

# MORVERN DEER MANAGEMENT GROUP

## HABITAT IMPACT ASSESSMENT

### REPORT 2020



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## Executive Summary

During June and early July 2020, a suite of 90 Habitat Impact Assessment (HIA) plots were established on Morvern DMG, with 30 each in the north-west, north-east and south-east sub-group.

The plots were placed on dwarf-shrub heath (DSH) habitat and assessed for impacts using the Wild Deer Best Practice methodology.

Approximately half of the total area has herbivores other than deer contributing to impacts – sheep on most of the SE sub-group and some of the NW sub-group area and both sheep and goats on the NE sub-group area. Otherwise, deer are the primary herbivore and the main cause of impacts on the plots.

Results show an overall predominance of medium browsing and low/medium trampling impacts. Impacts were overall lowest in the NW sub-group and highest in the SE sub-group. This pattern is mimicked in the frequency and abundance of dwarf-shrub habitats, with much higher incidence in the NW and lowest in the SE, meaning that impacts probably reflect both the relative density of herbivores and the relative abundance of the habitat on which impacts are measured.

Many of the challenges faced by the DMG in managing herbivore impacts relate to historic land management and the solution may not necessarily be as straight-forward as reducing deer numbers to gain an improvement in habitat condition.

HIA targets set by the group are met in the designated sites of Beinn Iaidain and Beinn na h-Uamha SSSI/SAC, Morvern Woods SAC (where open ground habitats have been assessed) and Sunart SSSI/SAC, though the sample size within the designations is small.

HIA targets outwith the designated sites have been met in the NW sub-group for browsing and trampling, but only for trampling in the other sub-groups. Overall the combined sub-groups fail the targets for browsing but the whole group meets the targets if browsing and trampling impacts are combined.

Changes to deer management are not considered necessary to maintain the DSH habitat condition in its current condition. Improvements to the *Molinia*-dominated habitats that might otherwise revert to DSH are not thought necessarily to be achievable through changes in deer numbers with a further reduction likely to make matters worse; other interventions are required.

## Introduction

In line with the requirements placed on deer managers through the Deer Management Planning process, a series of Habitat Impact Assessment (HIA) plots have been installed in Morvern Deer Management Group area during 2020. This is the first of three different habitat types that will be assessed over the period 2020-2022. The area covered is the open hill range of three of the four sub-groups – north-west, north-east and south-east.

The results are intended to assist, along with other data collected by the group, in setting targets for deer density and cull targets.

## Method

The method used is that set out in the Wild Deer Best Practice Guides, developed initially by the Deer Commission Scotland and now managed by Scottish Natural Heritage (SNH). While in the process of being updated, the original, published, method has been used but additional data also collected which it is expected will be comparable with the updates currently in draft form.

A series of 90 plots each of dwarf-shrub heath (DSH) habitat were installed in a random distribution across the sub-groups, 30 in each sub-group, using some of the plots issued by Scottish Natural Heritage (SNH) and, on Ardtornish, some HIA plots already in place following more detailed HIA work there in 2017. The plot distribution is random, but an effort has been made to achieve a good scatter across each sub-group.

The plots are marked with a 450mm wooden survey post, hammered in such that it is below the level of the vegetation sward. 10-figure GPS grid references and 4 separate location photographs were taken to ensure that the exact same location can be repeated in future. Additional photographs were taken of the plot number and GPS, and of the plot itself. Each image was given a file name that refers to the location, year, habitat type and plot number.

The data was recorded on paper forms and then transferred on an Excel spreadsheet. Both the forms and the spreadsheet, along with the relabelled images, have been provided to the DMG to facilitate repeat survey work in the future.

## Results

### Habitat condition – general observations

Overall the habitats seen on Morvern appear to be in good condition, without very high impacts observed except in a few hotspots, which are present on almost any site with free-ranging herbivores, whatever the density. However, there is an over-dominance of purple moor grass (*Molinia caerulea*) which is generally the most abundant plant present and increases in dominance to becoming almost a monoculture in the south-east. While observed current impacts are generally low or moderate, with medium impacts greatest in the DSH results, the dominance of *Molinia* indicates high historic impacts in terms of both grazing and burning.

Historically the peninsula was well-known for its cattle, arable and woodland products, with a pre-dominantly grassy hill. This is unlikely, however, to have been the dominance of *Molinia* which we see today, rather it would have been more productive grasses that would have thrived under the seasonal grazing regime of the cattle kept by the pre-1745 community. By 1770, sheep were beginning to replace cattle in Morvern and the pattern of small-scale tacksmen and farmers by larger sheep-walks (Gaskill, 1996). This trend continued over the next 150 years, with its survival into the modern day seen on Ardtornish. Elsewhere deer have replaced domesticated herbivores, as has been the trend over the 20<sup>th</sup> Century, when they would have been extremely rare or absent in the 18<sup>th</sup> and 19<sup>th</sup> centuries.

The trend towards dominance by *Molinia* stems from the desire to have a large number of herbivores on the ground, often all year round. Being selective grazers, sheep tend to enhance the trend towards dominance by *Molinia* since the leaves rapidly develop high levels of silicone and are generally unpalatable. The same is true of bracken (*Pteridium aquilinum*). As *Molinia* increases in abundance, large amounts of dead material accumulate, and its characteristic tussock formation develops. This has historically been tackled using fire, which burns off the leaf litter and stimulates fresh growth. However, the adverse impact has been the loss of many other species from the sward, including dwarf shrubs like heather (*Calluna vulgaris*).

While heather is not in itself particularly palatable, it remains the most valuable winter fodder, when most other plants have died back. With livestock on the hill all year round, or for deer, heather becomes a really important fodder plant. Historic burning reduces its presence in the sward but, in addition, the few remaining heather plants in a *Molinia*-dominated sward will struggle to thrive if grazing is reduced and burning stopped. Heather, like most other species, have been replaced by *Molinia* and are unlikely to return once a certain threshold has been reached as the *Molinia* out-competes their efforts to return.

So, while the current condition of the habitats is not poor, the legacy of historic activity is a very impoverished suite of habitats, especially where grazing and burning have been carried out for longer in the past. Just removing grazing and/or burning, which may be a successful strategy where habitats are slightly less dominated by *Molinia*, is unlikely to lead to an improvement on areas like Ardtornish (see image 1). Here it seems likely that only two potential strategies might make a difference; planting trees and significant disturbance, for example from short periods of intense grazing by small cattle like Dexters.

Image 1: small enclosure showing absence of grazing results on Ardtornish.



In north-east Kingairloch the absence of heather is also notable, with an over-dominance by *Molinia* in the bottom of Glen Galmadale. While the estate itself has no livestock (though a tenant grazier kept cattle until recently), sheep from neighbouring properties do drift onto the ground and there is also clear evidence of the impact of goats. While no goats were observed actually on the property, they are known to be present in the north-east corner of the peninsula and also on adjacent Ardgour (Aird Ghobhar – the height of the goats).

*Molinia* was recorded as present or dominant in 76 of the 90 plots. Of these, some were heavily grazed calcicolous grasslands on shallow soils over rock close to the surface, which *Molinia* would not normally be able to thrive in. About 6 of the 14 *Molinia*-free plots fall into that category. This leaves only about 8 plots, or 10% of the total of dwarf-shrub heath plots, where *Molinia* is not present. Even for Lochaber, this is an unusually high number of heath plots with *Molinia*.

Away from the *Molinia*-dominated grasslands of Ardtornish and north-east Kingairloch, heather is more abundant. Its condition is also better, which is not surprising given that there is more of it to feed the over-wintering population of deer. In places the heather is becoming rank and can be up to 1m deep where it has been subject to significant reduction in browsing by deer and/or livestock. Parts of Laudale and Glencripesdale (SNH) as well as Kinlocheteacuis fall into this category. Rank heather, like this, has relatively little value as fodder but its value as shelter increases.

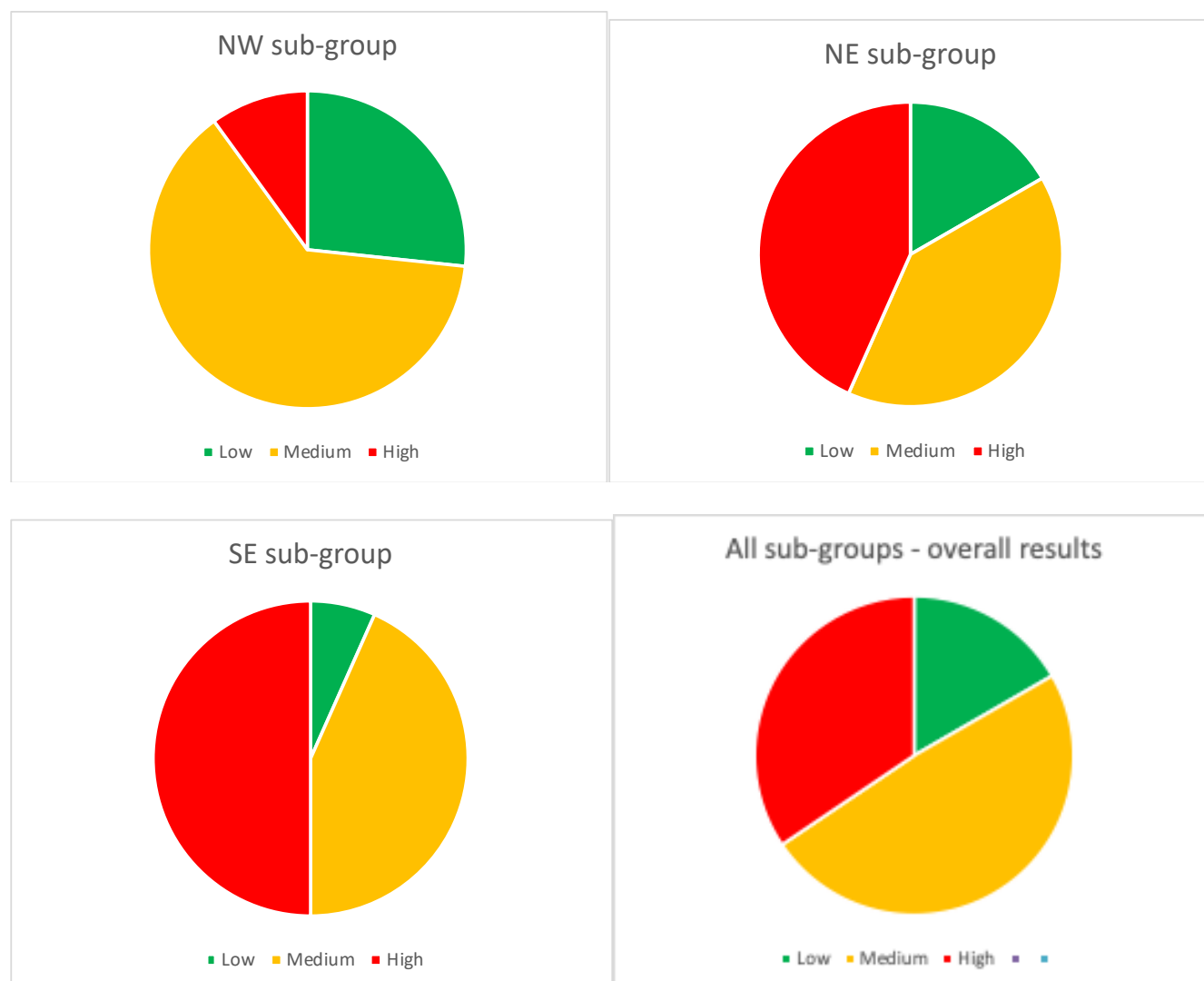
## Plot results

The results from the plots are essentially divided into browsing impacts and trampling impacts. Browsing impacts are considered to be low where less than 33% of last year's heather shoots have been browsed, medium where between 33 and 66% of last year's heather shoots have been browsed and high where it is above 66%. Trampling impacts are assessed on damage to the woody stems of heather. Here this measure is less useful since heavily browsed heather tends to be very short and low, with relatively little woody material and therefore does not show the kind of stem-breakage that is classified as high trampling impacts.

Table 1: browsing impacts on DSH in 2020.

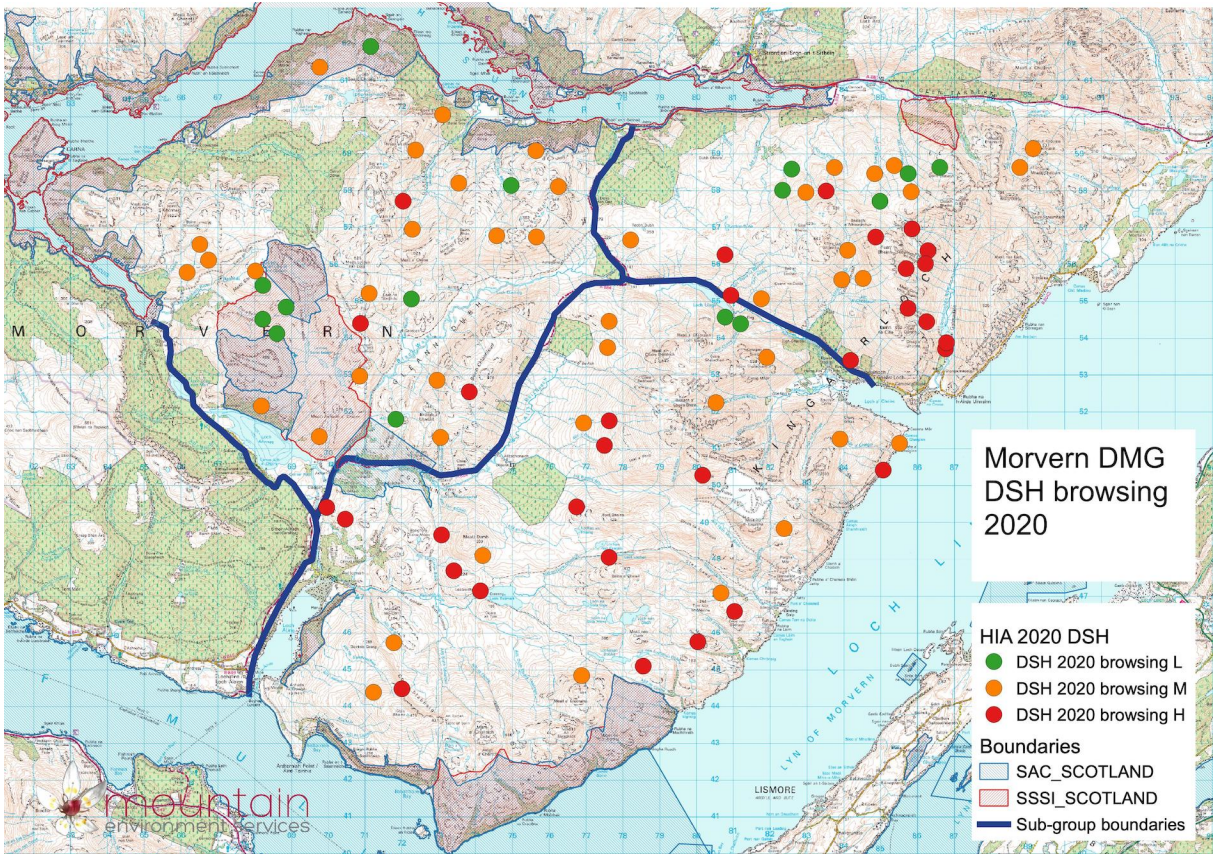
Sub-group	Browsing						Trampling			
	Low		Medium		High		Low/Medium		High	
	No.	%	No.	%	No.	%	No.	%	No.	%
NW	8	27	19	63	3	10	27	90	3	10
NE	5	17	12	40	13	43	29	97	1	3
SE	2	7	13	43	15	50	27	90	3	10
Overall	15	17	44	49	31	34	83	92	7	8

Figure 1: DSH browsing results by sub-group as a pie-chart.

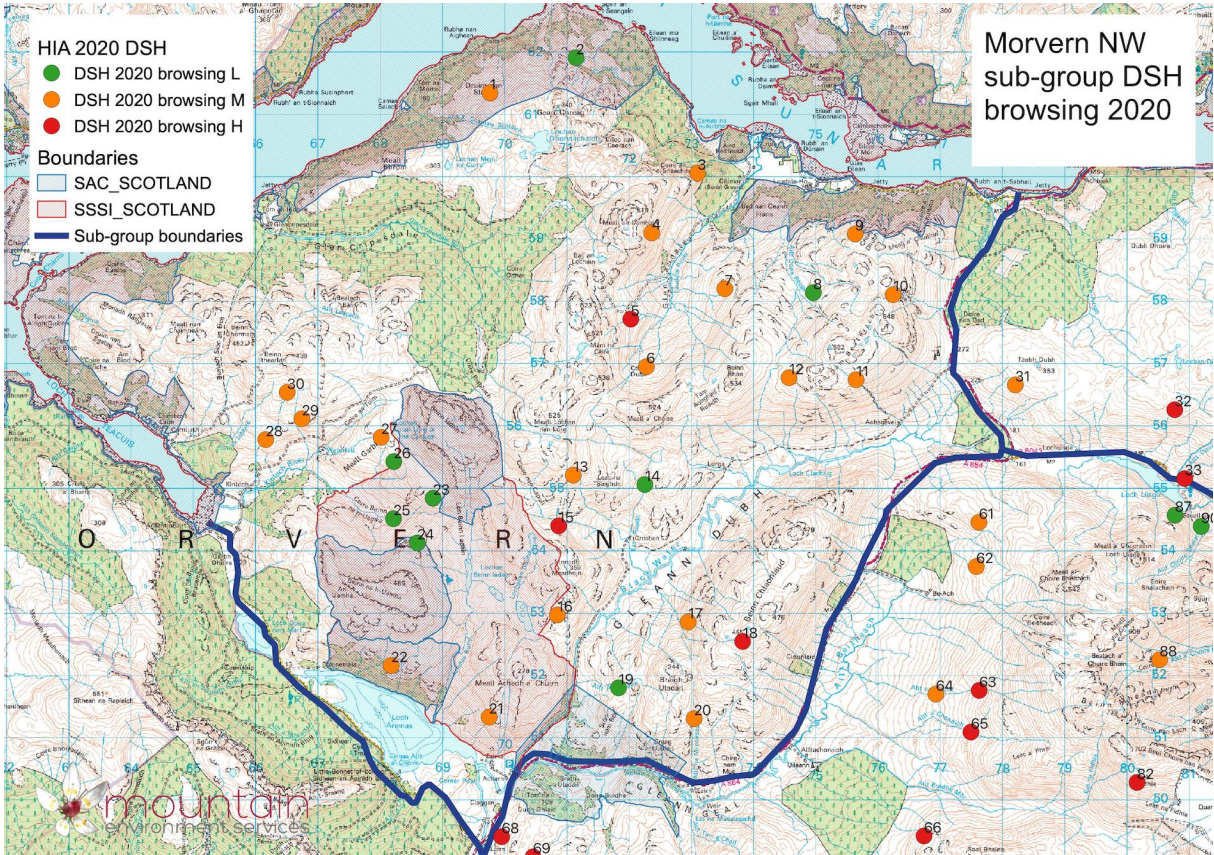


The increasing trend in impacts from NW to SE can also be seen on maps of the plots.

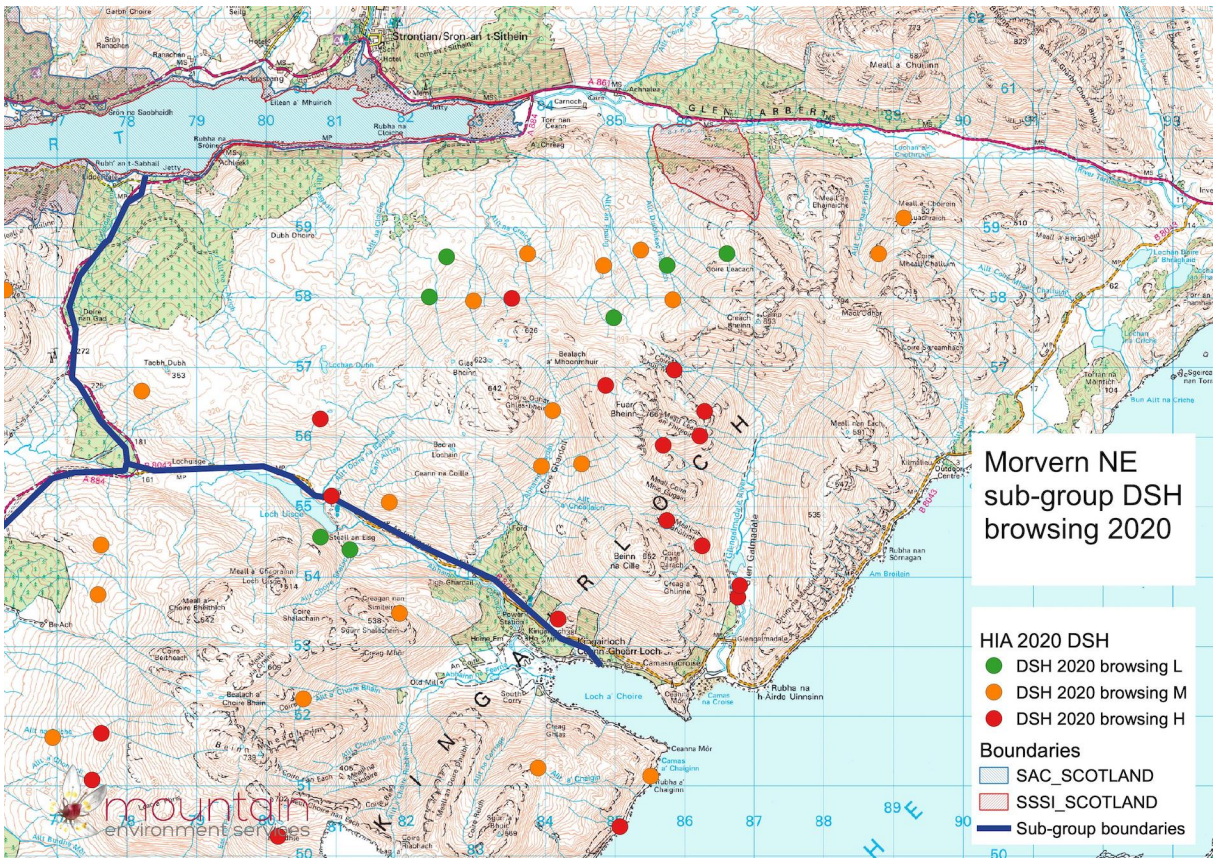
Map 1: Browsing impacts across all three sub-groups, DSH 2020.



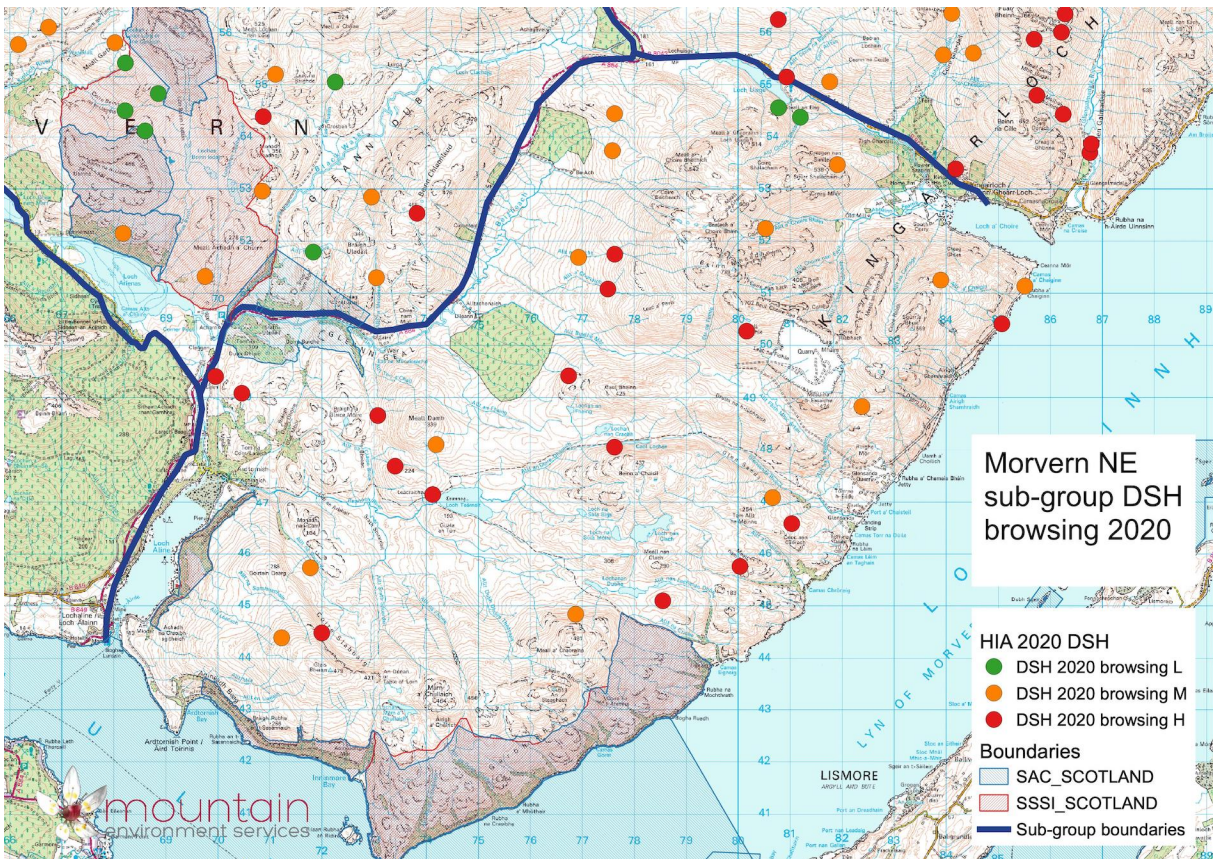
Map 2: Browsing impacts in NW sub-group, DSH 2020.



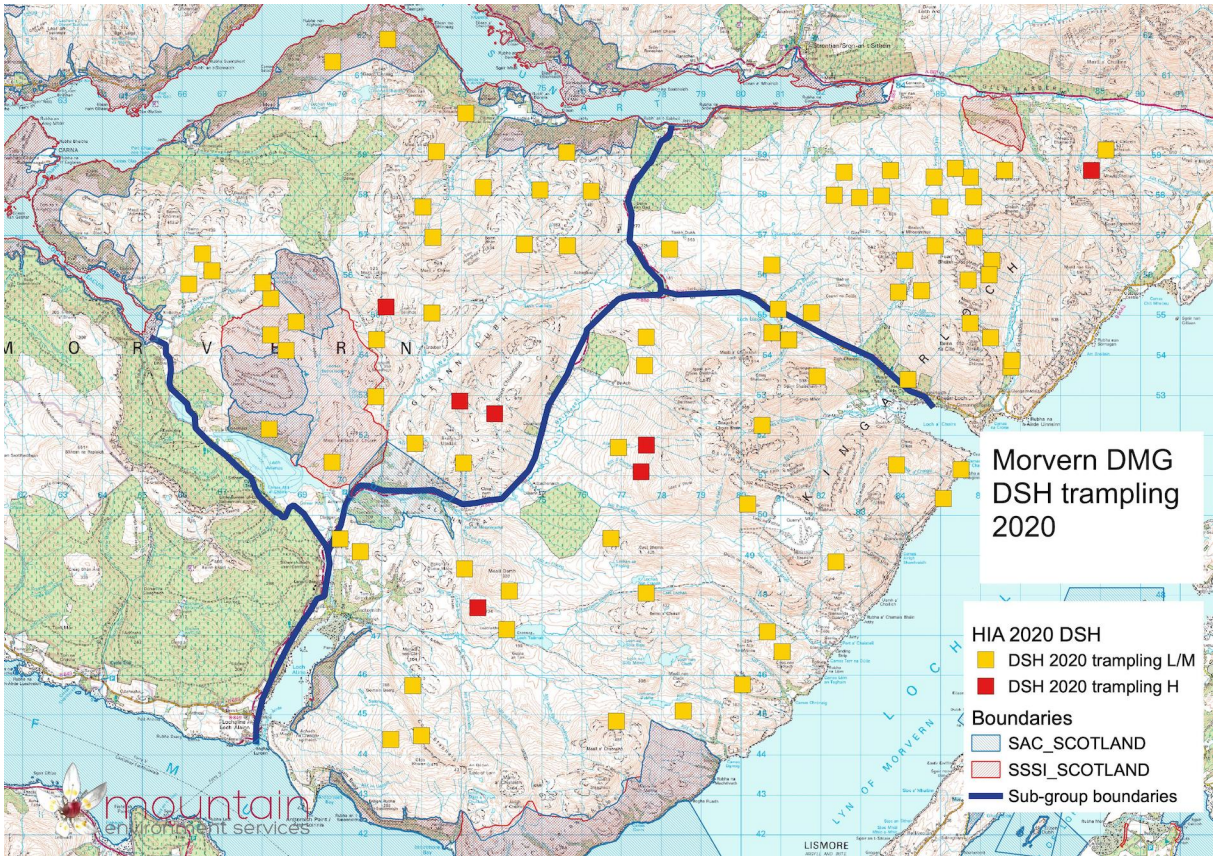
Map 3: Browsing impacts in NE sub-group, DSH 2020.



Map 4: Browsing impacts in SE sub-group, DSH 2020.



Map 5: Trampling impacts across all 3 sub-groups, DSH 2020.



## Discussion

The majority of browsing impacts are medium (49%), with few low (17%) and some high (34%). Impacts increase from NW to SE, with another pocket of high impacts in the NE corner. Overall trampling impacts are low/medium (92%) though this figure often reflects heather that is too short to show stem-breakage. However, the relatively low level of trampling on the habitats was observed throughout, with tracking rarely obvious or down into the soil below the vegetation. High browsing impacts at least partly reflect the low frequency of heather, the plant chosen for use in this methodology, and should be interpreted as just that, rather than a reflection of a high background density of herbivores. The provision of a methodology for the green hills of the west is long overdue and would potentially prove more useful in this kind of situation.

Observations throughout all 3 sub-groups indicated that browsing has been higher in the past and has, in the past 2-3 years, reduced. The high impacts of the winter of 2018/19 should not be underestimated, and this placed a skew on all data for heather. However, in spite of this, many of the plants showed more continuous growth in the current year than previously.

*Image 2: examples of browsed heather by forefinger, unbrowsed heather close to thumb.*



The presence of more rank heather in the NW sub-group also indicates that the deer here are not struggling to find enough to eat in winter and this equates to the large areas of open woodland to the north, in Glencripesdale. All sub-groups have woodlands that are open to deer, so the provision of forage on the open hill in winter becomes less of a limiting factor.

Everywhere rank heather has been observed to suffer from heather beetle, with large patches seen in every sub-group where rank heather occurs. This has not been seen in the more heavily browsed but nonetheless healthy heather plants; this more pioneer form of heather inhibits heather beetle. Even where the heather is close-cropped, most areas have some flowering and there is clearly a healthy seed bank to maintain the heather population. Where heather is scarce or absent and *Molinia* is dominant, this is not necessarily the case and lowering herbivore pressure is not likely to lead to an increase in heathy habitats.

There is evidence that the overall decline in the abundance of heather may be at least partly attributable to the impacts of heather beetle (The Heather Trust) and that this is potentially one of the drivers for the replacement of heather in the wetter west coast by *Molinia* grassland. It would be wise to take the prevalence of beetle occurrence into account when planning deer numbers and culling. If the more rank plants are those worst affected, then reducing impacts further may actually lead to a reduction in heather cover through the impacts of beetle damage, rather than the opposite.

Bell heather (*Erica cinerea*) is more abundant than heather (*Calluna vulgaris*) and perhaps reflects preferential selection of heather, which is more palatable than bell heather. However, it appears that the bell heather may be more abundant because it utilises the driest positions on the shallowest soils, where there is little or no competition from *Molinia*, rather than just preferential browsing impacts.

Deer everywhere this year look to be in excellent condition and the observed calving rate is high – around 40%. Some groups showed rates of 1 calf or follower for every hind and 1 set of twins was seen. The highest rates were observed adjacent to areas of significant woodland – Kinlochteacuis, Laudale and SWT. This raises the issue of culls in 2020/21, the need to maintain pressure to manage the bulge in deer population from a bumper calving year and the challenges associated with large reserves of deer held on adjacent properties with woodland. The situation at the Kinlochteacuis/SWT boundary with Glencripesdale means that culling hinds in season is extremely difficult and should probably be done early in the season in good weather, since otherwise they will not be in the open to be culled.

On Kingairloch the challenge of herbivores in the shape of neighbouring sheep and a vigorous goat population is a concern for Glen Galmadale, though the impacts seem to be confined to this one glen and elsewhere habitat condition is good with heather cover apparently increasing. This should become clearer when the Blanket Bog plots are surveyed in 2021, leading to a better overall spread of plots and data from the current blank part of the NE sub-group map.

On Ardtornish and the SE sub-group, the picture is confused by the presence of sheep and by the higher historic impacts that are obvious here.

## Results relative to DMG HIA targets

The DMG has stated HIA targets, as set out in Appendix 4.7 of their Management Plan. These are as follows:

Table 2: HIA targets for Morvern DMG.

Habitat type	Targets
Designated Woodland	80% low/medium impacts (currently 37%)
Designated upland sites	80% low/medium impacts
Salt marsh	Generally low impacts
Upland open range (including non-designated sites)	70% low/medium impacts with <30% high Blanket bog: <30% high impacts
Native woodland on non-designated sites	60% low/medium impacts (currently 67% for native species and 76% for PAWS)
Other woodland: a. Commercial forestry b. Continuous canopy forestry	No target for established forestry 60% low/medium impacts

Other than to comment that it will not be possible, using the Best Practice Guidance, to assess impacts on saltmarsh as no methodology has (yet) been agreed for any kind of grassy communities, at the present time we can only look at the targets against the DSH habitat type.

There is a total of 8 plots within the designated sites; 2 in the SNH-owned part of Sunart SSSI/SAC and 6 in the Beinn Iadain and Beinn na h-Uamha SSSI. Of these 6 Beinn Iadain and Beinn na h-Uamha SSSI plots, 1 is in the open range SAC of the same name and 1 is within the Morvern Woods SAC part of the SSSI. All the plots within the designated sites returned low or medium impacts for browsing and L/M for trampling, meaning the targets for designated sites have been met. The picture for undesignated sites is more complex.

The targets and 2020 results are summarised in the tables below. Table 3 looks at browsing only, Table 4 looks at trampling and Table 5 is a composite of both browsing and trampling, with each plot effectively returning 2 results. The sample size of plots on designated sites is too small for conclusions to be drawn about that area alone; the results are only statistically valid where the sample size approaches 30.

Table 3: Dwarf-shrub heath HIA targets for Morvern DMG versus the 2020 HIA results, using browsing as the indicator.

Habitat type		Target	Result	Sample size	Target met?
Woodland	Designated	80% L/M	100% L/M	3	Y
Upland open range	Designated	80% L/M	100% L/M	6	Y
Upland open range undesignated	NW sub-group	70% L/M with <30% H	86% L/M 14% H	22	Y
	NE sub-group		57% L/M 43% H	30	N
	SE sub-group		50% L/M 50% H	30	N
	Overall		60% L/M 40% H	82	N

Table 4: Dwarf-shrub heath HIA targets for Morvern DMG versus the 2020 HIA results, using trampling as the indicator.

Habitat type		Target	Result	Sample size	Target met?
Woodland	Designated	80% L/M	100% L/M	3	Y
Upland open range	Designated	80% L/M	100% L/M	6	Y
Upland open range undesignated	NW sub-group	70% L/M with <30% H	86% L/M 14% H	22	Y
	NE sub-group		97% L/M 3% H	30	Y
	SE sub-group		90% L/M 10% H	30	Y
	Overall		91% L/M 9% H	82	Y

Table 5: Dwarf-shrub heath HIA targets for Morvern DMG versus the 2020 HIA results, using both browsing and trampling indicators.

Habitat type		Target	Result	Sample size	Target met?
Woodland	Designated	80% L/M	100% L/M	6	Y
Upland open range	Designated	80% L/M	100% L/M	12	Y
Upland open range undesignated	NW sub-group	70% L/M with <30% H	86% L/M 14% H	44	Y
	NE sub-group		77% L/M 23% H	60	Y
	SE sub-group		70% L/M 30% H	60	Borderline
	Overall		79% L/M 21% H	164	Y

It can be seen that the combination of both browsing and trampling results leads to all targets being met in all sub-groups, though the SE group targets are borderline. Using browsing as the primary indicator, which is probably the more useful indicator, shows that targets are not met in the NE and SE sub-groups, leading to an overall target miss for non-designated open range. However, the targets do need to make allowance for other herbivores, with goats present in the NE group in the vicinity of the high impact plots, and sheep widespread at relatively low densities in the SE group.

On the designated sites, although targets have been met, there should be caution regarding the outcome. The sample size is too small to be statistically confident of the results. However, SNH states that “for the species-rich grasslands a [greater] range of impacts from low to high is appropriate and moderate grazing impacts overall are likely to maintain their condition. Historical high impacts have caused adverse effects (eg erosion) but this is now being resolved by management aimed at achieving the appropriate grazing/browsing levels.” (SNH, pers comm).

## Conclusions

Habitats are generally in good condition within the area covered by the survey, except where dominated by *Molinia*. Even here current condition is good, but the overall value of the habitat is low. Heath vegetation reduces in frequency and abundance from NW to SE and reflects both historic and current management, though the historic impacts probably out-weigh the current ones. The lack of heather to sustain deer over-winter is mitigated by the large areas of woodland available to them as both shelter and forage. The current level of the deer population does not, under the current circumstances, appear to be unsustainable and the recent reduction in numbers can be clearly seen in the impacts on heather.

Challenges remain around livestock, feral goats and the reservoirs of deer held in woodland on properties adjacent to the group, but not participating in its activities of collaborative deer management. While not insurmountable, pressure must be maintained to keep these external influences in check.