbler and reed bunting (SNH, 2008). The fen habitat was found to be in 'favourable' but declining condition during site condition monitoring carried

out in 2015. The main reason given for the deterioration was the expansion of common reed (*Phragmites australis*) across the site, which is reducing the extent of other wetland communities.

- Black-throated diver, which is a designated feature of the Inverpolly, Loch Uirigill and nearby Lochs SPA. The species can suffer from disturbance and changes to water quality.
- Freshwater habitats, including streams, oligotrophic lochs, acid-stained lakes and ponds, and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels.
- Species associated with good water quality, including otter and freshwater pearl mussel.

A table listing the features of each designated site is provided in Appendix 1.

Archaeology

There are a number of features of archaeological interest on the site, particularly near Achiltibuie. These include hut circle and field systems and a burnt mound. None of these are scheduled monuments but are of historical value locally. They are not dealt with further in this report but care should be taken to protect the sites when planning and carrying out management activities e.g. tree planting and livestock keeping.

Previous and Current Management Activities

Rubha Dunan

The Rubha Dunan designated site covers 22.28 ha. In addition to designated geological features, the site is protected for its hydromorphological mire range - fen wetland habitats.

In 2015, the site was found to be in favourable but declining condition due to the expansion of common reed on the site (Lockett, 2017).

In 2017, a management plan was drafted by Richard Lockett (Lockett, 2017). Its primary recommendation was to reduce reed cover. In consultation with Scottish Natural Heritage, areas for clearance were agreed as shown in the map in Appendix 2.

Cutting and dredging have been carried out in subsequent years. However, as many parts of the site are difficult to access, these activities have been inhibited. In 2021, for health and

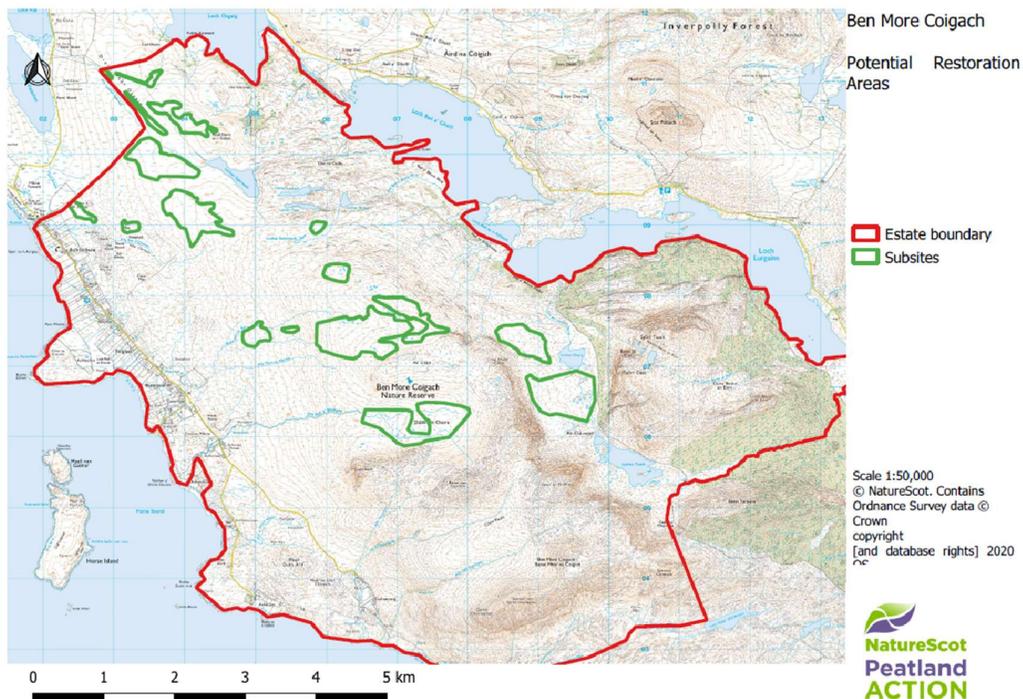
safety reasons, reed removal was limited to the area shown as D on the map in Appendix 2 (Michelle Henley, pers comm, December 2021).

Grazing of the site is now mostly limited to low numbers of sheep although roughly ten cattle were on the site in the summer of 2020 (Anne Campbell, pers comm 2021). However, the site was grazed by cattle to a greater extent in the past, which may have helped to control reed expansion although crofters report that the cattle were prone to getting stuck in the deeper areas of the mire.

Peatland Restoration

Peatland soils are extensive and cover a large proportion of the site. Initial assessments suggest that there are areas of bare and eroding peat with considerable potential for peatland restoration work. There is good scope to improve carbon storage, restore habitats, generate a source of additional income and improve hydro scheme output.

An initial, brief appraisal was carried out by a NatureScot Peatland Officer in 2021 and a number of potential restoration areas were identified (see Map 3). The NatureScot Peatland Officer is planning a more detailed appraisal of these areas in early 2022.



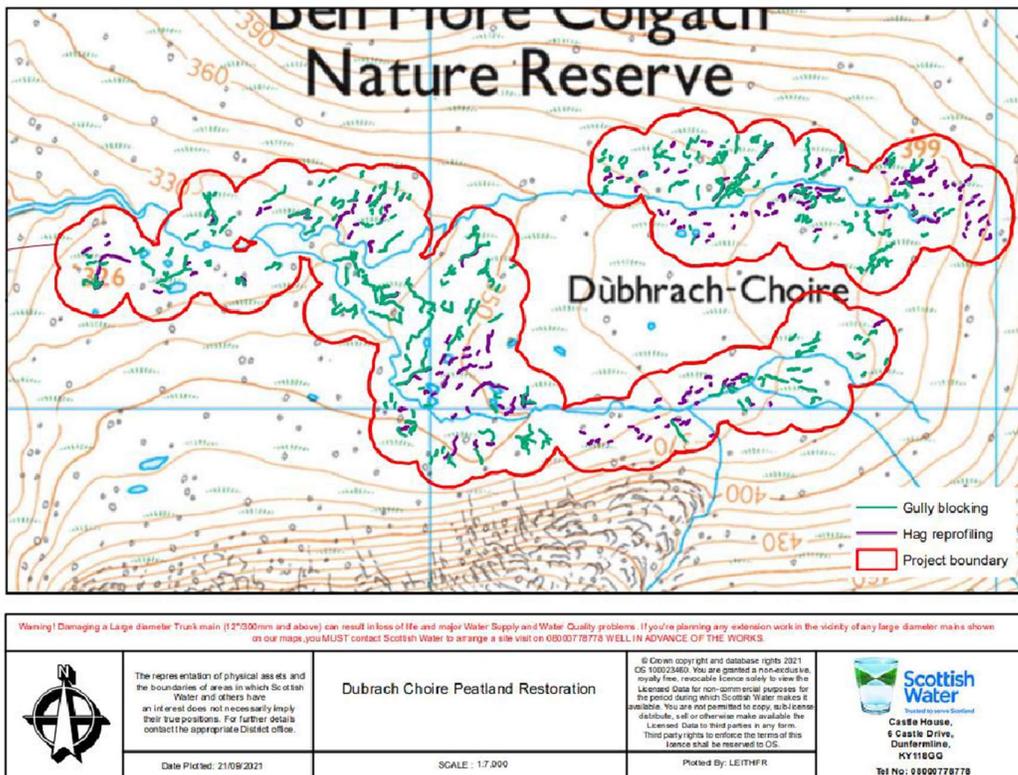
Map 3: The location of sites under consideration as potential peatland restoration areas.

More detailed scoping for potential peatland restoration in the Scottish Water catchment at Dubhrach Choire has also been carried out. This site is approximately 50 hectares in size and is part of the Achiltibuie Drinking Water Catchment. Achiltibuie Water Treatment Works (WTW) supplies water to approximately 473 customers in around 247 properties.

Proposed work includes the following (shown in Map 4):

- Peat hag re-profiling (approx. 2,663m) – The aim is to re-profile peat hags to prevent further erosion of the peat bank and stop peat erosion.
- Gully blocking - approx. 5,418m – The aim is to slow the flow of water through a gully system to reduce erosion. Bunds catch sediment which reduces peat loss and facilitates revegetation. Creating pools/wetter areas behind dams/bunds facilitates bog vegetation regrowth. Bunds can also be used to slow surface flow of water.
- Re-seeding (approx. 0.46 ha) – The aim is to stabilise the bare peat so that vegetation can grow and reduce erosion.

This work also has the potential to improve water storage capacity and therefore improve the output of the hydro scheme that operates in this catchment.



Map 4: Proposed peatland restoration areas within the Scottish Water catchment.

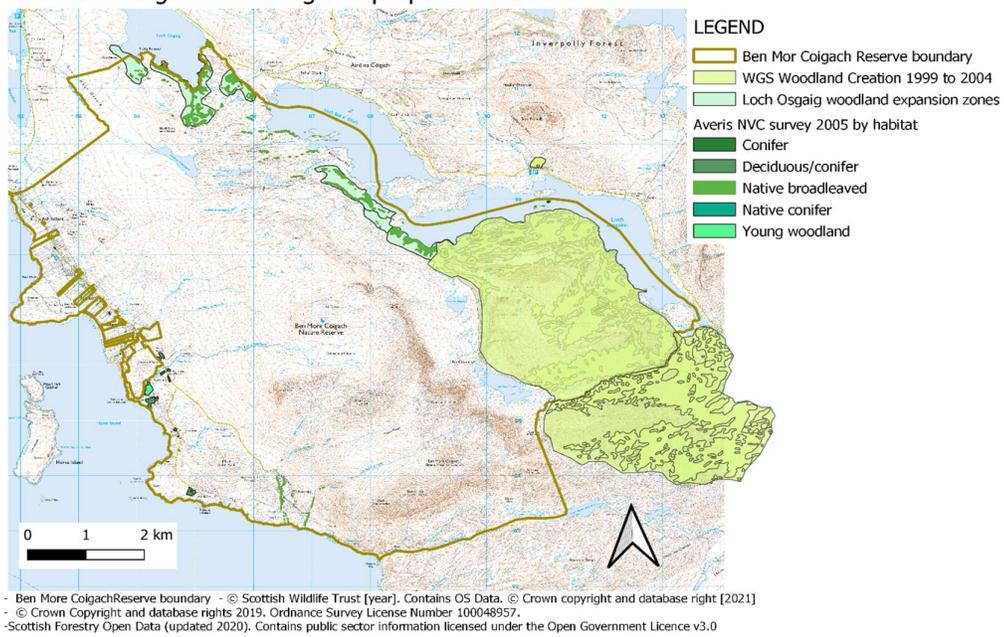
Woodland Management and Creation

Woodland projects on the site include:

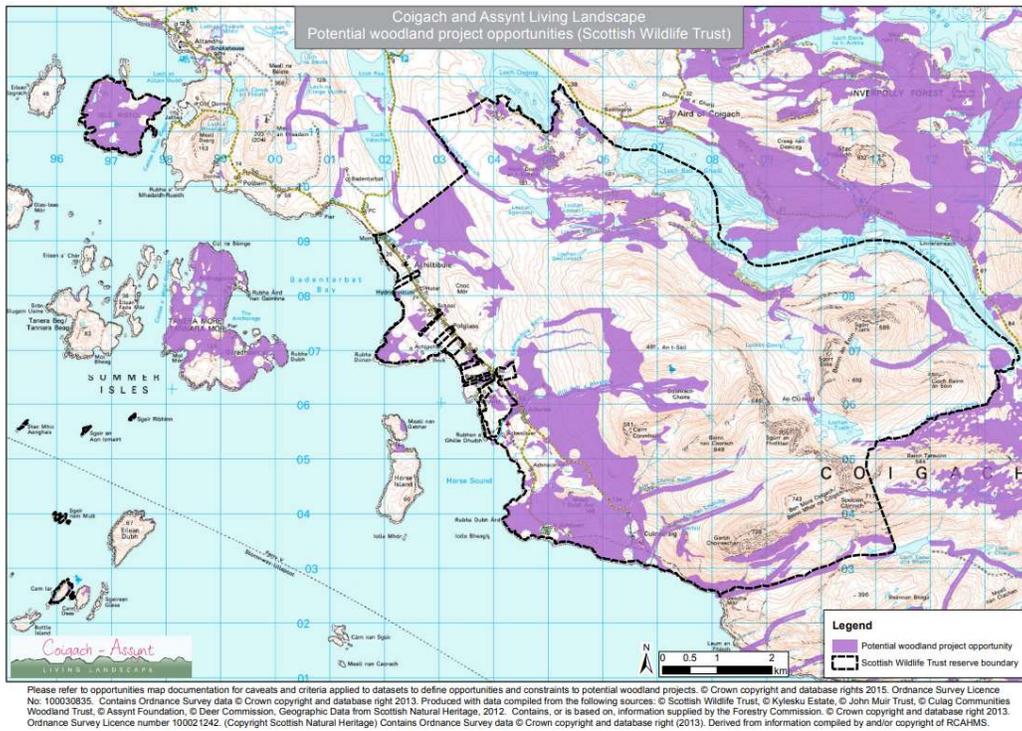
- A large block of native pinewood (1,686 ha), planted under the Woodland Grant Scheme (1999 to 2004) (Map 5). It was a collaborative project with the Strathcanaird Grazing Committee, and straddles Keanachulish Estate and Ben Mor Coigach. Deer management responsibilities lie with the grazing committee.
- Production of the Coigach and Assynt Living Landscape Potential woodland project opportunities map (Map 6) to inform future woodland creation proposals (Scottish Wildlife Trust, 2015). Constraints for tree planting factored into the mapping include the presence of specified priority habitats, presence of ancient and historic monuments, land set aside for other purposes, and elevation. Constraints not factored into the map include political boundaries, the presence of breeding waders (survey data not available) or peat depths.
- Scoping for a planting scheme along the north-eastern boundary of the site to the south-east of Loch Osaig, with the aim of connecting fragments of existing native woodland (Map 5). The assessment included a detailed National Vegetation Classification survey of the proposed planting area as shown in the maps in Appendix 3 (Strachan, 2018). Wet heath was the dominant habitat in the area but, in addition, there were significant spreads of bog and some dry heath/bracken (Strachan, 2018).

The Trust are working in collaboration with the Woodland Trust to apply for a Forestry Grant to plant compartment A and have been given a donation to fence and plant compartment B and to fence compartment C to allow natural regeneration. The Trust aims to commence this project in 2022 complete it by early 2023. There are no plans to plant Loch Osaig west and instead the aim is to encourage natural regeneration through a reduction in deer numbers.

Ben More Coigach - Existing and proposed woodland



Map 5: Existing and proposed woodland sites on Ben Mor Coigach. ‘Loch Osgaig proposed planting polygons’ supplied by Upland Ecology (2021)



Map 6: Potential Woodland Project Opportunities Map produced by the Scottish Wildlife Trust in 2015 for the Coigach and Assynt Living Landscape Partnership (CALLP) Woodland Project.

Agriculture:

Summary information for this section was supplied by Anne Campbell of CALLP and The Scottish Wildlife Trust.

Currently, the site is grazed by approximately 650 sheep. For the most part, they stay on the south-western slopes of the reserve (Anne Campbell, pers comm 2021). There has been some low-level cattle grazing at Achlochan in recent years and there is some interest in increasing cattle grazing on the site (Anne Campbell, pers comm 2021).

Currently, there are approximately twenty-seven shareholders. Nine of these put livestock on the common grazings (Anne Campbell, pers comm 2021).

It is believed that, in the past, the site was grazed by significantly higher numbers of cattle and sheep. There has been a sharp reduction in grazing levels over the last twenty years or so (Lockett, 2017).

Information on current sheep grazing timings and locations was not available for this report.

Deer Numbers and Management:

The last deer count was carried out in 2016 as part of a Scottish Natural Heritage helicopter survey (Scottish Wildlife Trust, 2018). Another helicopter count is planned for spring 2022.

At that time, deer densities stood at 3.7 per km². However, Michelle Henley of the Scottish Wildlife Trust (Michelle Henley, pers comm 2021) reports that the deer do not use the site evenly and that in some areas e.g. to the north of the Fiddler and Garbh Choireachan, densities may be as high as 20 per km² on occasion (Scottish Wildlife Trust, 2018).

Michelle Henley, as part of deer management planning for the site, recommends focusing cull efforts in these areas with a cull target of 49 (21 stags, 21 hinds and 6 calves) across the whole reserve. However, access is difficult in some areas, which makes them less attractive to contract stalkers because of the difficulty of extracting deer. For example, on the east side of Ben Mor Coigach, there is no permission for vehicular access. The current targets are based on maintaining a deer population of 151 deer at a density of 3 deer per km² by culling roughly one third of the population each year (Michelle Henley, pers comm 2021).

Densities for the whole Deer Management Group area was 3-4 per km² in 2016. On neighbouring estates, densities were between 1 per km² to the north-west and 4-5 per km² to the south-east (West Sutherland Deer Management Group sub-group Coigach South Assynt, 2018). The north-eastern boundary of the reserve is separated from neighbouring estates by lochs along much of its length.

Previous Surveys and Analysis

A number of surveys, covering a variety of habitats, species and features have been carried out on the site. Some of these are listed below. The results of and information from these surveys are provided in the relevant sections.

- **NVC whole site:** Ben and Alison Averis 2005 NVC survey – This survey, carried out by Ben and Alison Averis, mapped NVC communities across the entire reserve. It included a report, which highlighted priority plants and habitats and commented on potential impacts on these e.g. grazing and historic burning (Averis, 2005).
- **NVC around Loch Osaig:** - In 2017, Upland Ecology carried out a vegetation and habitat survey across roughly 481 hectares of ground to assess the potential for woodland restoration and expansion to the north-west of Ben Mor Coigach - see maps in Appendix 3 (Strachan, 2018).
- **Water vole** survey – A water vole survey of the whole site was carried out for the Scottish Wildlife Trust in 2003 (Belshaw, 2003) and 2016 (Scottish Wildlife Trust, 2016).
- **Peat depth** survey – Peat depth surveys were carried out by Upland Ecology in 2019 (Upland Ecology, 2019) in sections of the area planned for woodland creation south-west of Loch Osaig.
- **Peat restoration** assessment – a survey to assess the potential for peatland restoration at Dubhrach Choire by Scottish Water was carried out recently by Peatland Action (Michelle Henley, pers comm, December 2021). Further potential for peatland restoration projects is being explored by Peatland Action. Survey results were not available for the purposes of this report.
- **Freshwater pearl mussel** – a freshwater pearl mussel survey was carried out by Pete Cosgrove on commission from the Scottish Wildlife Trust in 2006.
- **CALL woodland opportunities** mapping – carried out in 2015 by the Scottish Wildlife Trust as described in the woodland section of this document.

- **Rubha Dunan** vegetation survey- It is assumed that vegetation surveys were carried out as part of the site condition monitoring in 2015. However, data were not available for the purposes of this report.
- **Herbivore Impact Assessment** – a Herbivore Impact Assessment on blanket bog and dwarf shrub heath was carried out on the site in 2019 and 2020. NatureScot supplied quadrat locations. Of the locations identified, thirty plots were surveyed on blanket bog and a further thirty on dwarf shrub heath. Within most survey quadrats only light to moderate grazing and trampling pressures were noted. However, coverage of the ground for the survey was not extensive and it is reported that parts of the site are moderately to highly impacted by grazing and trampling (Michelle Henley, pers comm, November 2021). As described in later sections, significant impacts from deer were noted during the 2021 field visits.
- **Deer numbers** – the last count on the site was carried out by Scottish Natural Heritage through a helicopter survey (Scottish Wildlife Trust ,2016).

Potential Conflicts to Consider

Agricultural interests –Given the low levels of sheep grazing on the site, it is not anticipated that there will be a conflict between environmental recommendations and agricultural requirements on the hill. However, that situation may change if new crofters come into the area with a view to increasing sheep numbers on the common grazings.

There may be opportunities to integrate agricultural management with good wildlife management. Species rich grasslands, wader habitats and coastal heath can all benefit from grazing and there is potential for the creation of well-managed woodland pasture sites. In addition, native cattle could help to manage rough vegetation e.g. in the rough, thatched stands of *Molinia caerulea*, which occur in parts of the site.

Deer management e.g. reducing deer numbers – Increasing cull levels could impact on neighbouring deer management estates. However, there are very low numbers on the estate to the west (1/km²). There is more sporting interest on estates to the north and east but, as shown on the map in Appendix 4, deer numbers on these in the 2016 count are not substantially higher than on Ben Mor Coigach (West Sutherland Deer Management Group sub-group Coigach South Assynt, 2018)

A questionnaire regarding the management of the Ben Mor Coigach common grazing was circulated to crofters. Returned responses indicate strong local support for reducing deer numbers.

Deer fencing – Deer fencing can cause negative impacts on priority habitats outwith fenced areas where grazing pressure is increased. In addition, fencing can:- result in localised erosion from tracking; fail to prevent deer incursions if not well-maintained; and detract from the aesthetics of landscape.

Ground nesting birds – It is not anticipated that proposed management activities will have serious negative impacts on ground nesting birds. Peatland restoration measures will benefit any upland breeding waders on the site such as golden plover. Woodland creation projects could have some negative impacts and it is recommended that an upland breeding bird survey is carried out to establish what is on the ground, with a particular focus on curlew.

Climate change mitigation – It is anticipated that proposed management activities will help to mitigate climate change impacts, for example carbon sequestration associated with peatland restoration and woodland creation. Therefore, no conflicts with climate change mitigation are anticipated.

Disturbance – Recreation activities such as hillwalking and angling could negatively impact some bird species e.g. breeding black-throated divers on lochans.

Section 2: Site Assessment Methods

Desk Study

In addition to field surveys and consultations, an extensive desk study was carried out to gather relevant information about the project.

This included:

- Online analysis of information on the NatureScot Sitelink (NatureScot, 2021).
- Online searches of the National Biodiversity Network (NBN Atlas website, 2021)
- Online examination of BTO Bird Atlas data (BTO Atlas website, 2021)
- Online examination and analysis of OS and satellite maps.

- Examination and analysis of maps, data and documentation supplied by the Scottish Wildlife Trust, including on deer management, vegetation surveys, woodland projects, peatland restoration projects, habitat impact assessments, bird records and observations, water vole surveys, and freshwater pearl mussel.

Field Work

In addition to gathering information from local site staff, during November and December 2021, field visits were made to five locations on the site (Map 8) with a view to making spot check assessments of habitat condition.

The areas visited were:

- **Area A:** South-western slopes above Achiltibuie
 - Selected to assess habitats above the main crofting townships where most of the livestock grazing occurs.
- **Area B:** Ground to the west of Meall Doire an t-Sithein in the northern section of the site.
 - Selected to assess current habitat condition as the Averis report (Averis, 2005) highlighted this area as having suffered particular damage due to overgrazing, and other livestock associated activities e.g. use of all-terrain vehicles.
- **Area B:** North-east Loch Osaig vicinity
 - Selected to assess the condition of habitats within or close to proposed planting sites. Existing habitats in this area include pockets of high value, remnant native woodlands.
- **Area C:** Southern slopes below Ben Mor Coigach
 - Selected to sample herbivore impacts some of the priority habitats that support rare bryophytes, rare liverworts or dwarf juniper as identified by Averis 2005
- **Area D:** Strathcanaird woodland enclosure
 - Selected to assess the current condition of the late-nineties plantation within the deer-fenced enclosure.

Consultation

Between September 2021 and January 2022, the following consultations were carried out to gather information for this report

- Crofters – a questionnaire was sent to all of the crofters within the common grazings (Appendix 5). Their views on future management options are provided in the next section.
- Scottish Wildlife Trust (Scottish Wildlife Trust) – virtual meetings and email correspondence with Michelle Henley.
- Coigach and Assynt Living Landscape Partnership (CALLP) - virtual meetings and email correspondence with Abigail Anne Campbell.
- Victor Clements (as co-producer of the West Sutherland Deer Management Group sub-group Coigach South Assynt, deer management plan) email correspondence
- Peatland Action officer - email correspondence.

Most of the documentation supplied as additional information for the report was provided by Michelle Henley of the Scottish Wildlife Trust and Anne Campbell of CALLP and the Scottish Wildlife Trust.

Crofters' Views on Current and Future Management

Questionnaires were sent to fifteen crofters within the Achiltibuie Common Grazings to gather information on stock keeping, current use of the common grazings and their views on future management of the site (Appendix 5). Six questionnaires were returned.

Livestock

Of the six crofters who returned questionnaires, four currently keep stock. Between the respondents there are 205 sheep and 16 cattle, all of which use the common grazings. The sheep are reported to stay close to the in-bye whereas the cattle have been observed to range more widely on the hill ground.

Those planning to change their stocking levels would like to slightly increase numbers to a level of 240 sheep and 20 cattle between the six crofters who responded.

It should be noted that stock is held by crofters who did not return a questionnaire.

Desired Management

Expressed preferences for future management of the site from the crofters who returned questionnaires included:

- Cattle grazing (all six crofters)
- Tree planting and regeneration (all six crofters)
- Improved deer management and a reduction in deer numbers (all six crofters)
- Carbon storage measures e.g. peatland restoration (four crofters)
- Rewilding measures (three crofters)
- Increased levels of biodiversity (one crofter)
- More sheep (one crofter)
- Fewer sheep (one crofter)
- Sheep grazing retained but unsure whether to increase or decrease numbers (one crofter)

Deer were highlighted as being a problem on the common grazing. Comments were made about the area being 'overrun' with deer and many felt that high deer densities were hindering tree planting projects. One crofter recommended a professional cull in the first instance to lower deer numbers to a manageable level followed by a community stalking initiative. Another commented that they would like to see the estate deer fenced to reduce the need for fencing on individual crofts.

Other interesting suggestions and comments included:

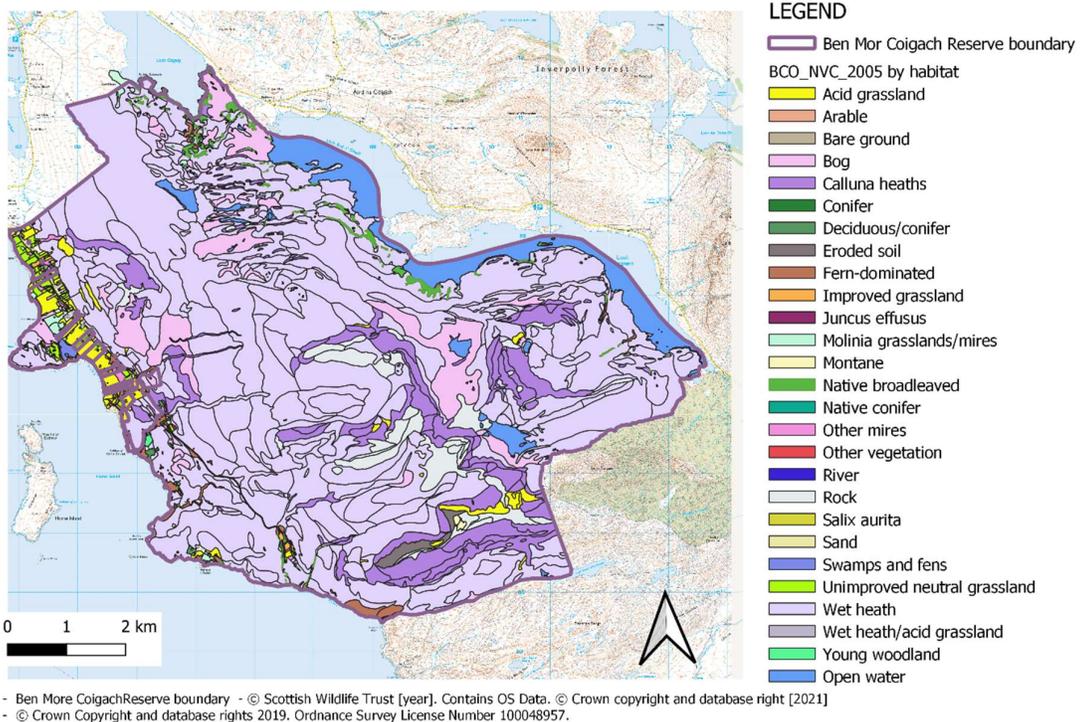
- Introduce a regime of managed grazing, using silvopasture systems alongside wildflower pastures.
- Create affordable houses/crofts/community rental opportunities to encourage young crofters into the area.
- Incorporate a system for processing local venison into deer management plans.

Section 3: Site assessment: Description and condition of key habitats and species

Habitat Descriptions.

In addition to observations from field visits, the information for the habitat descriptions provided below has largely been drawn from the vegetation survey carried out by Ben and Alison Averis in 2005 (Averis, 2005). Map 7 shows the dominant habitats across the site.

Ben More Coigach - Dominant habitats from the Averis (2005) NVC survey.



Map 7: Distribution of habitats across Ben Mor Coigach as mapped from GIS data produced for the Averis (2005) survey. NOTE: Each polygon shown contains a mosaic of habitats but is mapped according to the dominant habitat as styled by Bridget England of Peewit Potential Wildlife Ecology from the supplied data.

It is anticipated that the habitat types and distribution will not have changed radically in the intervening years, although the condition is likely to have altered to some degree due to changes in herbivore grazing, burning and fencing activities. In addition, the extent and/or composition of some habitats may have been affected by the spread of bracken and natural tree regeneration. The only means of accurately assessing actual change would be to carry out a repeat of the Averis survey.

Since the Averis report deals with these habitats in some depth, only very brief descriptions are provided here as a reference for management recommendations made later in the document.

Map 7 shows the dominant habitats across the site as mapped as part of the 2005 survey (Averis, 2005)

Description: Bog and peatland

As shown in Map 7, wet heath, which typically occurs on peat less than 50 cm in depth, is the most common and most widely distributed vegetation on the site. It extends from the low ground near the shore onto the ridges at about 600 m. The peatland surface and vegetation vary due to slope, elevation, aspect and management. Some areas of wet heath have become drier due to repeated burning in the past.

On deeper peat the vegetation is replaced by wet blanket bog or mire habitats which typically have a cover of *Sphagnum* moss. Large areas of bog have been affected by historic burning which has dried out and modified the bog vegetation to a greater or lesser extent. Burning and, potentially, grazing has led to the development of dense tussocks of purple moor grass in some places.

Description: Dry heath

A range of dry heath types occur on well drained slopes. At sea-level these have maritime influences but taller, heather dominated swards are present higher up. Dwarf juniper is present in a few locations at higher elevations, which are free from impacts from burning and other detrimental management practices. The shrub is rare on lower slopes.

Heather grows at more than 700 m above sea-level on the summit of Ben Mor Coigach, suggesting that high levels of snow accumulation and late snow beds are not present.

Description: Montane habitats

The higher summits and ridges on the site support a variety of montane and moss heaths, and grasslands. As described above, dwarf juniper occurs at higher elevations as a component of these heaths. On the ridges of Beinn an Eoin and in the col between Connheall and Beinn Caorach, dwarf juniper is common in places where some of the

montane heaths appear to be in 'near natural' condition. The shrub is also present on the ridge of Sgorr Deas in the east of the site as well as on wetter heath on Beinn an Eoin and Sgorr Tuath.

There are a number of rare liverworts on north facing cliffs and on gentle to moderate north to north-east facing slopes in the corrie north-east of Ben Mor Coigach.

Description: Grassland

Grasslands are not extensive on the site.

However, on the lower ground near the shore, there are rush mires and small patches of tall herb fen with plants such as meadowsweet, angelica, and yellow flag iris. The fen at Runan Dunan is designated for its fen communities, which includes the largest reedbed in Wester Ross, with bog bean, horsetail, the regionally scarce lesser bladderwort, *Sphagnum* beds, bottle sedge, small sedge communities, marsh cinquefoil, ragged robin, early marsh orchid and yellow iris (NatureScot, accessed in 2021).

Some of the shorter coastal grasslands and heaths may be relatively species rich but recent information on these was not available for the purposes of this report.

On the hill ground, there are spreads of dry and wet acid grasslands, interspersed with the heath and bog communities. Tiny pockets of more base rich grasslands, containing herbs such as thyme, also occur on some slopes on the south-western part of the site.

The type and composition of grasslands on the site varies according to slope, altitude and base conditions. On the hill ground, they tend to form intricate mosaics with other habitats and are fully described in the Averis NVC report (Averis, 2005), which also lists the communities of value due to a range of factors e.g. rarity, near naturalness or species richness.

Description: Woodland

As shown in Map 5 in Section 1, there is one large-scale forestry scheme and scattered fragments of native woodland across the site. Currently, with the exception of the large plantation, only a small percentage of the landholding is covered with trees.

Native woodland and regeneration

There are fragments of high value native woodland on the site, primarily on the north-east boundary above Lochs Osgaig, Bad a' Ghail and Lurgainn. They occur in wet, acidic conditions as well as on drier soils with a grass or heath understorey. Downy birch and rowan dominate with eared willow, grey willow, hazel, aspen, bird cherry, dog rose, juniper and oak occurring at low levels (Strachan, 2018). The rocky oak woodland in the north-east of the site supports internationally important assemblages of bryophytes and is rich in ferns.

On the islands in Loch Lurgainn there is pine woodland locally with an understorey of juniper which suggests that the islands have escaped grazing and burning impacts. The populations of juniper in tall heath on the islands in Loch Lurgainn are significant as some of the largest known in the western Highlands.

Small pockets of alder woodland occur at Culnacraig and among fields and gardens at Achiltibuie and Badenscallie.

Woodland creation projects

The Strathcanaird woodland creation site: This site (Map 5) was planted under the Woodland Grants Scheme (1999 to 2004) as a native pinewood with large areas of open space built into the design. Broadleaves such as birch, rowan, alder and willow were also planted.

Currently, the site has very sparse tree cover, primarily Scots pine and birch, over well-developed heath and *Molinia* dominated habitats. It is described further in the section below which provides information on habitat condition gathered during field visits.

Loch Osgaig Woodland Scheme: In 2017, a survey was carried out by Upland Ecology on the north-eastern boundary of the site, around and to the south of Loch Osgaig, with the aim of assessing the potential for connecting up existing fragments of ancient semi-natural native woodland (Strachan, 2018) as described in the section above.

The survey mapped the extent of current regeneration, which was primarily of birch and rowan and the occasional holly, which had largely established on dry heath, purple moor grass and bracken dominated habitats along the shores of Loch Osgaig.

The 2017 report suggests erecting a series of exclosures to reduce deer browsing pressures and enable woodland expansion through a combination of natural regeneration and planting. Planting recommendations included using local seed, placed in appropriate habitats. The expansion zones are shown in Map 5.

Non-native woodland and small plantations

As shown in Map 5, there are a few small blocks of either dense conifer or mixed conifer/broadleaves plantation to the south-west of the site, mostly close to areas of habitation (Averis, 2005).

Between Acheninver and Achvraie, an area of broadleaves has established on a mosaic of grassland, wet heath and rush mire either through planting or regeneration (Averis, 2005). On Map 5, this is shown as 'Young woodland', which was the category assigned to it in the Averis NVC survey in 2005 (Averis, 2005).

Priority habitats

Several vegetation and habitat types on the site are of high conservation value in the UK and many are listed in Annex I of the EC Habitats Directive because of their rarity in Europe.

Notable habitats and species cover a significant proportion of the site and include:

- The north-facing small patches of birch woodland on the slopes above Lochs Osgaig, Bad a' Ghail and Lurgainn, which are significant for their rich diversity of oceanic bryophytes.

This type of bryophyte-rich woodland is rare on a European scale and many of the individual bryophyte species are rare outside Britain and Ireland. The richness of the bryophyte assemblages, as well their oceanic lichens and ferns, places these woods among the many in the west Highlands which are well-established as being of international importance

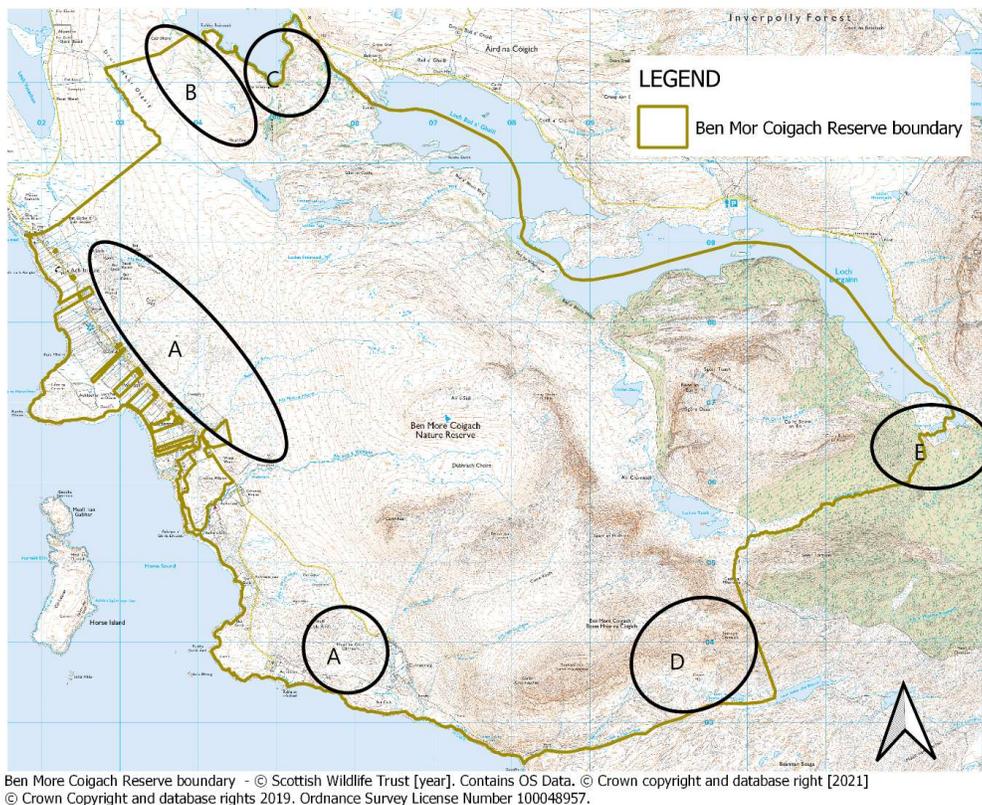
- Some areas of wet blanket bog, including those with the distinctly northern 'patterning' of small bog pools.

- Rich and internationally important assemblages of uncommon northern oceanic liverworts in dry and montane heaths on steep, rocky north to north-east facing slopes.
- Juniper. There are good populations of dwarf juniper on some of the exposed heaths on higher rocky ground and it is a significant component of the pine woodland on the islands of Loch Lurgainn.

Juniper is a species of special ecological importance as it is associated with relatively undisturbed habitats which have suffered little or no burning in the past.

Current habitat condition

In addition to information gathered from site staff, further observations on habitat condition were made during site visits to five key areas on the site in November and December 2021. These are shown in Map 8.



Map 8: The location of field visits made to the site in November and December 2021.

- **Area A:** South-western slopes above Achiltibuie
- **Area B:** Ground to the west of Meall Doire an t-Sithein in the northern section of the site.
- **Area C:** North-east. Loch Osaig vicinity
- **Area D:** Southern slopes below Ben Mor Coigach
- **Area E:** Strathcanaird woodland enclosure

Information on habitat condition for each area is provided below. Issues to take account of for management purposes include:

- Some limited signs of deer browsing on regenerating trees in Area C.
- Significant areas of sand erosion on the southern slopes of Ben Mor Coigach (Area D). While there are some signs of plant recolonisation, the eroded areas are extremely fragile and likely to be suffering further damage from deer.
- Bare peat and the development of peat hags and gullies in some parts of the site. These were not quantified for this report but are under assessment by Peatland Action.
- The lack of tree cover on the south-western slopes in Area A, which is likely to be due to the combined pressures of deer and sheep grazing.
- Heavily browsed vegetation in grassland and heath habitats on the south-western slopes closest to the inbye in Area A.
- Habitat modification due to historic practices e.g. burning and high levels of grazing.

Some of the issues listed e.g. erosion are likely to have arisen due to historic burning, which is no longer carried out.

Therefore, currently, grazing pressure from deer and sheep is having the greatest impact on this site.

Area A. South-western slopes above Achiltibuie: Habitat condition

The grazings above Achiltibuie and out towards Culnacraig were visited on the 22nd November.

The hill ground on the northern and western sections of the grazings (closest to Achiltibuie) consist of wet heath, dry heath, modified bog and small areas of unimproved grassland.

Wet heath on shallow peat soils is the predominant habitat type and covers extensive areas of ground. Dry heath is a frequent habitat type and is found in areas with mineral soils, particularly along the margins of watercourses (e.g. the Allt Bad a' Chotair), and some areas of more steeply sloping ground.

Areas of grassland are relatively small in extent and are concentrated in the north-west corner of the hill. These areas generally consist of acid grassland and are likely to have developed as a result of past improvement and/or more concentrated grazing pressure. There are also pockets of previously improved grassland in the vicinity of Achlochan.

Woodland and scrub habitats are limited to areas that have been planted and deer fenced. The exception to this is the small areas of remnant native woodland along the steep sided ravines above Culnacraig where herbivore access is restricted.

Grazing impacts are most noticeable on areas of ground closest to in-bye land as well as areas where vegetation productivity is higher (e.g. grassland habitats). These include ground to the north and west of Cnoc Mor above Achiltibuie. It appears that the sheep tend to concentrate on lower sections of hill. Notable impacts were localised areas of heavily browsed vegetation in grassland and heath habitats

Evidence of grazing pressure appears to be lower to the south and east of Cnoc Mor and to the north and east of the Allt Bad a' Chotair.

The only area that livestock was seen was to the north and west of Cnoc Mor above Achiltibuie.



Plate 1: Overview of extensive wet heath habitat the slopes on the south-western edge of the site.



Plate 2: Overview of the slopes on the south-western edge of the site, looking north. The banks of the burn in the middle ground is an example of possible location for new riparian woodland planting.



Plate 3:



Plate 4:

Plates 3 and 4: More heavily browsed heath and grassland near the inbye.

Area B. Meall Doire an t-Sithein area: Habitat condition

The section of ground around Meall Doire an t-Sithein was highlighted in the 2005 vegetation survey (Averis, 2005) as showing evidence of high grazing pressure from sheep and damage due to livestock management activities e.g. use of all-terrain vehicles and livestock feeding.

This area was revisited on the 21st of December.

Large swathes of modified wet heath/bog dominated by deer grass cover the area (Plate 5). Other bog/heath plants are also present but in low abundance, including heather (*Calluna vulgaris*), cross-leaved heath, pockets of *Sphagnum* mosses and bog myrtle. Indicators of bog degradation e.g. the liverwort *Pleurozia purpurea* also occur.



Plate 5: A quad bike track showing across the large swathes of deer dominated wet heath/modified bog in Area B

Deer and sheep droppings were noted in the area but they were infrequent. However, in winter, it is likely that the deer congregate on the lower, more productive ground above Achiltibuie or within woodland habitats. Therefore, deer densities and impacts will vary throughout the year on this piece of ground. Two hinds and a calf were spotted near the stock fence to the east of Loch Raa downhill from the Trust boundary.

It appears that livestock are no longer fed on the bog during winter and no associated refuse was found in the area.

One track made by an all-terrain vehicle was noted during the visit but vehicular damage was not extensive.

Area C. Loch Osgaig vicinity: Habitat condition

A walkover survey was undertaken along the southern shores of Loch Osgaig to assess the ongoing expansion of native woodland and identify the current condition of the existing woodland.

As noted in the Upland Ecology report (Strachan, 2018). the most common species in the area are downy birch, rowan and holly. Eared willow, grey willow, hazel, oak and aspen, while bird cherry, dog rose and juniper also occur at low levels

In the field, it was evident that the birch woodland is localised on drier soils where bracken and purple moor grass (*Molinia caerulea*) are dominant. Natural regeneration of birch is frequently present on *Molinia* grassland, heather dominated dry heath and bracken covered ground. Some young holly is emerging alongside the birch woodland. There are several senescent birch on wetter ground but there are no young trees emerging here. There is almost no tree regeneration on wet heath or blanket bog.



Plate 6: View looking south-east towards Meall Doire an t-Sidhein from near the southern tip of Loch Osgaig.

Deer tracks are evident in places but browsing damage appears very low on young birch. However, the holly was noticeably browsed. The Upland Ecology surveyors concluded that more extensive tree and shrub regeneration on suitable habitats was being limited by deer browsing pressures. (Strachan, 2018).

Quad tracks were observed on the south-west of Loch Osgaig running east/west from the road.



Plate 7: Holly showing signs of browsing among bracken and dry heath above the southern shores of Loch Osgaig.



Plate 8

Plate 8: View looking north on the southern shores of Loch Osgaig, showing birch regeneration and dense stands of purple moor grass.



Plate 9

Plate 9: Birch regeneration and holly on dense spreads of purple moor grass above the southern shores of Loch Osgaig.

Area D. Southern slopes below Ben Mor Coigach: Habitat types and condition

This section of the site was visited to assess the current impacts on dry and alpine heaths that were highlighted in the 2005 vegetation report as being at risk from burning, trampling and grazing. Dwarf juniper on dry heath is especially at risk from burning.

The area contains some well-developed areas of wet and dry heath and blanket bog (Plate 10) as well as spreads of upland, fescue dominated grassland. However, there are patches of bare peat and soil where vegetation cannot colonise due to the high levels of wind exposure (Plate 11).

Much more extreme damage is visible in some locations, where there is significant and extensive erosion on some of the sandstone ridges (Plates 12 and 13). This erosion appears to be active and ongoing. In places, coarse blown sand is gathered in almost dune like formations. In some areas, young fescue and thyme plants are colonising the blown bare sand but there was obvious mature vegetation cover adjacent to erosion sites (Plate 14).

These bare and wind blasted habitats are extremely fragile and they appear unable to stabilise in places due to ongoing wind erosion, grazing and deer trampling.

Dwarf juniper plants identified within these fragile habitats show frequent signs of browsing, and some woodrush plants have been uprooted. This demonstrates locally high impacts by red deer on these locations.

Since roughly 500 ha are identified within the site as being rock, sand and bare ground, the extreme fragility of these habitats should be taken into account when assessing deer numbers for the site and cull levels should be adjusted accordingly. Allowing these habitats to recover by further reducing deer numbers, particularly by targeting deer in the SW around Culnacraig and the montane zone, would enable dwarf juniper, liverworts, *Sphagnum* mosses and other bryophytes to thrive to provide a more stable vegetation cover and increase the resilience of the habitats.

The eroded areas should be monitored for extent and plant recolonisation using fixed point photography.



Plate 10: Locally well-vegetated wet heath / bog with intact *Sphagnum* moss above Culnacraig.



Plate 11: Patches of exposed peat on the exposed slopes south-west of Ben Mor Coigach.



Plate 12: Erosion on the sand substrate on the southern slopes of Ben Mor Coigach.



Plate 13



Plate 14

Plate 13: Bare sand due to erosion on the southern slopes of Ben Mor Coigach

Plate 14: Recolonization of the bare sand by fescue grasses and thyme

Area E: Strathcanaird woodland plantation - Habitat condition

The woodland scheme that straddles Keanachulish and Ben Mor Coigach contains sparse tree cover over well-developed heath and *Molinia* habitats (Plates 15, 16 and 17). The dominant tree species are Scots pine and downy birch. Stands of pine often occur in small, isolated pockets across the area (Plate 18).

On the field visit, it was noted that the heather and *Molinia* within the deer fenced area is taller and more developed than outwith the exclosure due to the twenty-year recovery break from over grazing and burning. The peat surface within the exclosure is well vegetated and locally some *Sphagnum* moss is present.

While there has been some degree of native woodland regeneration within the fenced exclosure, which is fairly intact but with a number of points where deer can get access, recent observations from site staff suggest that deer browsing is occurring (Michelle Henley, pers comm, November 2021). Site staff have observed groups of up to twelve hinds within the exclosure (Michelle Henley, pers comm 2021). In addition, deer were spotted within the exclosure during the 2021 field visits.



Plate 15: Pockets of Scots pine within the Strathcanaird woodland exclosure)

There are small pockets of birch regeneration adjacent to but outwith the exclosure, primarily on dry heath, *Molinia*, bracken and acid grassland habitats (Michelle Henley, pers comm, November 2021).

There is concern that the fencing for the woodland may be increasing grazing pressure on priority habitats outwith the enclosure (Averis, 2005). In addition, the damaged fencing is unsightly and can cause a health and safety hazard to people and wildlife. Therefore, removing the fencing at some point in the future when existing trees are less vulnerable and/or deer numbers are much reduced is desirable (Michelle Henley, pers comm, November 2021).



Plate 16: Birch and Scots pine over heather and purple moor grass within the Strathcanaird woodland enclosure)



Plate 17:



Plate 18:

Plates 17 and 18: Views of the habitat within the Strathcanaird woodland planting scheme enclosure.

Species Survey Information

Birds

There were no available records of formal bird surveys for the site..

However, Michelle Henley of the Scottish Wildlife Trust provided records of bird sightings for 2021 (Appendix 6) and Ian MacKenzie, a local crofter, provided records of bird sightings on the Achlochan peninsula for 2016 to 2019. The 2019 records are shown in Appendix 7. In both cases, although dates of sightings were recorded, behavioural information was not available. Therefore, it is not possible to say whether the listed birds were breeding on the site, using it for feeding or just passing over.

Searches were also carried out on the NBN Atlas website and the BTO mapstore web pages.

Species to consider in the development of a management plan are shown in Table 1. include:

It is strongly recommended that a set of breeding bird surveys are carried out on the site to fully assess whether high priority avian species are present that may be affected by management.

Table 1: Bird species to consider when developing a management plan

Bird species	Record reference	Information and Management Considerations
Black-throated diver	Breeding records on NBN Atlas, RSPB Scotland from 2019 and previous years.	Designated on the Inverpolly, Loch Uirigill and nearby lochs SPA. Assessed as Favourable, maintained in 2008. Dependent on good water quality and protection from disturbance.
Curlew	There are very few recent records for curlew available for this area on the National Biodiversity Network (NBN). There were a small number of records in the area of Polglass, provided by the BTO and partners but none on the hill ground. However, while it is unlikely that	Hill ground focus: Curlew will breed on inbye grasslands and upland sites. It prefers open ground with a mosaic of vegetation types and structure for breeding. Negative impacts can occur from inappropriate grazing regimes and woodland creation.

	curlew will be a species of concern for woodland planting proposals, an upland wader survey is recommended before proceeding with the design of new woodlands.	
Golden plover	Sporadic records on the hill ground on the NBN Atlas as provided by BTO and Partners. Upland wader survey is recommended.	Hill ground focus: Tends to breed on high ground where there is some short vegetation and good quality bog habitats. Peatland restoration measures on the site will be beneficial.
Greenshank	No records accessed. Upland wader survey is recommended.	Hill ground focus: Strongly associated with high quality bog habitats for breeding. Peatland restoration measures on the site will be beneficial.
Ptarmigan	No records accessed but likely to occur on the high tops.	Hill ground focus: No specific management issues.
Ring ouzel	The NBN Atlas contains ring ouzel records for the area, including a BTO/JNCC/RSPB/ partnership record from 2018.	Ring ouzel prefer a mosaic of vegetation types and structure with some tall heather on slopes and additional areas with mosaics of heather and short grassland. Overgrazing can be an issue as can woodland planting near nesting and feeding sites.
Golden eagle	Known to be in the area and to have bred on the site in the past (Michelle Henley, pers comm). Recorded by Michelle Henley (Appendix 6). Survey or liaison with Highland raptor group	Requires protection from disturbance and persecution.
White-tailed eagle	Known to be in the area. Recorded by Michelle Henley and Ian MacKenzie (Appendices 6 and 7). Survey or liaison with Highland raptor group recommended.	Requires protection from disturbance and persecution.
Merlin	Known to be in the area. Recorded by Michelle Henley (Appendix6). Survey recommended.	No specific management issues.
Oystercatcher	Recorded in the breeding season at Achlochan by Ian Mitchell, Appendix 7. Breeding farmland wader survey recommended.	Inbye focus: Oystercatcher prefer short swards and/or cultivated ground for breeding. They benefit from cropping and grazing regimes. It is probable that they breed on the coastal grasslands.

Redshank	No records accessed. Breeding farmland wader survey recommended.	Inbye focus: Redshank breed primarily on wet grasslands and marshy areas. They are strongly associated with the presence of small bodies of open water.
Snipe	No records accessed. Breeding farmland wader survey recommended.	Inbye focus: Snipe prefer longer swards for breeding, particularly those dominated by rush, and wet areas for feeding.
Skylark	Recorded by Michelle Henley during the breeding season. Known to use the coastal grasslands.	Inbye focus: Skylark prefer unenclosed grassland swards with an open structure and short sward. Therefore, they benefit from the grazing of grasslands.
Barnacle geese	Ian MacKenzie has regularly recorded flocks of barnacle geese on the Achlochan peninsula in winter. In Feb 2019, he recorded a flock of 200.	Overwintering barnacle geese are likely to benefit from the semi-natural and managed grasslands along the coastal strip.
Rubha Dunan bird assemblage	The Rubha Dunan fen is cited as supporting red-throated diver, black-throated diver, heron, greylag goose, wigeon, teal, goldeneye, red-breasted merganser, snipe, curlew, greenshank, common sandpiper and grey wagtail. However, formal surveys of the area have not been carried out for some time	This bird assemblage is likely to be dependent on good management of the fen – see section on current management.

Mammals

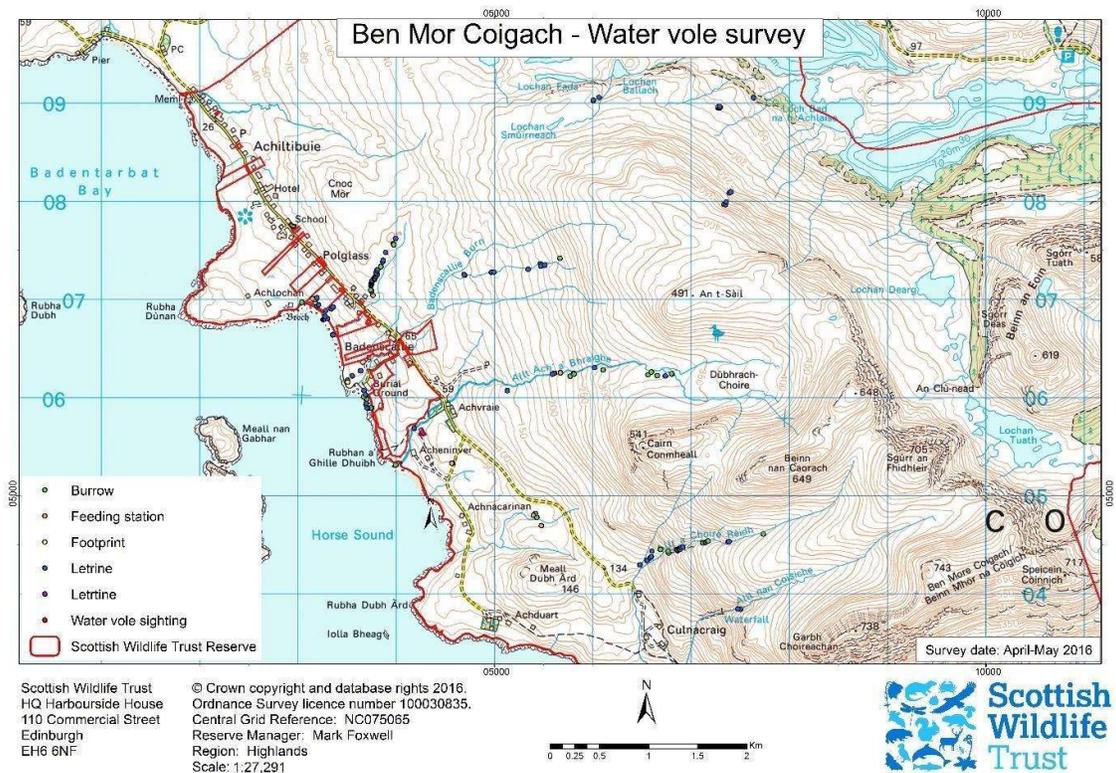
Water vole:

The water vole is protected under Schedule 5 of the Wildlife and Countryside Act 1981. It is a red-listed species which has suffered long-term declines. It is classified as Endangered in the UK and Near Threatened in Scotland.

Water vole surveys were carried out across Ben Mor Coigach in 2003 (Belshaw, 2003) and again in 2016 (Scottish Wildlife Trust, 2016). As can be seen in Map 9, signs of water vole occupation were observed along the length of most of the tributaries on the western side of the site. There were some additional records on north-easterly slopes.

For the conservation of water voles, it is important to manage for groups of colonies rather than individual populations. Across all sites, care should be taken to maintain riparian vegetation, create habitat connectivity where possible and avoid shading out watercourses

through woodland creation. These areas should be monitored for mink and control measures should be considered if necessary.



Map 9: Results of the water vole survey carried out within Ben Mor Coigach in 2016.

Butterflies

Michelle Henley provided 2021 records of small heath and small pearl-bordered fritillary butterflies on the site in June. There is no record of a formal survey of butterflies having been carried out, but butterfly surveys are recommended to provide further information records for future management of the site.

Other invertebrates

No invertebrate surveys of the site were available.

Molluscs

Freshwater pearl mussel

The Scottish Wildlife Trust commissioned Pete Cosgove to carry out a survey of the site for freshwater pearl mussel in 2006. The species was recorded at low densities in five of six

surveyed transects (Cosgrove, pers comm, 2021). The details of the survey have not been made available.

Michelle Henley of the Scottish Wildlife Trust provided an additional 2021 observation of freshwater pearl mussel on the reserve, and a number of open shells were noted during the 2021 field visits for this project.

Section 4: Management Aims and Suggestions

Management aims: After discussion with the Scottish Wildlife Trust and the Coigach and Assynt Living Landscape Partnership, and subject to further consultation with crofters, it was agreed that the primary aims for management of the site were to:

- Manage, restore and create habitats that have the potential to mitigate climate change impacts, particularly peatland and woodland.
- Protect existing high priority habitats and increase biodiversity on the site.
- Adopt economically sustainable practices with support from funding streams to sustain viable crofting activities.

Management suggestions

Management suggestions likely to meet the agreed aims include:

A Deer management

Consider the potential for reducing deer numbers to 1-2 per km².

Deer numbers (based on the 2016 count) on the reserve are relatively low at 3.7/km². However, some crofters have highlighted the impact of deer on the hill grazings, and there is still a need to erect expensive deer fencing to protect newly planted or regenerating woodlands. In addition, browsing of regenerating trees, including dwarf juniper, was noted during the field surveys and the very fragile montane habitats with large expanses of eroded, bare sand on the southern slopes of Ben Mor Coigach are likely to be highly susceptible to damage by deer. Deer were also noted as being present within deer-fenced woodland enclosures. Additional benefits of reducing deer numbers include protection for high priority peatland habitats, particularly during the restoration phase.

Therefore, it is clear that a substantial reduction in deer numbers could help achieve the biodiversity and environmental objectives of the Scottish Wildlife Trust while benefiting crofters with an interest in the common grazings. All of the crofters who returned the questionnaire expressed the view that deer numbers on the reserve should be reduced.

Deer numbers on surrounding estates are not substantially different from those on the reserve. Therefore if numbers are reduced on Ben Mor Coigach, the 'vacuum effect' associated with drawing in deer from neighbouring estates with higher densities should be limited to some degree. Deer numbers on the estate to the south-east were higher than on Ben Mor Coigach at 4-5 per km². (Appendix 4) However, numbers to the north-west of the reserve are very low at approximately 1 per km². The reserve has the advantage of being bounded by the sea to the south-west and a series of lochs to the north-east which helps to limit deer ingress.

It is recommended that deer numbers are reduced to 1-2 per km². This reduction is likely to accelerate tree regeneration along the northern side of the reserve, potentially reducing the need for further deer fenced enclosures. It also offers scope to remove the (now porous) deer fence around the better-established areas of woodland in the south-eastern corner of the Reserve.

It would be useful to undertake an up-to-date deer count and to produce a Deer Management Plan in advance of a reduction cull.

Deer numbers could either be reduced quickly with a concerted, concentrated effort, or more gradually over time. A large initial concentrated effort is likely to require less cull effort in the longer term.

Deer stalking is currently undertaken by contractors. This contractor effort could be stepped up. However, there is also scope to introduce some form of local stalking, for example through a 'stalking club' involving those living in the local area. This would help increase the resource for stalking and provide some additional local benefits.

Deer management can be funded through the *Deer Management* option under the Agri-Environment and Climate Scheme (AECS) at a rate of £1.24/ha.

The following specific recommendations apply to deer management on the reserve:

- Work with the Deer Management Group to undertake an up-to-date deer count and revise the Deer Management Plan.
- Consult with crofters and make a plan for increased deer cull effort with the objective of reducing deer numbers to 1-2 per km².
- Investigate options for undertaking the reduction cull, including a concentrated effort over a shorter period of time.
- Identify areas for increased cull efforts e.g. by targeting deer in around Culnacraig, in the montane zone in area D and in the additional zones identified in the draft deer management plan (the slopes north of the Fiddler, east of Ben Mor Coigach and Garbh Choireachan) (Scottish Wildlife Trust, 2018).
- Eliminate deer from existing woodland exclosures and ensure fences are deer proof.
- Investigate the potential for delivering increased benefits locally from deer stalking, for example, through a 'stalking club'.
- Consider applying to AECS for funding to assist with a reduction cull.

B Peatland restoration

Continue to work with other stakeholders e.g. Peatland Action and Scottish Water to maximise the potential for peatland restoration on the site.

Peatlands are high priority habitats and restoration measures offer an excellent opportunity to:

- Increase carbon storage.
- Enhance breeding sites for waders like golden plover and greenshank.
- Restore high priority habitats
- Improve water quality.
- Increase water storage in the catchment, which, at Ben Mor Coigach, could improve the performance of the hydro scheme.
- Access sources of income for good environmental management.

Planning work for potential peatland restoration is already well advanced in the Scottish Water WTW catchment area on the site and the extent of possible restoration works has been assessed in some detail in this location.

The scope for peatland restoration on other parts of the reserve is likely to be significant.

Funding for peatland restoration is available through the Peatland Action Scheme which has the potential to cover 100% of the capital cost of restoration work. In addition, there is potential to generate income through the sale of carbon credits accredited under the Peatland Code.

The [Peatland Code](#) is a voluntary certification standard for UK peatland projects wishing to market the climate benefits of peatland restoration and provides assurances to voluntary carbon market buyers that the climate benefits being sold are real, quantifiable, additional and permanent. Once a site has been certified the carbon credits can then be sold, usually through a broker, on the open market. Schemes can run for 50 – 100 years with longer schemes offering more potential income.

Useful information on the carbon code is available here. <https://www.iucn-uk-peatlandprogramme.org/peatland-code/introduction-peatland-code>

The following specific recommendations apply to peatlands on the reserve:

- Encourage Scottish Water to progress the restoration in the WTW catchment. This will realise the benefits to the hydro scheme and allow for generation of additional income via the Peatland Code.
- Encourage NatureScot/Peatland Action to complete their assessment of scope for peatland restoration on the remainder of the reserve as soon as possible. This should include specific, detailed quantification of the amount and type of restoration work and specific locations.
- Enable crofters and Scottish Wildlife Trust staff to develop in-house understanding of and expertise in managing peatland restoration work and generating income from carbon credits. Alternatively, bring in external bodies to advise on these issues.
- Reducing deer numbers as suggested in section A and manage livestock numbers and stock locations to protect existing and recovering peatland habitats.
- Refrain from driving all-terrain vehicles over deep peat habitats where possible.
- Refrain from carrying out any muirburn on the site.

C Woodland Creation

Consider the potential for woodland creation projects and opportunities to encourage further native woodland regeneration.

New woodlands offer a range of benefits including:

- An increase in carbon storage.
- The creation of new habitats for e.g. birds, invertebrates, mammals, mosses, lichens, which increases biodiversity levels generally.
- Shelter for livestock.
- A means of accessing income streams aimed at good environmental management.

Some additional native tree regeneration could be achieved through a reduction in deer numbers, particularly in the northern half of the reserve (see Section D). In other areas, particularly the Achiltibuie side of the reserve, there is scope to increase the very limited woodland cover on the hill grazings:- fencing and planting would be required at these sites.

Creation: South-west slopes near the hydro scheme. The Woodland Opportunities map produced as part of the Coigach and Assynt Landscape Partnership Scheme identified areas for woodland creation on the south-western slopes of the reserve, particularly around the Allt Ach' a' Bhraighe river. This offers some potentially good opportunities to increase and extend woodland cover where it is currently very limited. Woodland expansion in this area could focus on the ground close to the river, which would help to ensure that the new woodland has a more natural appearance.

Creation: North-west corner. The Woodland Opportunities map highlighted scope for new woodlands on the hill ground closer to Achiltibuie. This area forms an important part of the hill grazings and care should be taken to ensure that grazing land is not compromised. However, there may be scope to extend woodlands in a way that makes livestock management easier e.g. through the creation of new, enclosed hill parks (see Section D). Woodlands in this area could, for example, focus on new riparian woodland adjacent to the Allt Bad a' Chotair, which would integrate well with the existing landscape. There are a considerable number of archaeological sites in this area and care should be taken to ensure that these are not damaged by woodland creation work.

Management: Osgaig to Strathcanaid woodland. There is scope for further woodland expansion on the northern side of the reserve. Some of this is planned as part of a new woodland creation scheme incorporating deer fencing. A more sustainable option would be to encourage natural regeneration through a reduction in deer numbers (see Section A). This

is likely to be a better long-term approach and would allow for a more natural development of woodlands without the need for expensive deer fencing.

A long-term consideration is the ongoing management of planted and regenerating woodlands in the northern part of the site, including the Strathcanaird woodland. It is likely that, over time, these habitats would benefit from the introduction of large herbivores (cattle). There are significant logistical constraints associated with cattle grazing in these areas. However, light cattle grazing has the potential for significant habitat enhancement.

The following specific recommendations apply to woodland creation on the reserve:

- Investigate in more detail the potential for new woodlands on the western half of the reserve close to Achiltibuie and Banenscallie. These woodlands should be designed in a way that integrates livestock management, enhances habitats and is sensitive to the local landscape.
- Encourage natural regeneration of woodland in the northern half of the estate through a sustained reduction in deer numbers.
- Consider riparian tree planting and encourage natural regeneration of native trees along watercourses where freshwater pearl mussel occurs and where there are no conflicts with water voles. It is also recommended that the sites managed are periodically checked for illegal pearl fishing activity.
- Investigate the possibility of introducing low-level native cattle grazing in summer to areas of regenerating and planted woodland.

Issues to consider:

- The presence of peat soils
- The presence of high priority habitats. These should be graphically mapped from the GIS files created by Ben and Alison Averis (Averis, 2005) to ensure that there is no overlap between woodland planting and existing habitats of high value.
- The presence of water voles. Where vole colonies occur, retain corridors of open ground where water vole colonies occur.
- The presence of freshwater pearl mussel. Riparian woodland planting could benefit this species.
- The presence of breeding curlew and other farmland and upland waders. Avoid planting close to breeding populations.

- The presence of archaeological sites. Avoid planting on or around these sites.
- Pollution to watercourses:- minimise run-off to watercourses and lochs in the planting methods selected.

D Livestock management

Cattle: Consider the potential for introducing low densities of native cattle to the site.

Although it may not be possible within current agricultural capacity, low level native cattle grazing could significantly benefit some habitats and associated species, including:

- Wet heath and other habitats that have become modified and developed dense stands of purple moor grass and rush.
- Coastal and inbye grasslands - patches of bare earth, which encourages seed germination.
- Hill parks (suggested feature, see below) by improving grassland habitats for breeding upland waders.
- Existing woodland through controlled grazing
- The Rubha Dunan designated fen where cattle grazing at the edges may help to control common reed. However, it is understood that it may be difficult to manage for the possibility of cattle becoming stuck in mire habitats. There is also the potential for conflict with sheep grazing and public access in this location.

Some crofters feel that there has been an increase in bracken encroachment as a result of reduced cattle numbers. (Anne Campbell, pers comm 2021).

It may not be necessary to keep cattle on the site all year round. Alternative options include bringing in cattle from other locations (e.g. the east of Scotland) in summer.

In addition, as suggested in a questionnaire returned by a crofter from the common grazings, it might be worth considering the potential for introducing silviculture systems integrated with wildflower pastures.

High value peat-based habitats would not benefit from cattle grazing. Therefore, they should only be brought on to the site in low densities so that they preferentially graze available grassland and woodland habitats.

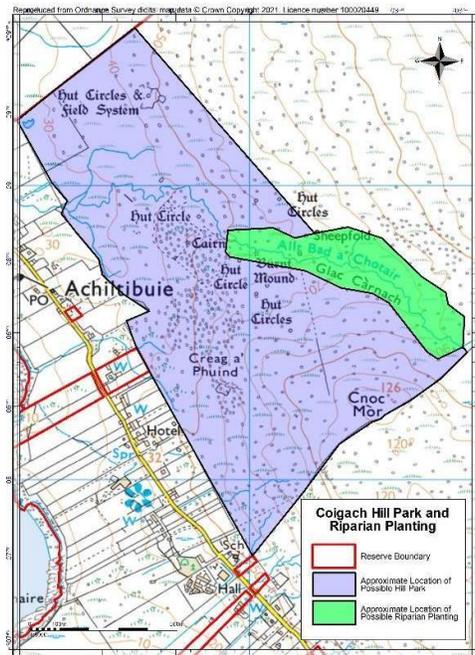
The care and protection of sites of archaeological interest should also be considered if cattle grazing is introduced.

Hill parks: Consider the potential for creating grassland, hill parks for livestock.

As described in Section C, there is scope to integrate woodland creation projects with new hill parks. Currently, the hill ground is unfenced and stock have the opportunity to range freely. Fenced hill parks could aid livestock management through concentrating animals in smaller areas when needed and allow for a twin track approach to management i.e:

- More concentrated grazing on the richer hill ground close to the in-bye
- 'Rewilding' on the outer hill, based around reduced deer numbers and tree and scrub regeneration with seasonal cattle grazing.

A possible example of a hill park integrated with woodland creation is shown in Map 10. The hill park in this example extends to 105 ha. Since the example area includes sites of archaeological interest, care should be taken to protect these features when carrying out new management activities in this type of location.



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Map 10: Example of a possible site for integrated hill park and woodland creation.
NOTE: Careful consideration should be given to the protection of archaeological features when planning woodland planting and livestock keeping activities.

Grassland hill grazings in the form of managed hill parks can provide valuable habitat for breeding waders like lapwing, curlew and snipe. A breeding wader survey is recommended to establish which breeding waders use the site and where they occur. If breeding waders are present, care should be taken when considering woodland planting to avoid loss of wader habitat.

Ensure that all livestock management activities meet compliance regulations.

E Rubha Dunan SSSI

Increase levels of reed cutting and removal.

It is understood that there are resource, cost and health and safety limitations to carrying out these actions. However, it might be possible to, for example, use a boat to access deep water sections of the site if budgets allow for it. Since boat operations are risky, it may be necessary to access funding for a contractor for work of this type.

F Water vole habitat management

Develop a water vole management plan.

As advised in the in the Scottish Natural Heritage Guide (SNH) (Scottish Natural Heritage, 2017) it is recommended that:

- New woodland planting schemes are designed to include riparian corridors.
- Riparian vegetation is not damaged through excessive grazing and poaching. Ideally, this would be achieved by maintaining low grazing levels on the site.
- No muirburn is carried out in the vicinity of water vole colonies
- Where possible, good habitat connectivity is established between colonised sites. Opportunities for excavating pools systems with good spreads of sedge, rush and grasses between could be considered. As suggested by SNH, these could act as 'stepping stones' between colonies.

G Water quality and riparian management for priority species

Maintain good water quality in lochs and streams for the benefit of otters, breeding divers, Atlantic salmon, freshwater pearl mussel and other freshwater species.

In addition to blanket bog restoration measures and the good management of heaths and grasslands:

- Consider implementing riparian tree planting schemes for Atlantic salmon and freshwater pearl mussel sites. NOTE: Refrain from planting near water vole colonies.
- Refrain from carrying out small-scale river engineering at or near freshwater pearl mussel habitat without a full assessment of their impacts (Cosgrove, pers comm, 2021).
- Consider taking measures near the freshwater pearl mussel site to prevent stock accessing the watercourse.
- Make contact with the West Sutherland Fisheries Trust to identify potential management for benefiting freshwater fish species. This may include (but not limited to) improvement of riparian habitats on the south bank of the Abhainn Osgaig between Loch Osgaig and Loch Bad a' Ghaill.
- Monitor key sites for illegal freshwater pearl mussel fishing.

H Species protection

Protect priority species on the site from disturbance and illegal activities e.g.

- Minimise disturbance near black-throated diver sites.
- Act to prevent illegal freshwater pearl mussel fishing

I Analysis of existing data

It is strongly recommended that the Averis survey data is used to map the locations of priority habitats on the site. The GIS mapped habitat polygons for this survey each contain a mosaic of habitat types. Separating out the priority habitats for each polygon is likely to be a substantial piece of work. Following the mapping exercise, the priority habitats should be resurveyed if possible.

J Monitoring programmes

Introduce monitoring programmes to assess trends for some features, particularly where new management recommendations are adopted.

In most cases, that would require carrying out benchmark surveys.

Features suggested for monitoring include:

- Native woodland regeneration extent and type (mapped for the Loch Osgaig woodland proposal on the north-eastern border of the site (Strachan, 2018).
- The extent of erosion and recolonisation by plants of the eroded, bare sand features on the southern slopes of Ben Mor Coigach.
- Blanket bog condition
- Breeding waders

K Species surveys

It is recommended that a series of species surveys is carried out to increase the knowledge of wildlife on the site and to inform management planning for the future.

- Upland breeding waders – It is recommended that a breeding wader survey is carried out on the hill ground using the Brown and Shepherd method 1993 (Brown *et al*, 1993). NatureScot advice is that this should be carried out using this method but with recommendations as set out in Calladine *et al* (2009) and with four survey visits at least seven days apart.
- Breeding farmland waders on the Achlochan ground and other low grasslands – It is recommended that a breeding wader survey is carried out on inbye grasslands using the Smith O'Brien survey method (Gilbert *et al*, 2009)
- Breeding divers – Survey methods can be sourced in Gilbert *et al*. (1998).
- Bird survey at Rubha Dunan. Discuss methods with NatureScot.
- Raptors – Species specific surveys are required for raptors. It is suggested that either the Highland Raptor Study Group or RSPB Scotland is consulted on what is already known about raptors on the site and which surveys would be appropriate to carry out. Species of interest are golden eagle, white-tailed eagle and merlin.
- Butterflies

- Fish - Conducting fish surveys, perhaps through the West Sutherland Fisheries Trust, would give an indication of fish stocks within the reserve. A healthy fish population is required for the dispersal of young freshwater pearl mussels.

There may be potential for interested, local people to be trained up to carry out survey and monitoring activities on the site.

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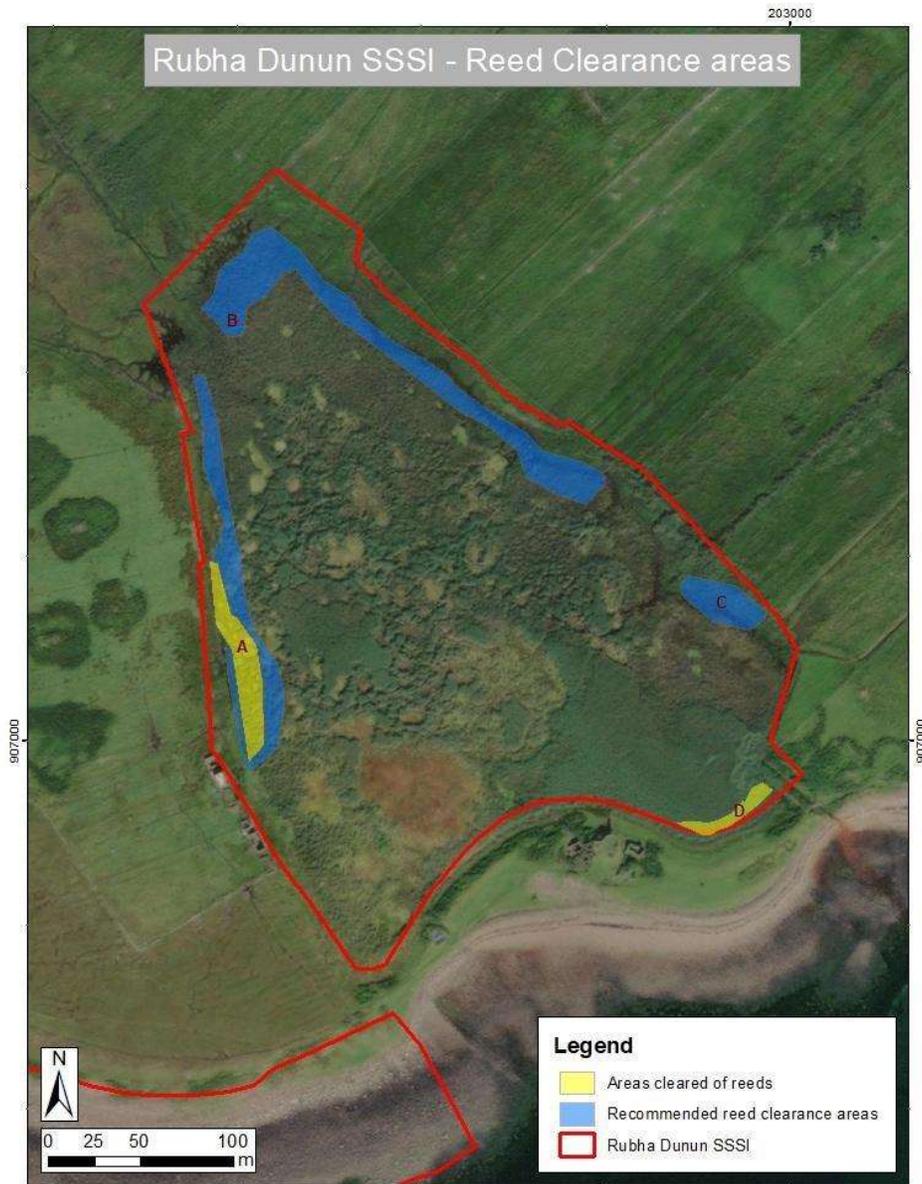
Appendix 1: Designated Features of relevance on the Ben Mor Coigach Reserve.

All information in this table has been taken from documents that can be accessed through the NatureScot Sitelink website (NatureScot 2021).

Designation	Site Name	Features, condition and management issues
SSSI	Rubha Dunan	<p>Geological features</p> <p>Fen, Marsh and swamp: Hydromorphological mire range. (Large stand of common reed, bog bean, horsetail, the regionally scarce lesser bladderwort, <i>Sphagnum</i> beds, bottle sedge, small sedge communities, marsh cinquefoil, ragged robin, early marsh orchid and yellow iris.)</p> <p>Favourable, declining. 2015</p> <p><u>Management issues:</u> Cutting of reed beds.</p> <p>Maintenance of sheep grazing to maintain visibility of geological features.</p> <p>Maintenance of seasonal fluctuation of water levels.</p> <p>Maintenance of livestock at a level that does not damage fen vegetation.</p> <p>Minimising nutrient run-off to maintain water quality.</p>
SPA	Inverpolly, Loch Uirigill and nearby lochs	<p>Black-throated diver – Favourable, maintained. June 2008</p> <p>Incorporates the sections of Loch Bad ‘Ghail and Loch Lurgainn that fall within the reserve.</p> <p><u>Management issues:</u> Disturbance from recreation. Water management.</p>
SSSI	Inverpolly	<p>NOTE: The Ben Mor Coigach reserve only incorporates a very small section of this site.</p> <p>Oligotrophic loch - Favourable, maintained. July 2004 Upland assemblage (alpine heath, spring-head, rill and flush, subalpine wet heath)– Favourable, recovered. December 2005. Blanket bog – Unfavourable, declining. December 2005 Upland birchwood – Unfavourable, declining. November 2005. Norwegian mugwort – Favourable, recovered. July 2007 Beetles (<i>weevil Otiorhynchus auropunctatus</i>) - Favourable maintained, July 2003</p>

		<p>Moths - unassessed</p> <p>Breeding bird assemblage (Red-throated diver, black-throated diver, heron, greylag goose, wigeon, teal, goldeneye, red-breasted merganser, snipe, curlew, greenshank, common sandpiper and grey wagtail) – Favourable, maintained. June 2003.</p> <p><u>Management issues</u>: Over grazing and trampling by sheep and deer on heath, bog and woodland habitats.</p>
SAC	Inverpolly	<p>NOTE: The Ben Mor Coigach reserve only incorporates a very small section of this site.</p> <p>Acid peat-stained lakes and ponds – Favourable, maintained. July 2004.</p> <p>Alpine and subalpine heaths – Unfavourable, recovering. July 2013.</p> <p>Acidic scree – Unfavourable, recovering. December 2005</p> <p>Blanket bog – Unfavourable, recovering. July 2013.</p> <p>Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels – Favourable maintained. July 2010.</p> <p>Depressions on peat substrates – Unfavourable, recovering. November 2005.</p> <p>Dry heaths -Unfavourable, no change. December 2005.</p> <p>Otter – Favourable, maintained. September 2011</p> <p>Freshwater pearl mussel – Unfavorable, declining, July 2008</p> <p>Western acidic oak woodland – Unfavourable, declining. February 2005.</p> <p>Montane acid grasslands – Unfavourable, no change. July 2013.</p> <p>Plants in crevices and on acid rocks – Favourable, maintained. November 2005.</p> <p>Very wet mires – Favourable, maintained. July 2013</p> <p>Wet heathland with cross-leaved heath – Favourable, recovered. December 2005.</p> <p><u>Management issues</u>- over grazing and deer trampling.</p>

Appendix 2: Map showing the Rubha Dunan SSSI with the area of fen vegetation to be removed (sections A-D). In 2018 reeds were removed and silt was dredged from areas A and D. In 2021 reeds were removed from area D only for health and safety reasons.

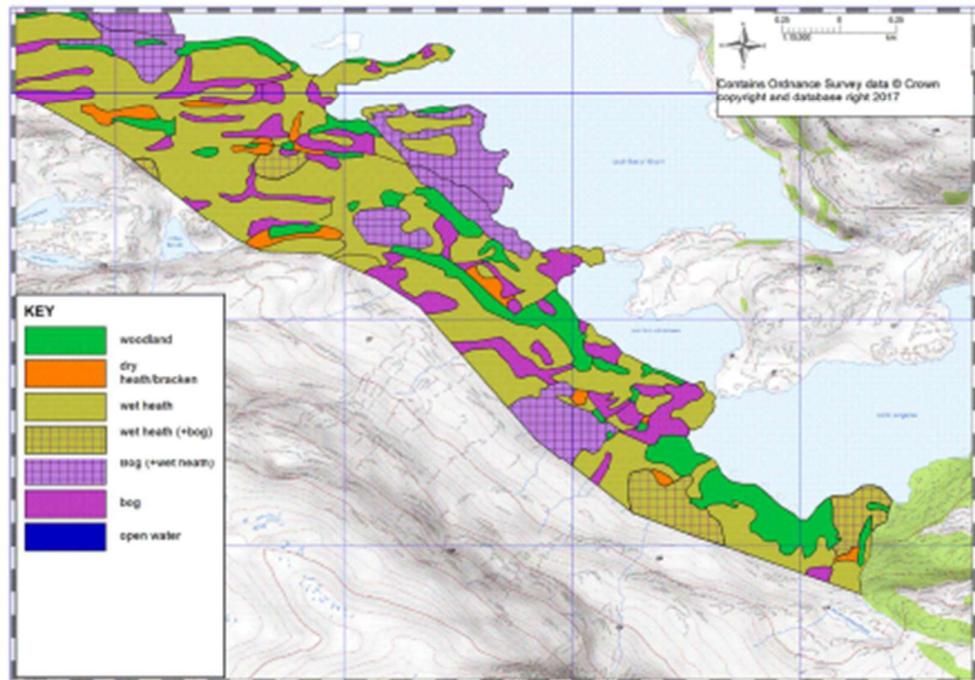
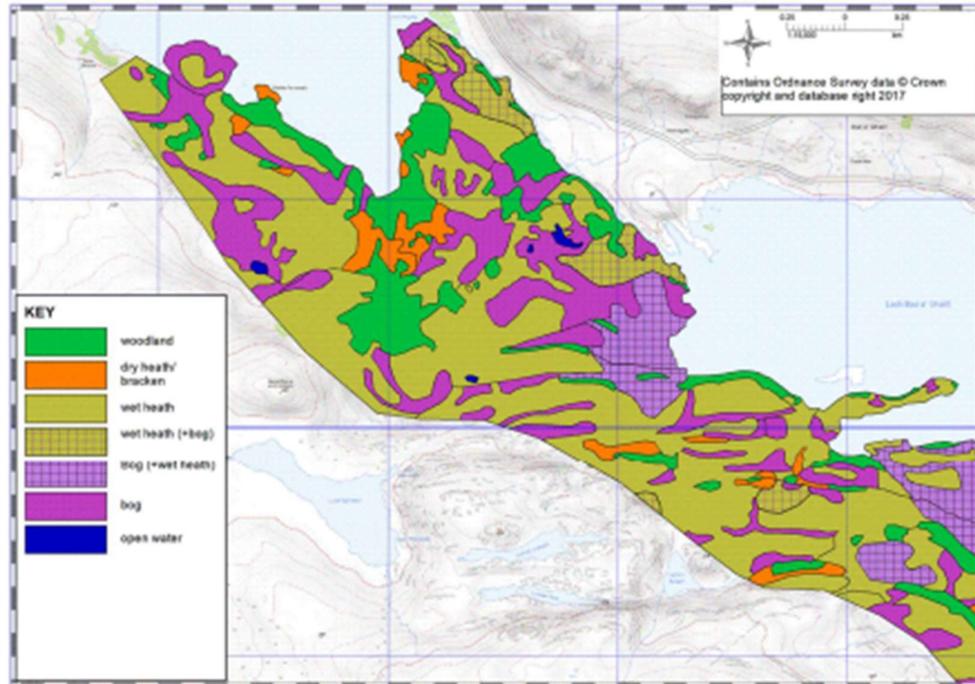


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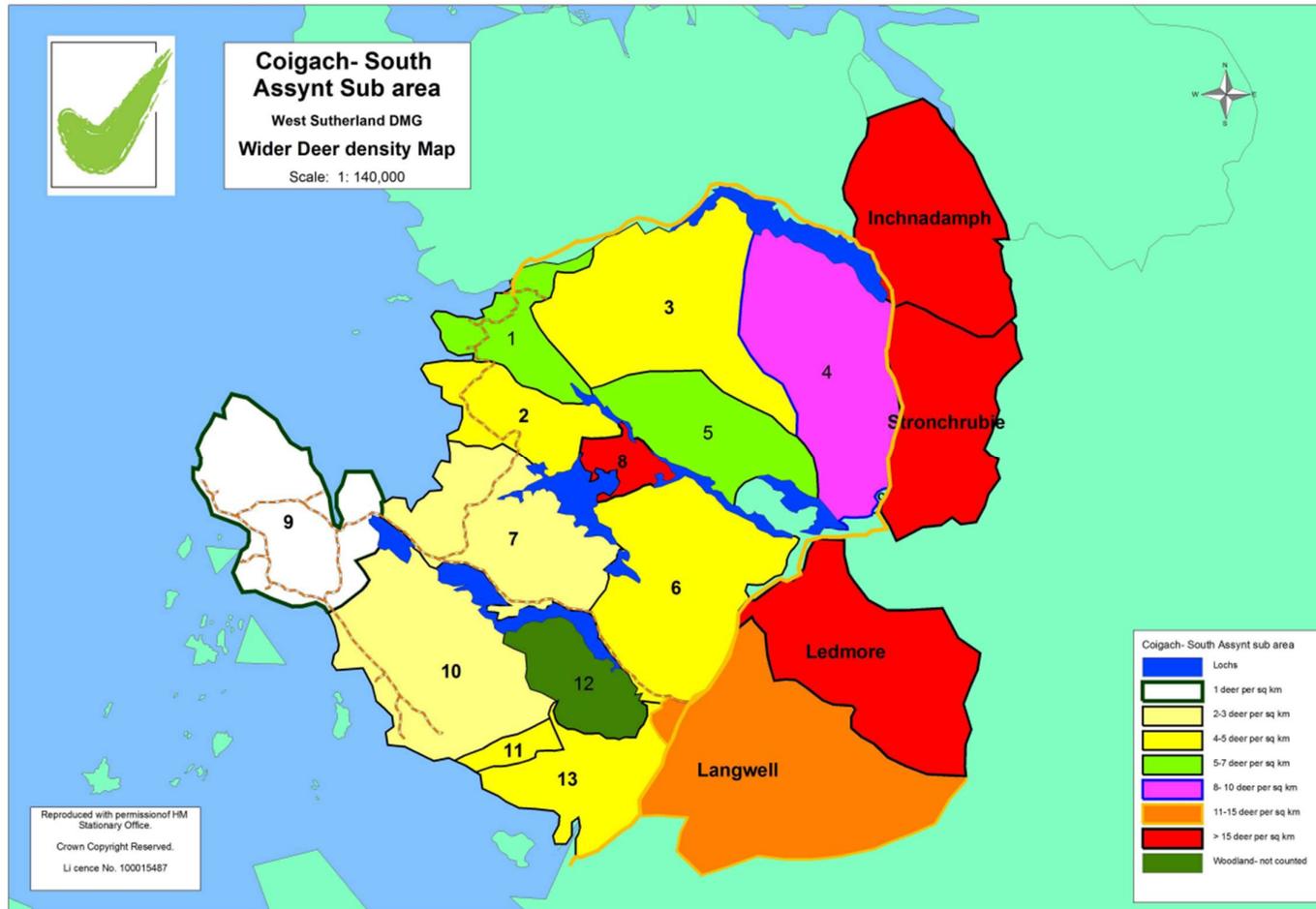
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
 Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and
 the GIS User Community
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 Scale at A4: 1:2,513



Appendix 3: Habitat maps from the 2017 survey carried out as part of the scoping exercise for a woodland planting proposal south-east of Loch Oscaig (Strachan, 2018). Top map = survey area (west). Lower map = survey area (east).



Appendix 4: Map of deer densities on Ben Mor Coigach and neighbouring estates as calculated from deer counts by helicopter in 2016 (West Sutherland Deer Management Group, sub-group Coigach South Assynt, 2018).



Appendix 5: Questionnaire that was sent to all crofters within the Achiltibuie Common Grazings in November 2021.

Common Grazing Questionnaire

We have been asked by the Coigach & Assynt Living Landscape Partnership to assess options for future management of the Achiltibuie etc Common Grazings. Getting the views of crofters on the future of the common grazings is an essential part of this process.

Unfortunately we won't have time to organise a meeting of all the shareholders. However, we would be very grateful if you could fill in this short questionnaire. This will help us develop ideas and recommendations for the future of the common grazings. If you have anything else you'd like to add, please write on the reverse.

Please either email the completed questionnaire to lockett@agri-environmental.co.uk , post to Richard Lockett, Knockbain Farm, Dingwall, IV15 9TJ or give it back to Anne Campbell.

Name (optional)		
Croft name (optional)		
How would you like to see the common grazing being used? (tick all that apply)		<input type="checkbox"/> More sheep grazing <input type="checkbox"/> Less sheep grazing <input type="checkbox"/> Cattle grazing <input type="checkbox"/> Tree planting / regeneration <input type="checkbox"/> Carbon storage (e.g. peatland restoration) <input type="checkbox"/> Rewilding <input type="checkbox"/> Biodiversity (state any particular priorities you have) <input type="checkbox"/> Improved deer management (please comment) <input type="checkbox"/> Other (please state below or on the next page)
Comments		
What livestock do you have?		<input type="checkbox"/> Cattle <input type="checkbox"/> Sheep <input type="checkbox"/> Other _____
Please provide information on how many of each livestock type you have (approx..)		
Are you planning on changing your stock numbers or type?		<input type="checkbox"/> Yes <input type="checkbox"/> No
If so, to what/how many?		
Do your livestock go on to the common grazing?		<input type="checkbox"/> Yes <input type="checkbox"/> No
If so:	What type? (sheep / cattle)	<input type="checkbox"/> Sheep <input type="checkbox"/> Cattle
	How many?	
	At what time of year?	
	Where (roughly) do they graze?	
	Are you planning on changing your stock numbers or type of livestock on the common grazing?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If so, to what/how many?		

Appendix 6: Records of bird sightings on Ben Mor Coigach as provided by Michelle Henley, Scottish Wildlife Trust

Scientific name	Common name	Notes	Grid reference	Date
<i>Tyto alba</i>	Barn owl	Dellets	NC 02690 06981	02/07/2021
<i>Tyto alba</i>	Barn owl	Disturbed from barn	NC 0248 0707	19/08/2021
<i>Buteo buteo</i>	Buzzard		NC 02497 07077	01/06/2021
<i>Buteo buteo</i>	Buzzard		NC 0243 0707	19/08/2021
<i>Aquila chrysaetos</i>	Golden eagle	Adult and juvenile	NC 0682 0315	22/04/2021
<i>Falco tinnunculus</i>	Kestrel	Rocky crag	NC 081 076	17/06/2020
<i>Falco tinnunculus</i>	Kestrel		NC 0243 0707	19/08/2021
<i>Anthus pratensis</i>	Meadow pipit		NC 0487 0650	07/06/2021
<i>Falco Columbarius</i>	Merlin	Flew along ditch next to road at low height	NC 06162 04161	12/01/2021
<i>Corvus corax</i>	Raven		NC 06110 04258	29/05/2021
<i>Emberiza schoeniclus</i>	Reed bunting	Reeds in Achlochan loch	NC 0294 0695	23/06/2021
<i>Charadrius hiaticula</i>	Ringed plover		NC 0819 0650	07/06/2021
<i>Charadrius hiaticula</i>	Ringed plover		NC 030 117	02/07/2021
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	Reeds in Achlochan loch	NC 0294 0695	23/06/2021
<i>Asio flammeus</i>	Short-eared owl		NC 02511 06985	19/08/2021
<i>Alauda arvensis</i>	Skylark		NC 0487 0650	07/06/2021
<i>Alauda arvensis</i>	Skylark		NC 030 117	02/07/2021
<i>Accipter nisus</i>	Sparrowhawk	Flew over road with prey in talons	NC 059 043	11/09/2020
<i>Accipter nisus</i>	Sparrowhawk		NC 04581 05817	25/02/2021
<i>Oenanthe oenanthe</i>	Wheatear		NC 02497 07077	01/06/2021
<i>Oenanthe oenanthe</i>	Wheatear	A few around the ruins at Achlochan	NC 02916 06925	23/06/2021
<i>Oenanthe oenanthe</i>	Wheatear		NC 02916 06925	02/07/2021
<i>Haliaeetus albicilla</i>	White-tailed eagle	Flying above road	NC 04156 06399	19/11/2020
<i>Haliaeetus albicilla</i>	White-tailed eagle		NC 0682 0315	22/04/2021

