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Habitat Assessment

The ASCENT Site

Slieve Donard Co Down, Northern Ireland

T1.1

Research on the Impact of Unregulated Access to Upland Sites

by Newry Mourne and Down District Council and Mourne Heritage Trust and researcher Marc Vinas, Ecologist

ASCENT
Promoting Sustainable Access to Uplands & Natural Environments

Northern Periphery and Arctic Programme 2014–2020

EUROPEAN UNION
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Contents

Executive Summary

This report delivers against ASCENT Output T1.1 Habitat Assessment

Upland paths on Slieve Donard have deteriorated due to increased use and other disturbances and this is having a detrimental impact on the Natura 2000 (Special Areas of Conservation) designated habitats.

A Phase 2 National Vegetation Classification (NVC) survey has been undertaken in order to determine the condition of the habitat within the main access corridors and to provide a baseline to inform management proposals and monitor change.

A combination of aerial imagery, existing survey data and ground truthing, has been used to describe the upland vegetation within the main access corridors and immediate surroundings (100m buffer in respect to the main path line), capturing 30 different habitats and landscape features along it.

Twenty quadrats (2x2m) have been placed along the main access corridors, covering a general surveying area of 141ha and a distance of 10km. The assessment locations have been placed in immediate contact with the main path line in order to determine the baseline condition from the point of view of the recreational impact, enabling future longer-term change monitoring (e.g,. widening erosion and habitat loss, or recovery), setting strategic and representative assessment locations along the corridor.

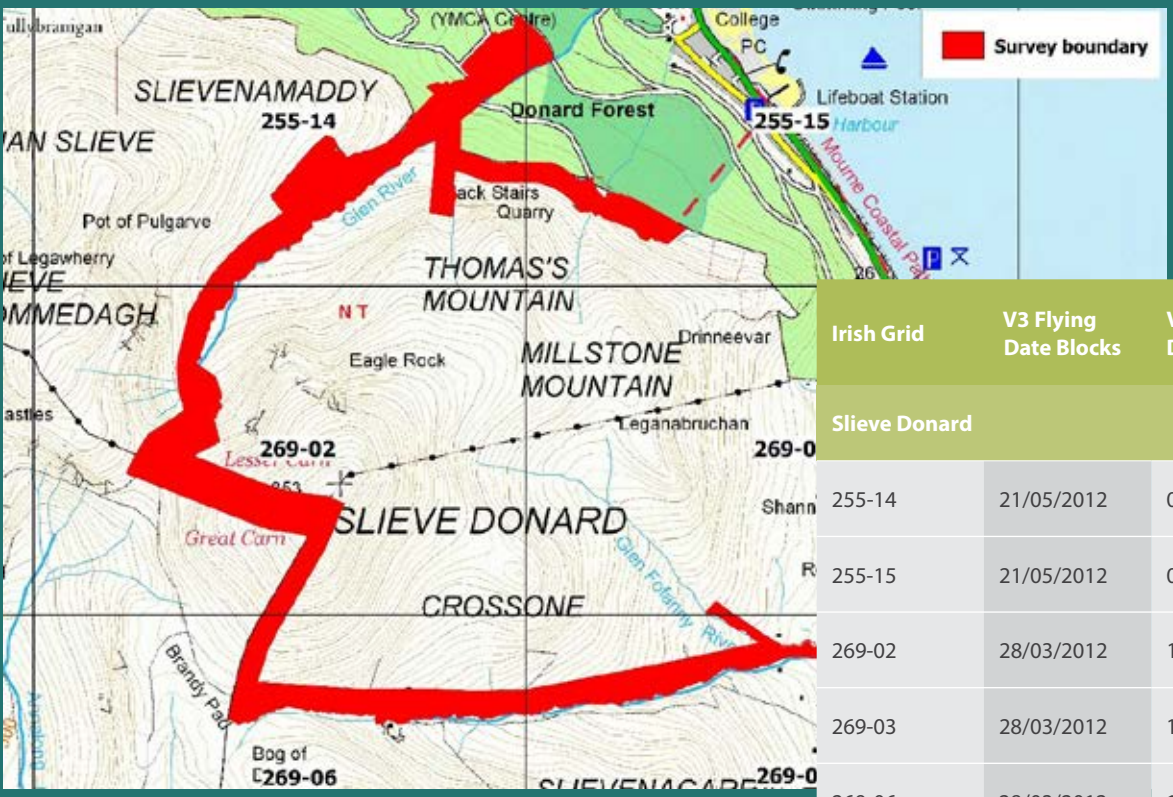
The assessment locations consisted of six different NVC Phase 2 communities including H10 Calluna vulgaris-Erica cinerea heath (nine locations), H10b Calluna vulgaris-Erica cinerea heath Racomitrium lanuginosum sub-community (four locations), M15 Trichophorum cespitosum-Erica tetralix wet heath (three locations), U10 stiff sedge-woolly fringe moss heath (two locations), and H8 Calluna vulgaris-Ulex gallii heath (two locations).

None of the plants species recorded as present were listed as Schedule 8 species or Northern Ireland Priority Species.

1.0

Materials and Methods

1.1 Aerial Imagery Resources



Irish Grid	V3 Flying Date Blocks	V4 Flying Date Blocks	V5 Flying Date Blocks
Slieve Donard			
255-14	21/05/2012	01/07/2014	
255-15	21/05/2012	01/07/2014	
269-02	28/03/2012	18/04/2014	
269-03	28/03/2012	18/04/2014	
269-06	28/03/2012	18/04/2014	
269-07	28/03/2012	18/04/2014	

1.2 Existing Habitat Survey Data

Document	Source	Year
A vegetation survey of the Mourne Mountains	MAC	1990s
Biological Survey: Slieve Donard	NT	1993
Slieve Donard Nature Conservation Evaluation	NT	2012
NVC Survey on a 22.7 hectare site in the eastern Mournes ASSI/SAC	MHT	2014
NVC Baseline Condition Survey on Sites within eastern Mournes ASSI/SAC	MMLP	2015
Eastern Mournes Condition Assessment Report	NIEA	2016

1.3
National Vegetation Classification

The National Vegetation Classification (NVC) classifies British natural and semi-natural plant communities, and also agriculturally-improved grasslands (Rodwell 1991, 1992, 1995 & 2000). The communities are usually referred to by the Latin names of the most frequent species they contain.

From the point of view of a wider European context, analogist classical phytosociological data, which exists in very large quantities in many EU states and other European countries, provides a substantial basis for comparing plant communities and gaining an overview of variation among vegetation types across Europe. The standard NVC sample is essentially the same as the relevé (or Aufnahme) of the phytosociologist, and the plant communities defined by the scheme are roughly equivalent to the Braun-Blanquet Association used in phytosociological hierarchy. Also, in the descriptions in British Plant Communities, the affinities of each vegetation type to the most appropriate phytosociological alliance are discussed. Such comparisons are summarised in a phytosociological conspectus of all the NVC vegetation types, which is included in Volume 5 of British Plant Communities (Rodwell 2000) and reviewed further in Rodwell et al. (2000).

Meanwhile, one of the benefits of publication of the NVC has been to stimulate contacts between British vegetation scientists and their European colleagues, in joint excursions, training and collaborative research. A variety of projects are now attempting to build a clearer picture of the vegetation of Europe and its vulnerability to environmental change. These are linked through a European Vegetation Survey (EVS) network that develops common survey standards and analytical software (Mucina et al. 1993, Rodwell et al. 1995), and produced an updated overview of phytosociological alliances in Europe (Rodwell et al 2002). Through this network, NVC users will be able to make a substantial contribution to our understanding of the European landscape.

The NVC was conceived originally as a classification scheme to help identify and understand vegetation types encountered in the field. Together with the survey methodology designed for the project, the classification is now very widely used by the UK conservation agencies and many other organisations to produce inventories and maps of plant communities on designated or threatened sites.

In addition to such basic applications, however, the NVC is also widely used now as a framework for scientific research into the relationships between plant communities and the environmental factors, which influence their composition and distribution. Some such studies have been pursued for their intrinsic ecological interest; in other cases, the NVC has been employed to help devise programmes for managing vegetation types or individual plant species under threat. Investigations of other biota in particular habitats, such as fungi, soil bacteria and invertebrates, are also making use of the NVC as a framework for sampling, description and experimentation.

Although the NVC itself is not a monitoring tool, it is also being used to help furnish protocols for particular monitoring programmes and to develop a conceptual basis for understanding the purpose and practice of monitoring. The predictive capacity of the NVC means that it can also serve as a basis for developing management options for sites or landscapes and as a framework for restoration and design guidelines.

Regarding the present habitat assessment in Slieve Donard and Slieve Gullion, the latest Landcover Map 2007 (Morton et al. 2011) was used to examine the likely habitats present on the site using ArcGIS 10.4 (ESRI, California, USA). An initial site visit was also made to both sites, determining suitable locations for the placing of the habitat assessment quadrats, and providing field truthing along the corridor area for the identification of broad habitat patches using a handheld GPS unit.

After that initial field assessment, several 2x2m quadrat locations were definitely placed along the path corridors, all located strategically with respect to the main path lines to provide effective monitoring of possible recreational pressure changes. In this way it will be possible to quantify the effects of an eventual increase in visitors and recreational pressure, based on possible changes in the condition (bare soil cover) and/or in the vegetation community (species composition and % cover) in the sample quadrats. As far as possible all quadrats were located ensuring representativeness of the surrounding vegetation composition and habitats. Each quadrat was surveyed using standard NVC Phase 2 survey methodology (Rodwell, 2006) recording all plant species present and their percentage cover (converted to the Domin scale). It was very helpful to use a standardised record sheet for NVC sampling. These served as a prompt to ensure that all relevant information is recorded and can greatly assist data coding and analysis. The sheet used in the NVC survey is shown in Figure 1.

Cover	Domin
91–100%	10
76–90%	9
51–75%	8
34–50%	7
26–33%	6
11–25%	5
4–10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

For every species recorded in the sample, an estimate should be made of its quantitative contribution to the vegetation. Cover/abundance is a measure of the vertical projection on to the ground of the extent of the living parts of a species (see Figure 2). In the NVC, this is estimated using the Domin scale (sensu Dahl and Hadac, 1941):

A full species list including relative abundance and NVC classes were recorded. The species inventory list was compared to Schedule 8 and the Northern Ireland Priority Species list to flag those species of conservation concern. Soil depth was measured with a penetrometer at five locations in each quadrat and the mean calculated. Shrub height was measured at five locations in each quadrat and the mean calculated.

Together with the measurement of the quadrat aspect using a compass (see Figure 2), fixed-point photographs (Pentax istDL with Sigma panoramic lens 10-20 mm F4-5.6 EX DC) were taken on a standardised aspect pattern in all the sample quadrat locations (see Figure 3). Finally, a dichotomous key to upland vegetation types (Averis et al. 2004) was used to establish which NVC community and sub-community represented each quadrat best.

NVC record sheet:

Location	**Coordinates [•] X,Y**	**Region**	**Author**

Site and vegetation description	**Date**	**Sampling position*1**
Path corridor section Phase I habitat Map		LS / M / RS
	Altitude	**Slope**
	GPS data	%
	Aspect	**Soil depth**
	(x,y)	X mean
	Stand area	**Sample area**
	Stand patch	2 m x 2 m
	Mean height	**Layers cover*2**
	X mean	% % %
	Fixed point photography nº	
	File name (aspect related)	

Species list: Domin scale value based on % cover

*1 Left side / Middle / Right side position of the quadrate respect (aspect specification) to the main line of the path.

*2 trees, shrubs/grasses and bryophites layers cover.

Figure 1: NVC survey sheet.

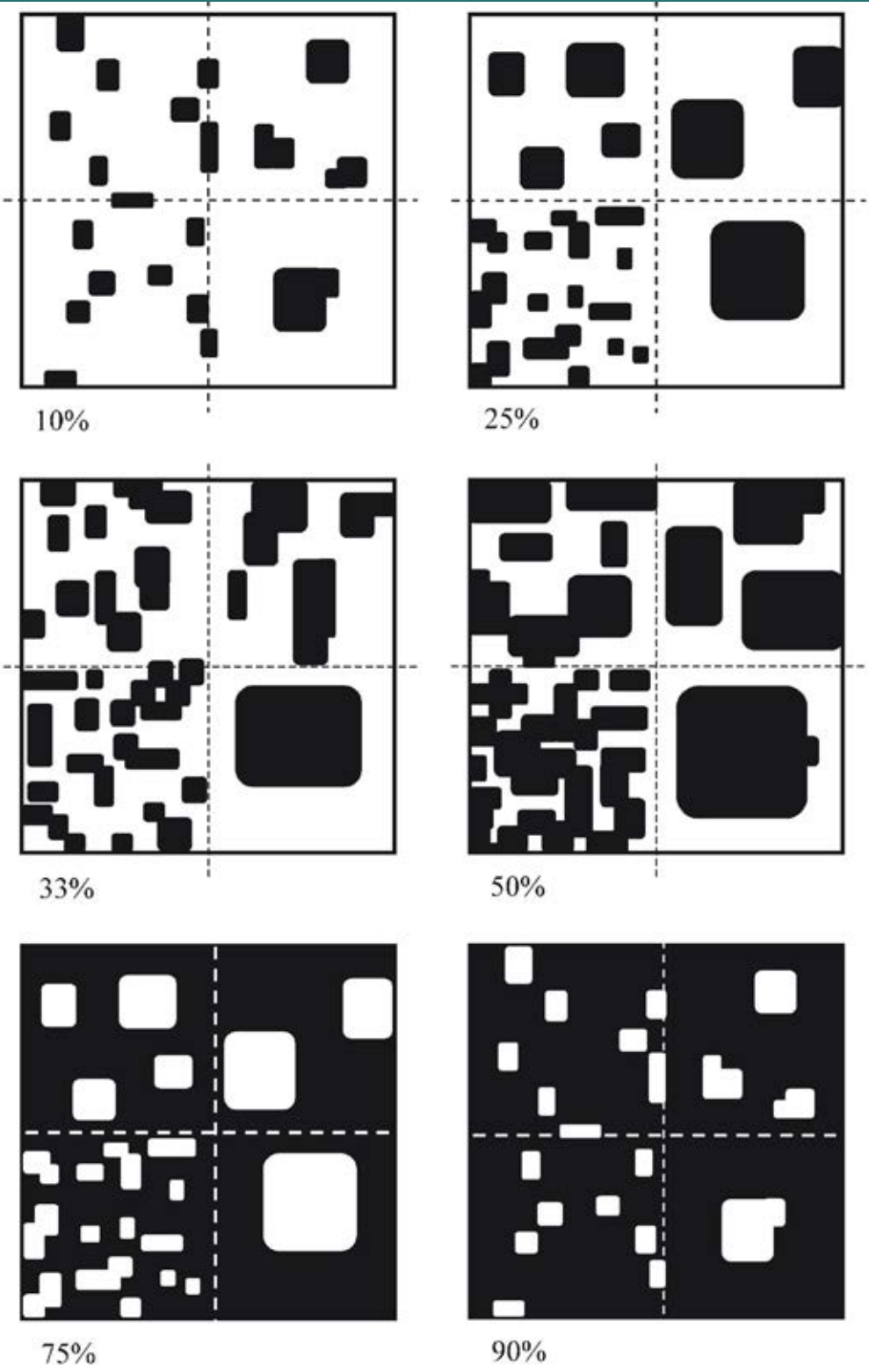


Figure 11 A visual interpretation of Domin cover/abundance thresholds. In the diagrams, each sub-square has the same total area of black: the top left diagram, for example, has 10% black in each sub-square.

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Figure 2. A visual interpretation of Domin cover/abundance thresholds. In the diagrams, each sub-square has the same total area of black: the top left diagram, for example, has 10% black in each sub-square.

2.0

Upland Vegetation Description

Slieve Donard forms a very important part of the eastern Mournes ASSI and SAC, noted for its biological and earth science interests. The extent and quality of the habitats represented is particularly notable. The altitude ranges from 852 metres on the summit of Slieve Donard down to 160 metres on the eastern slope, with the habitats ranging from montane heath on the highest summit area, down through upland heath and blanket bog to lower-level heath on some of the lower slopes. The Glen River and Bloody Bridge Valley sides, together with other different facing slopes and streams elsewhere, support complex mosaics of habitats, including flushes, wet heaths and mires, along with transitions between these.

The area supports a wide range of habitats of significant nature conservation interest, and offers opportunities to enhance the biological interest of some areas through strategic land management.

The key features and species of nature conservation interest (Northern Ireland Priority Habitats) are:

- Montane heath on the summit of Slieve Donard, with dwarf willow, a component of one of the rarer upland vegetation types. Other characteristic species include woolly fringe-moss and both alpine and fir clubmoss.
- Extensive areas of upland heathland especially along the mid-slopes/valley sides with good dwarf shrub development.
- Blanket bog on the spur of Thomas's Mountain with good vegetation cover, very little bare peat and a series of boggy pools, supporting scarce invertebrates such as the upland cranefly.
- Upland flushes, fens and swamps including extensive areas of wet heath and mire communities with locally-distributed plants such as pale butterwort, black bog-rush, bog asphodel and star sedge that are characteristic of the nutrient-poor wetlands in the uplands of the western UK. Also, some of the highest flushes supporting notable plants such as starry saxifrage.
- Inland rock outcrops and scree with ledge and crevice flora reported in historical surveys, including notable bryophytes at Eagle Rock and Black Stairs, and Wilson's filmy-fern at Eagle Rock.
- A different heathland community occurs around the lower slopes, especially on the eastern edge, where Western gorse is prominent.

The vegetation is highly complex, varying in topography and management history. It mainly consists of varying proportions of heath, grass-heath, mire, flush/stream and rock/scree habitats. These often form habitat mosaics and merge into each other, with gradual transitions from one vegetation type to another.

This poses problems when trying to map the vegetation, particularly when using the Phase I Habitat Classification. As a result, a Phase I Habitat map which accompanies the corridor map of this report should be seen as a very simplified overview of the vegetation produced under the limitations of the Phase I Habitat mapping system.

Slieve Donard forms part of the much larger (7,500 ha) eastern Mournes ASSI and SAC. The ASSI designation is due to its geological and geophysical features, as well as its heathland and upland flora and fauna.

The SAC designation is based on the presence of Annex I Habitats of European importance. All of these are likely to be present within the Slieve Donard area of the SAC:

Annex I Habitats that are a primary reason for selection of the site:

- Northern Atlantic heaths with Erica tetralix.
- European dry heaths.

Annex I Habitats present as a qualifying feature, but not a primary reason for selection at the site:

- Alpine and boreal heaths.
- Siliceous alpine and boreal grasslands.
- Blanket bogs.

- Siliceous scree of the montane to snow levels.
- Siliceous rocky slopes with chasmophytic vegetation.

Annex I of the EC Habitats Directive is a list of habitat types which Member States of the European Union are required to protect through designation of Special Areas of Conservation. This list was initially derived from an unpublished version of the CORINE Biotopes Classification produced in 1988, which differs from the published version of the CORINE Biotopes Classification. Member States have found difficulty in relating the Annex I list to the published version of the CORINE Biotopes Classification. An Interpretation Manual of European Union Habitats containing definitions of each of the Annex I Habitat types has been prepared and published by the European Commission (European Commission DG Environment, 2003) to allow experts in the EU Member States to identify individual Annex I Habitats on a consistent basis. Where relevant, this manual contains details of those NVC types which correspond to given Annex I Habitat types. A more comprehensive review of the correspondence between the NVC and Annex I types is provided via the National Biodiversity Network Habitats Dictionary **https://www.nbn.org.uk/habitats** and in Appendix 2 of Jackson and McLeod (2000).

Numerous NVC communities are represented at Slieve Donard, often forming complex mosaics and transitions. Most of the upland dry heath is of the NVC H10 heather–bell heather type. Several sub-communities are present, particularly the woolly fringe-moss sub-community in the higher and more exposed areas. H10 heathland occurs in the more oceanic parts of Britain and Ireland. Higher up this grades into the H18 bilberry–wavy hair-grass community (particularly the woolly fringe-moss–Cladonia sub-community). This occurs at moderate to high altitudes throughout the uplands of northern Britain and Ireland.

The vegetation on the very highest summits (particularly Slieve Donard itself) shows closest affinity to the NVC U10 stiff sedge–woolly fringe-moss moss heath community. This is characteristic of windswept plateaus at moderate to very high altitudes in the cold, humid mountains of north-west Britain and Ireland.

Most of the wet heath vegetation falls within the NVC M15 deergrass–cross-leaved heath community. This occurs widely on both peat and mineral soils at lower altitudes in the wetter western and northern parts of Britain and Ireland. The examples here are variable, and several sub-communities are probably present. The blanket bog vegetation (on deep peat and receiving water only from rainfall) is mainly of the NVC M17 deer-grass–hare's-tail cottongrass type. This is also confined to the more oceanic parts of western Britain and Ireland.

Vegetation associated with the rock and scree habitats include the NVC U16 great wood-rush–bilberry tall herb community. This develops in areas inaccessible to sheep and other animals in the cold, wet uplands of north-west Britain.

The vegetation on the lower slopes of Donard area falls within the H8 heather – western gorse community. This is typical of warm, oceanic regions of lowland Britain and Ireland.

3.0

Summary of Results

Combined with the considerable habitat modification under the present grazing regime, the recreational pressure is contributing to the loss and fragmentation of several habitats around the Donard main access corridors.

This combination results in advancing fronts of acid grassland along the recreational corridor that are replacing the previous heath surrounding communities. It is evidence of the dominance pattern recorded in most of the assessing quadrats (especially along the Glenn river corridor), with high cover of mat-grass Nardus stricta, as a result of its unpalatable nature and high tolerance to trampling.

The digitising of the main access corridor based on the last set of aerial images (2016-2017) has revealed areas where the corridor has become dramatically wider, with severe braiding areas sections and frequent scars produced within sensitive habitats such as Racomitrium heath (Donard summit and slopes) and wet heath (Bloody Bridge and Bog of Donard) presents along the corridor.

The strategic placement of the 20 surveying quadrats along the recreational corridor has provided an accurate baseline condition. They have been placed on the side of main paths or braiding scars, and are predicted to be damaged in the short term if the recreational pressure increases in coming years. The features recorded (species content, percentage cover, best-represented community, percentage bare peat, average height), together with the fixed-point photography, will enable the detection of possible future changes due to recreational pressure.

Further combined analysis of the habitat mapping and the 20 NVC baseline survey results will provide decision making and inform management proposals for the different sections along the recreational corridor.

Annex I:

NVC Survey Record Sheets

NVC record sheet: D 01

Location	Coordinates [●] X,Y		Region	Author
Glen river	336638	329744	Donard Forest	MVA

Site and vegetation description

Final section of the glen river path inside the Donard forest. The forest area beside the river has been recently thinned, with several pine trees removed. Herbaceous plants and woody scrubs, especially holly, are developing below the tree canopy.

The quadrate is situated in the immediate intersection between the main path, main line closer to the river, and the common diversions towards the parallel upper path line immediately further up from the river side.

The vegetation here consists on suppressed gorse bushes with dominant herbaceous neighbour of purple moor-grass, becoming denser in forest openings and the sides of the river. There are some bracken patches and abundant rocks, where ferns, mosses and other scrubs as heather and billberry develop sparsely on the shelter.

The area assessed has been not currently damaged by recreational pressure (trampling), but it is in a vulnerable location, with high probabilities of being affected by walkers diverting from both path lines, especially for those diverting up from the main path line beside the river.

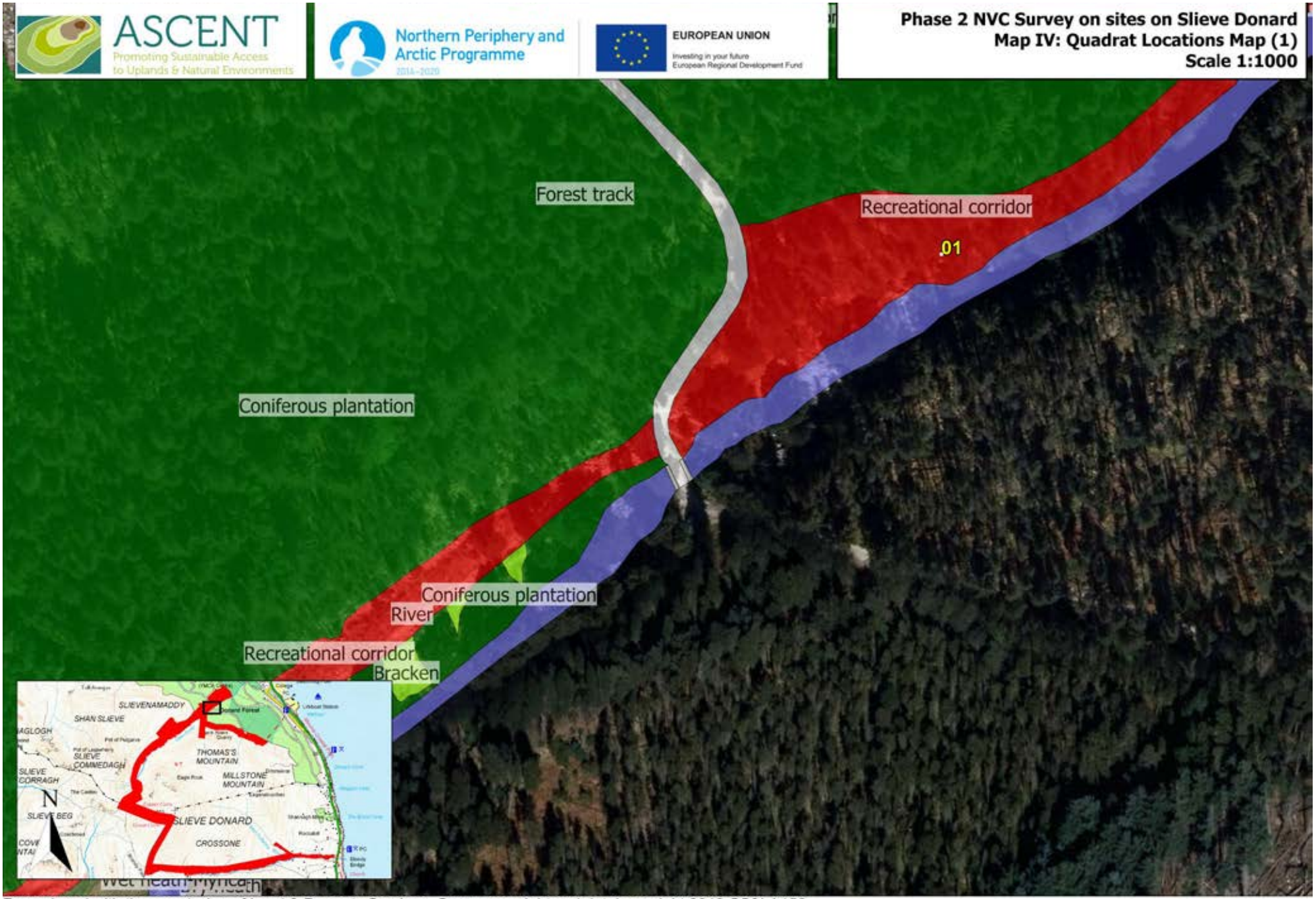
Date	Sampling position
30/11/2017	LS (NW)
Altitude	**Slope**
180 m	2%
Aspect	**$\bar{X}$ Soil depth**
Y 275º NW X 175º SE	6,27 cm
Bare rock / **Bare soil**	**Sample area**
10% / 0%	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
82,89 cm	- / 90% / 50%
Fixed point photography nº	
IMGDQ01	

Species list:

Molinea caerulea	9
Hypnum spp.	7
Erica cinerea	5
Pteridium aquilinum	5
Calluna vulgaris	4
Thuidum tamariscum	4
Potentilla erecta	1
Campylopus introflexus	1

NVC classification: Forest understorey area of ~H10 *Calluna vulgaris-Erica cinerea* heath


NW
SE



NVC record sheet: D 02

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Glen river	336385	329558	Initial section out of the forest	MVA

Site and vegetation description
Grassy slope on the side of the rocky section of Glen river path near the junction to the ice house diversion. Vegetation dominated by mosaics of mat-grass interspersed with brown bent and purple moor grass, scattered rocks with dwarf shrub associated, consisting of heather, bell heather and western gorse.
Previous damaged area that has been regenerating after path work improvement actions. There is a slight scar of trampling in the middle of the quadrat (SW direction). The area is vulnerable on the side of the path especially because of the walkers coming up in a shortcut from the ice house diversion, and as well for those ones who avoid the main rocky path line especially on the way down.

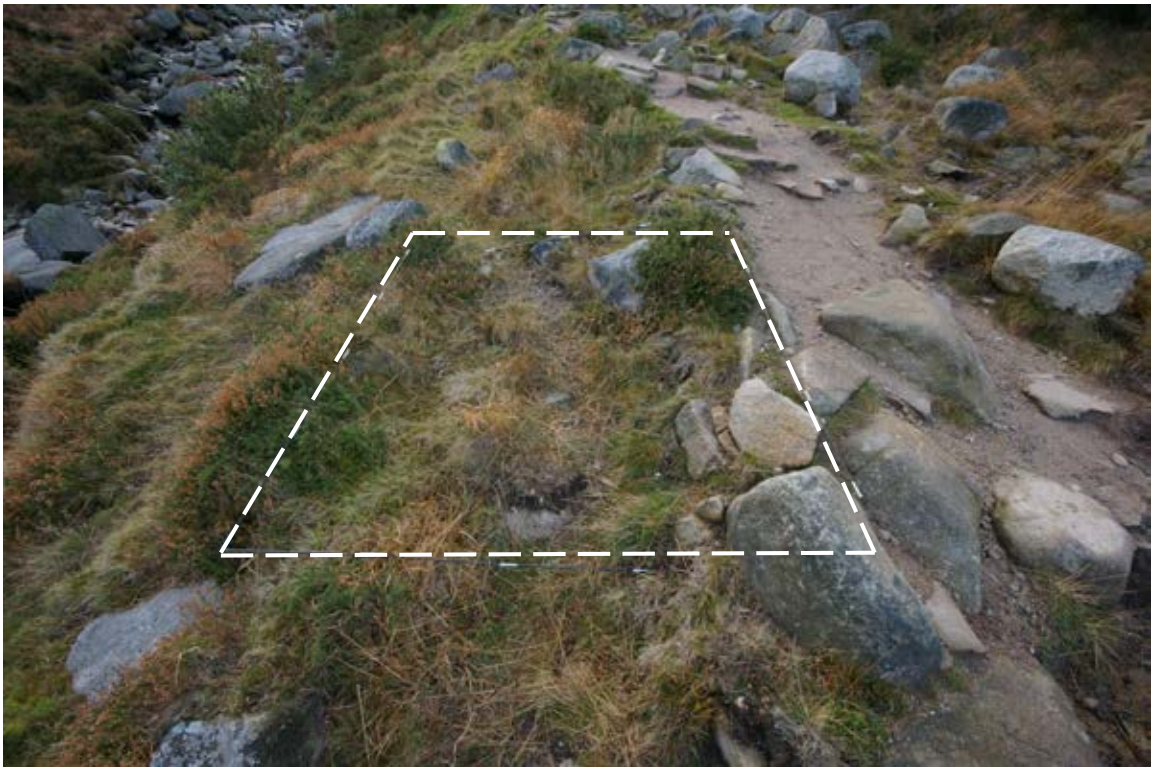
Date 30/11/2017	**Sampling position** LS (SW)
Altitude 229 m	**Slope** 10%
Aspect Y 240º SW X 150º SE	**$\bar{X}$ Soil depth** 7,36 cm
Bare rock 5% / **Bare soil** 1%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 25,72 cm	**Layers cover** - / 75% / 15%
Fixed point photography nº IMGDQ02	

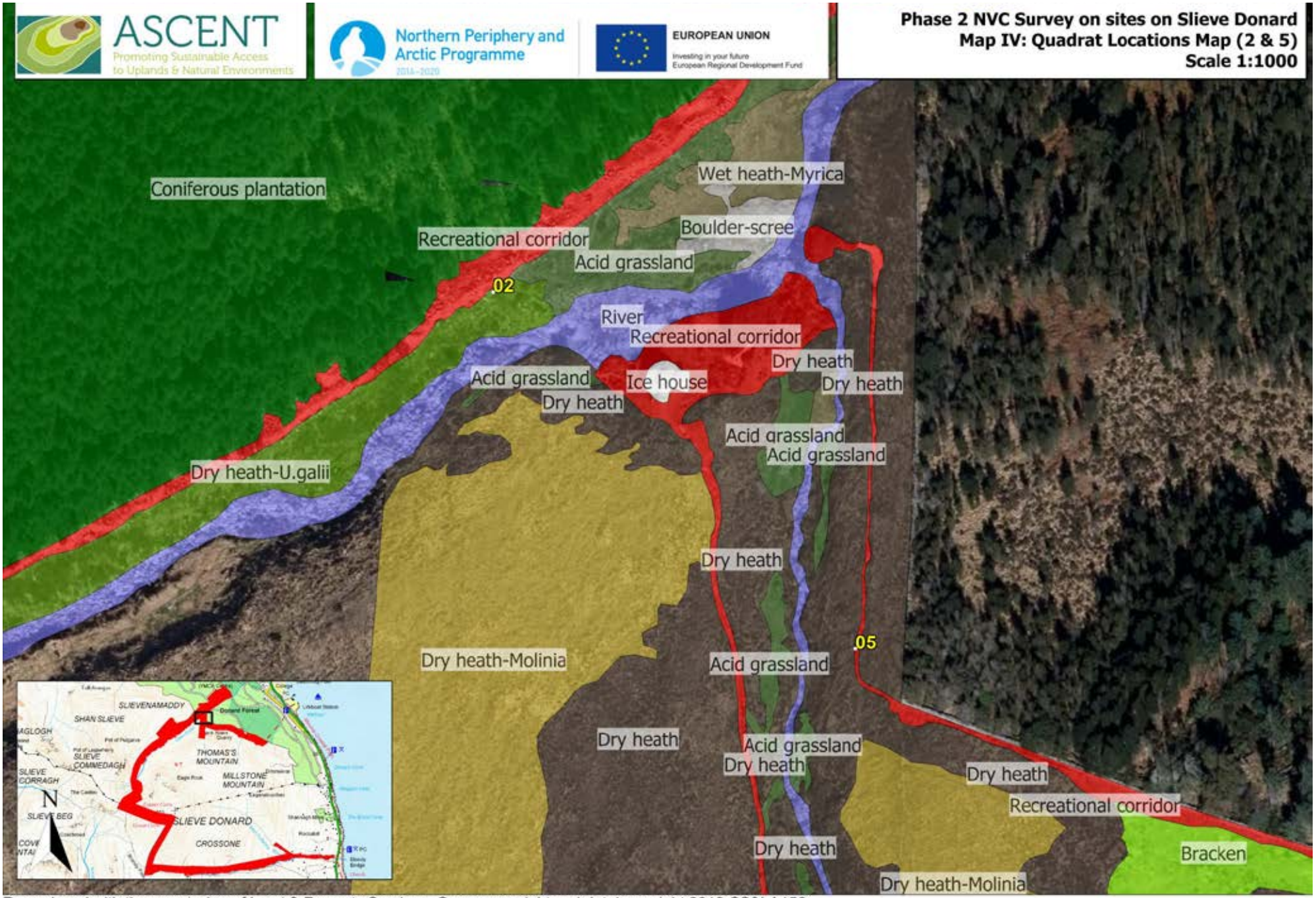
Species list:

Nardus stricta	8
Agrostis vinealis	6
Molinea caerulea	5
Ulex galii	5
Hypnum spp.	5
Erica cinerea	4
Potentilla erecta	1

NVC classification: ~grassy patch of H8 *Calluna vulgaris – Ulex gallii* heath

SW





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NVC record sheet: D 03

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Black Stairs	336371	329213	Just before the steepest section	MVA

Site and vegetation description

Steep grassy section up at the Black Stairs, defined hill hanging path line between a rock wall and scattered rock outcrops and large boulders on the right side (SW). The vegetation consists of mosaics of mat-grass and bushes of heather and bell heather, usually 10 cm – 20 cm high, with frequent bilberry and common yellow sedge.

Path line defined in the middle of the quadrate along the grass cover. The track is used as shorter and more direct route to the summit of Donard, frequently used by fell runners.

The section of the path where the assessment quadrat has been placed situated, between a rock wall in one side and a steep slope in the other, and no other walking line alternative, provides with an strategic enclave to assess possible increase of recreation pressure on that route.

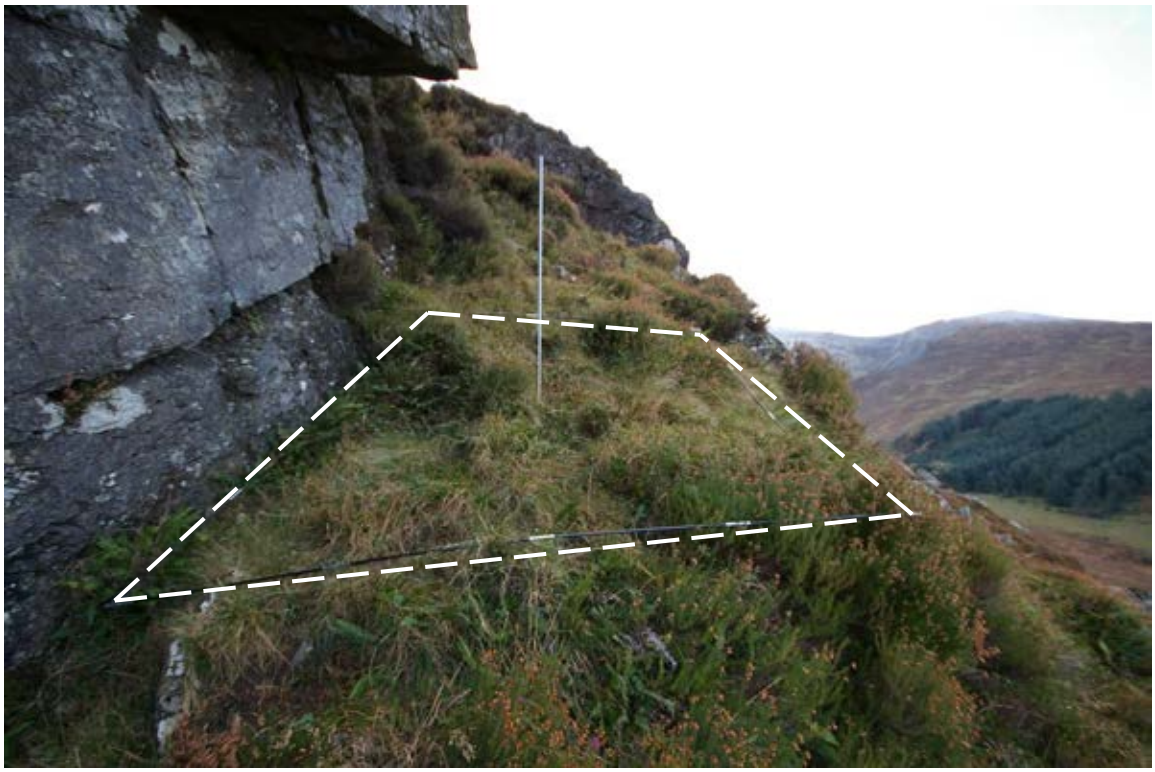
Date	**Sampling position**
30/11/2017	M (SW)
Altitude	**Slope**
331 m	25%
Aspect	**$\bar{X}$ Soil depth**
Y 225º SW X 115º NE	13,36 cm
Bare rock / **Bare soil**	**Sample area**
0% / 0%	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
33,30 cm	- / 70% / 15%
Fixed point photography nº	
IMGDQ03	

Species list:

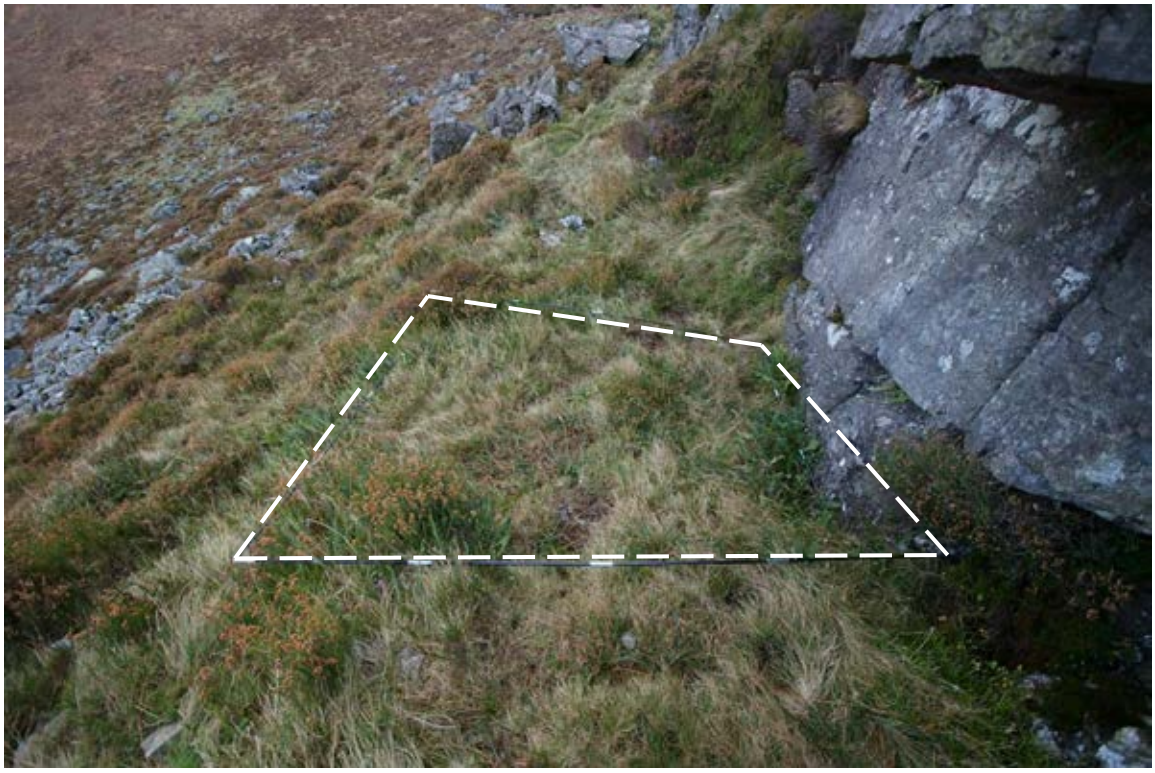
Nardus stricta	8
Erica cinerea	5
Vaccinum myrtillus	5
Blechnum spicant	5
Sphagnum spp.	5
Calluna vulgaris	4
Carex binervis	4
Galium saxatile	4
Potentilla erecta	1
Campylopus introflexus	1

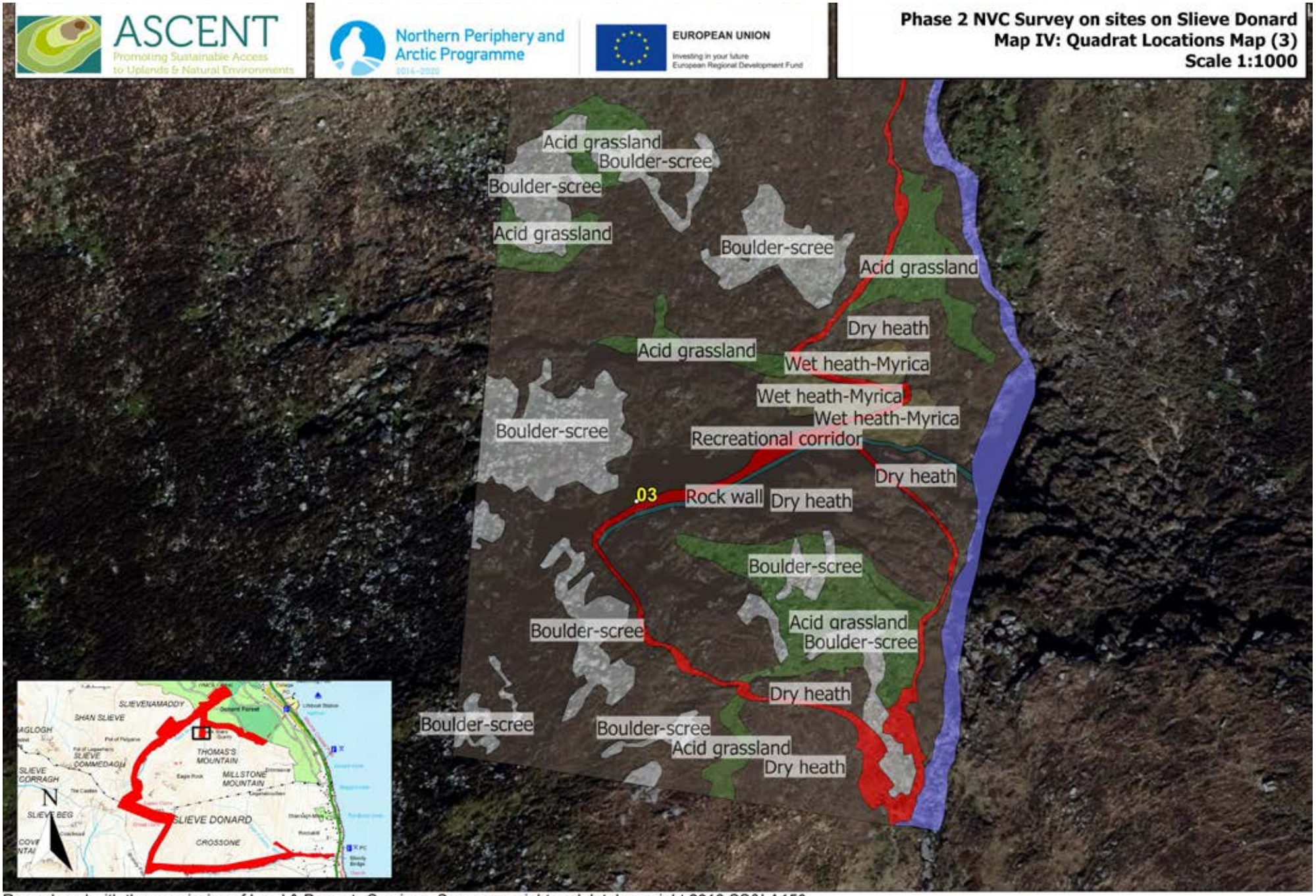
NVC classification: grassy patch of ~H10 *Calluna vulgaris – Erica cinerea heath*

SW



NW





NVC record sheet: D 04

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Thomas' Quarry	337190	329151	Steep slope on the left side of the Quarry	MVA

Site and vegetation description

Steep slope with dense vegetation where the purple moor-grass has become dominant and is overgrowing much of the heather, with a build-up of thatch in places. Patches of bracken also occur in the drier edges.

The quadrate has been set on the right side (way up) in a starting braiding area where two other lines on both sides of the main path line are beginning to be defined.

The assessing area within the quadrat hasn't been trampled yet, but is in a vulnerable location especially for the walkers coming down on the path.

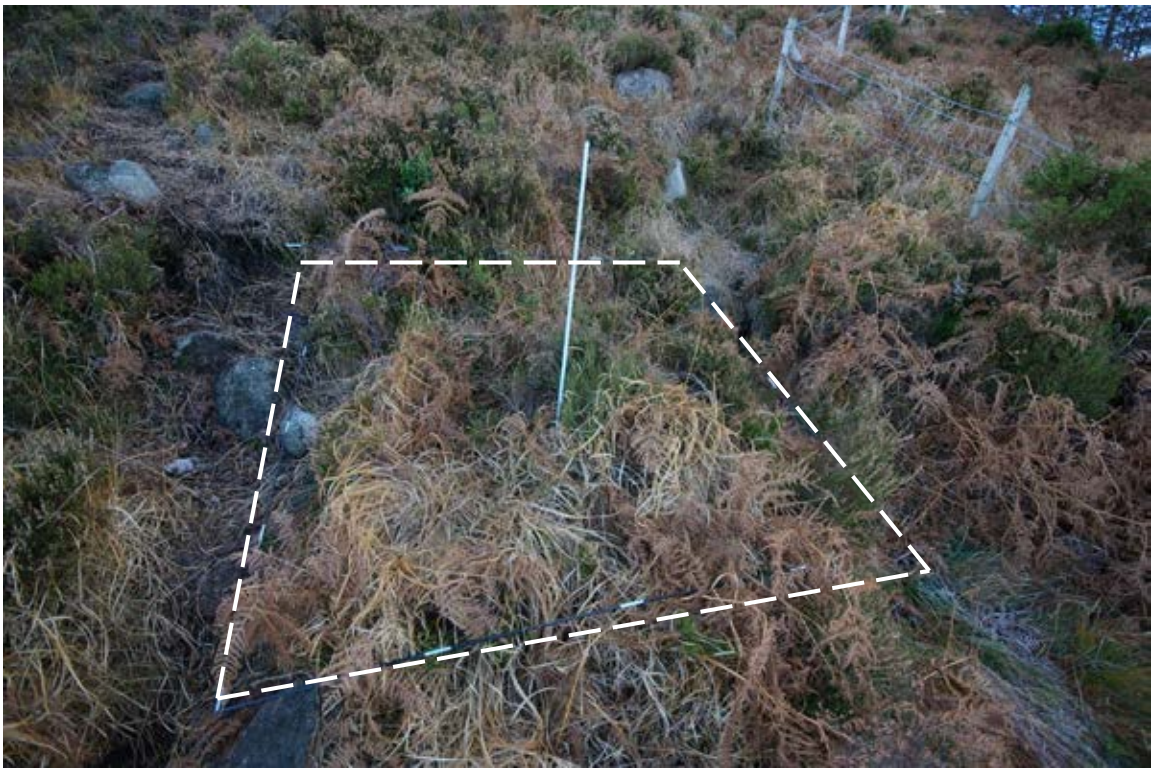
Date	**Sampling position**
01/12/2017	RS (SW)
Altitude	**Slope**
246 m	30%
Aspect	**$\bar{X}$ Soil depth**
Y 220º SW X 120º SE	16,34 cm
Bare rock / **Bare soil**	**Sample area**
5% / 5%	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
59,39 cm	- / 80% / 50%
Fixed point photography nº	
IMGDQ04	

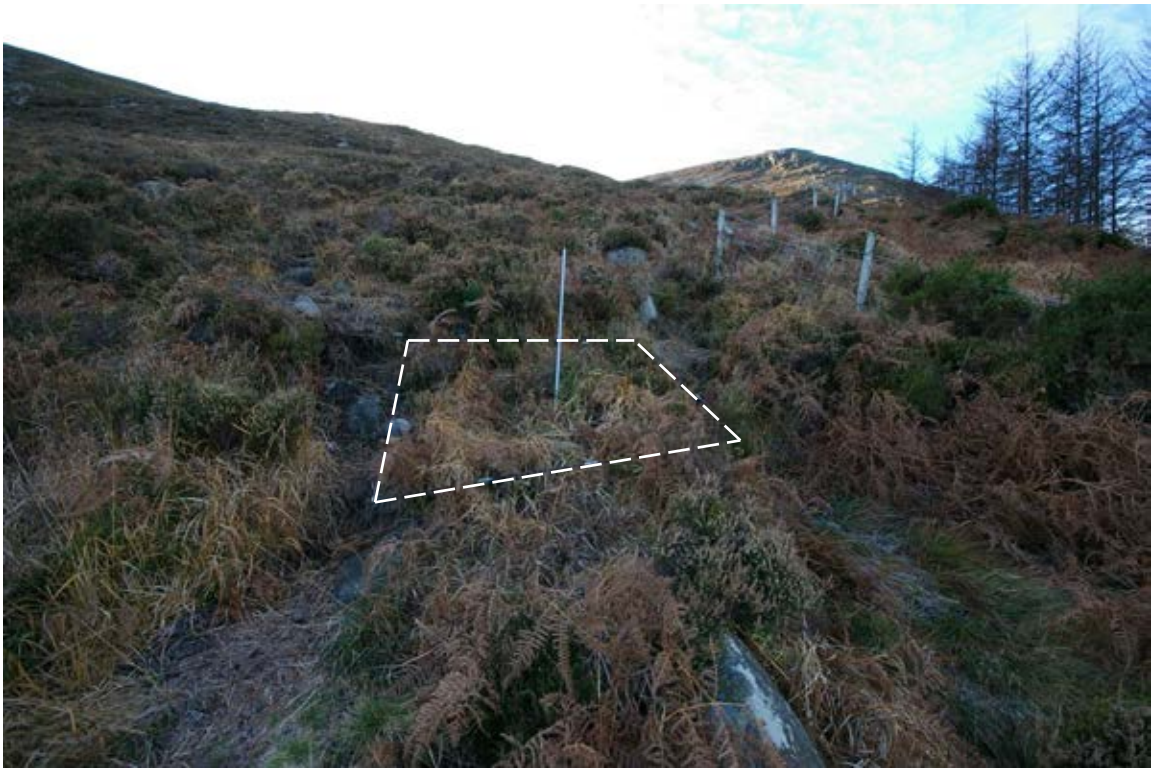
Species list:

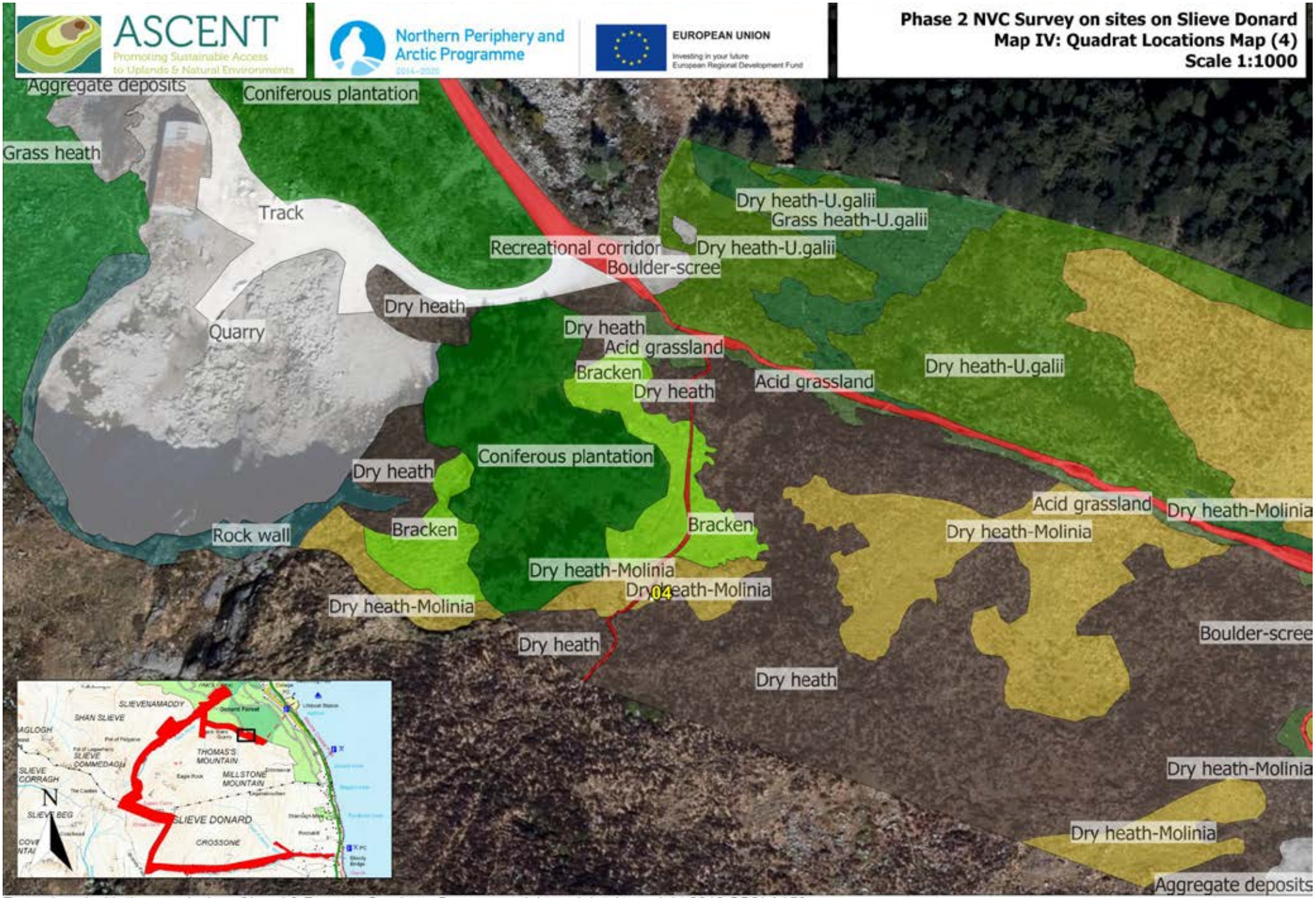
Molinia caerulea	7
Hypnum spp.	7
Calluna vulgaris	5
Pteridium aquilinum	5
Erica cinerea	4
Carex binervis	4
Nardus stricta	3
Thuidum tamariscum	2
Potentilla erecta	1

NVC classification: ~H10 *Calluna vulgaris – Erica cinerea heath*

SW







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NVC record sheet: D 05

Location	**Coordinates [•] X,Y**		**Region**	**Author**
From Glen river to the Thomas' Quarry	336468	329476	Section beside the fence wall	MVA

Site and vegetation description
Path along the edge of the forestry plantation and the stream coming from Thomas' mountain. Vegetation dominated by a mixture of tussocky purple moor-grass and bushy heather 20cm – 50 cm high. Deergrass is abundant in the path line, frequently trampled there. It is present around also with bell heather and cross-leaved heath and bog myrtle (forming extensive patches in the wettest areas).
The quadrat placed in the middle the path, characterized by low height vegetation, will be a strategic point to control if the trampling line becomes wider or braiding occurs in case of recreational pressure increasing.

Date	**Sampling position**
01/12/2017	M (SW)
Altitude	**Slope**
243 m	10%
Aspect	**$\bar{X}$ Soil depth**
Y 185º SW X 90º E	13,77 cm
Bare rock / **Bare soil**	**Sample area**
% / %	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
30,70 cm	- / 80% / 60%
Fixed point photography nº	
IMGDQ05	

Species list:

Hypnum spp.	8
Calluna vulgaris	7
Trichophorum cespitosum	6
Molinia caerulea	5
Erica cinerea	4
Erica tetralix	2
Blechnum spicant	2

NVC classification: ~M15 *Trichophorum cespitosum-Erica tetralix wet heath*

SW

NVC record sheet: D 06

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Glen river	335601	329044	Section out of the forestry plantation	MVA

Site and vegetation description

Path braiding section beside the rocky path main line, consisting in three lines over the vegetation where the sample area has been placed including the farthest one respect to the main path.

Area dominated by heather and bell heather with mosaics of mat-grass, with slightly damper/flushed areas support small amounts of deergrass, common yellow-sedge and bog myrtle.

As mention before, one of the braiding lines, the one farthest from the main path line, consisting in a line of trampled grasses and the moss underlining patch. Bare soil is not yet present on that scarp walking line.

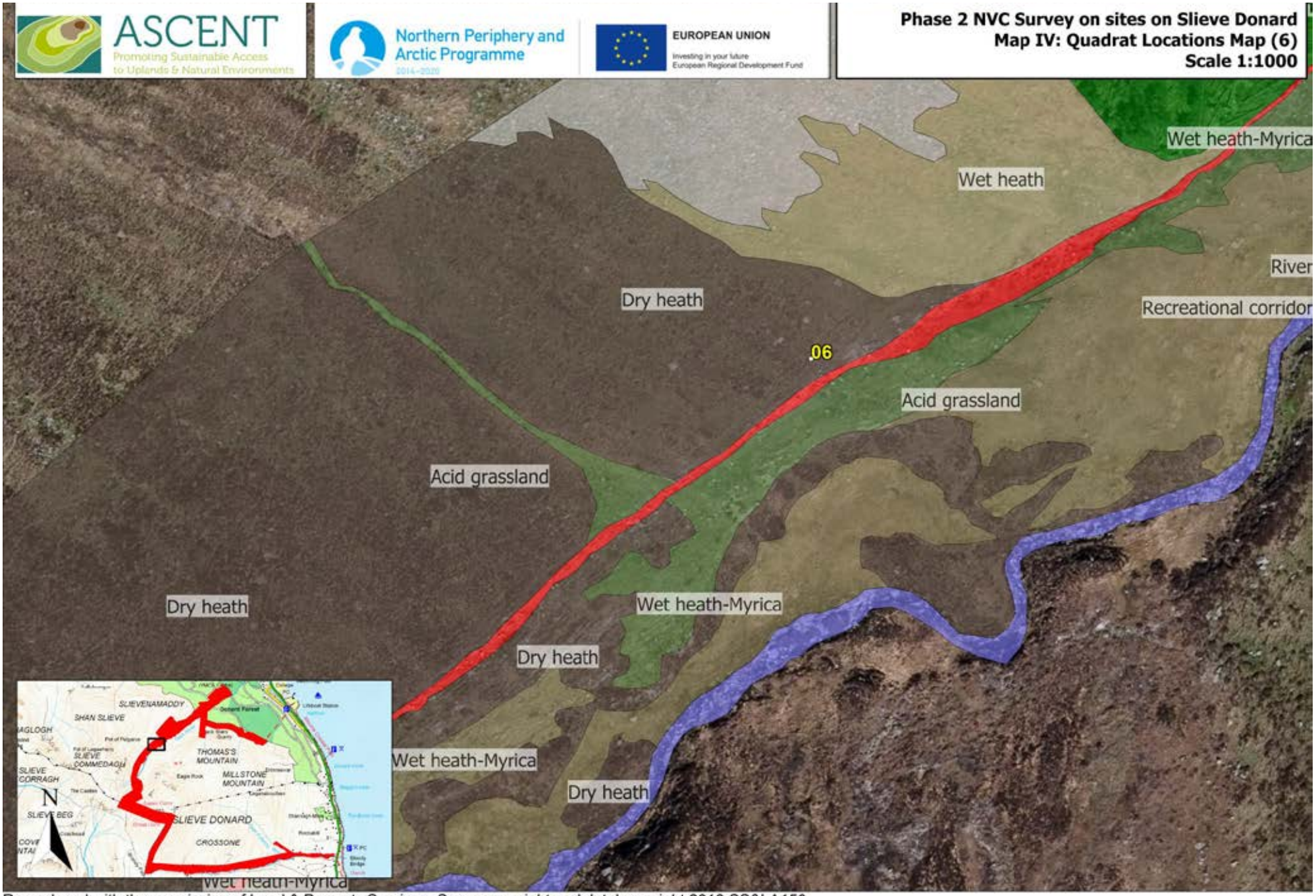
Date	**Sampling position**
01/12/2017	RS (SW)
Altitude	**Slope**
329 m	5%
Aspect	**$\bar{X}$ Soil depth**
Y 220º SW X 140º SE	12,03 cm
Bare rock / **Bare soil**	**Sample area**
0% / 0%	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
21,35 cm	- / 70% / 100%
Fixed point photography nº	
IMGDQ06	

Species list:

Hypnum spp.	10
Erica cinerea	6
Nardus stricta	6
Calluna vulgaris	5
Trichophorum cespitosum	3
Molinia caerulea	2
Carex demissa	2
Potentilla erecta	1

NVC classification: ~H10 *Calluna vulgaris-Erica cinerea* heath

SW



NVC record sheet: D 07

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Glen river	335207	328474	Section before the river crossing area	MVA

Site and vegetation description
Area dominated by heather and bell heather with wide patches of mat-grass especially along the recreational corridor, with slightly damper/flushed areas supporting small amounts of deergrass and common yellow-sedge.
The assessment quadrat has been placed on the side of a single braiding line. Walkers mainly on the way down, divert to this area going out from the main stone pitched line.

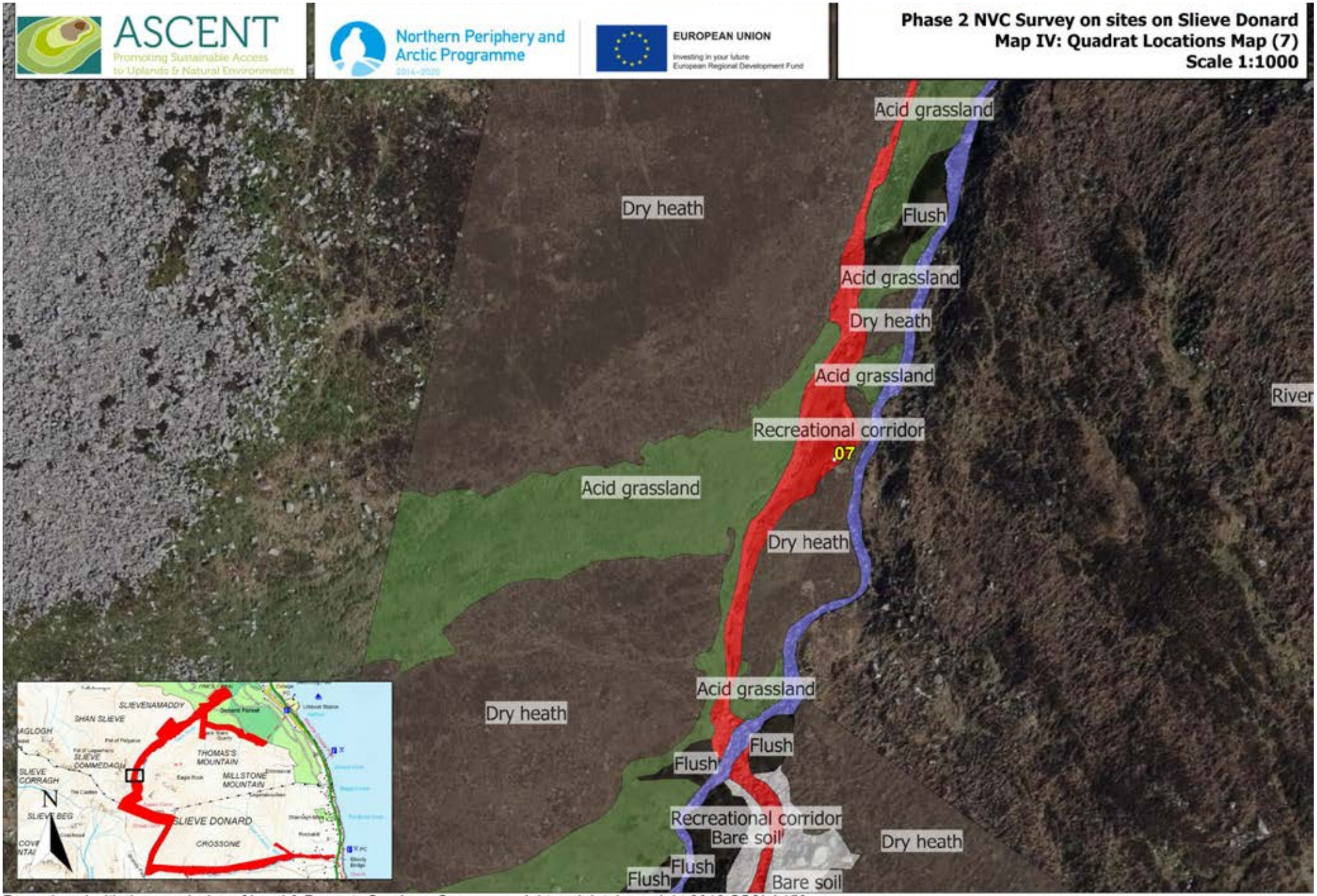
Date 23/01/2018	**Sampling position** LS (SW)
Altitude 417m	**Slope** 5%
Aspect Y 200 SW X 110 SE	**$\bar{X}$ Soil depth** 31cm
Bare rock 0% / **Bare soil** 5%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 21cm	**Layers cover** - / 95% / 0%
Fixed point photography nº IMGDQ07	

Species list:

Calluna vulgaris	7
Trichophorum cespitosum	7
Erica cinerea	6
Nardus stricta	5
Carex demissa	2
Potentilla erecta	1

NVC classification: ~H10 *Calluna vulgaris-Erica cinerea* heath

SW



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NVC record sheet: D 08

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Glen river	335129	328054	Upper section of Glen river	MVA

Site and vegetation description
Very trampled diversion at the end section of the stone pitch before arriving to the Donard saddle. The sample area include two trampling scarps, the main one frequently used by walkers avoiding the stone pitch on the way down, and another one over a grassy patch.
The slope is quite steep here, just before the change of slope of the the saddle area, with frequent scattered rocks. The vegetation is dominated by mosaics of mat-grass (forming tussocks to 30 cm high), especially around areas surrounding the path, and stunted bushes of heather and bell heather, usually 10cm-20cm high.

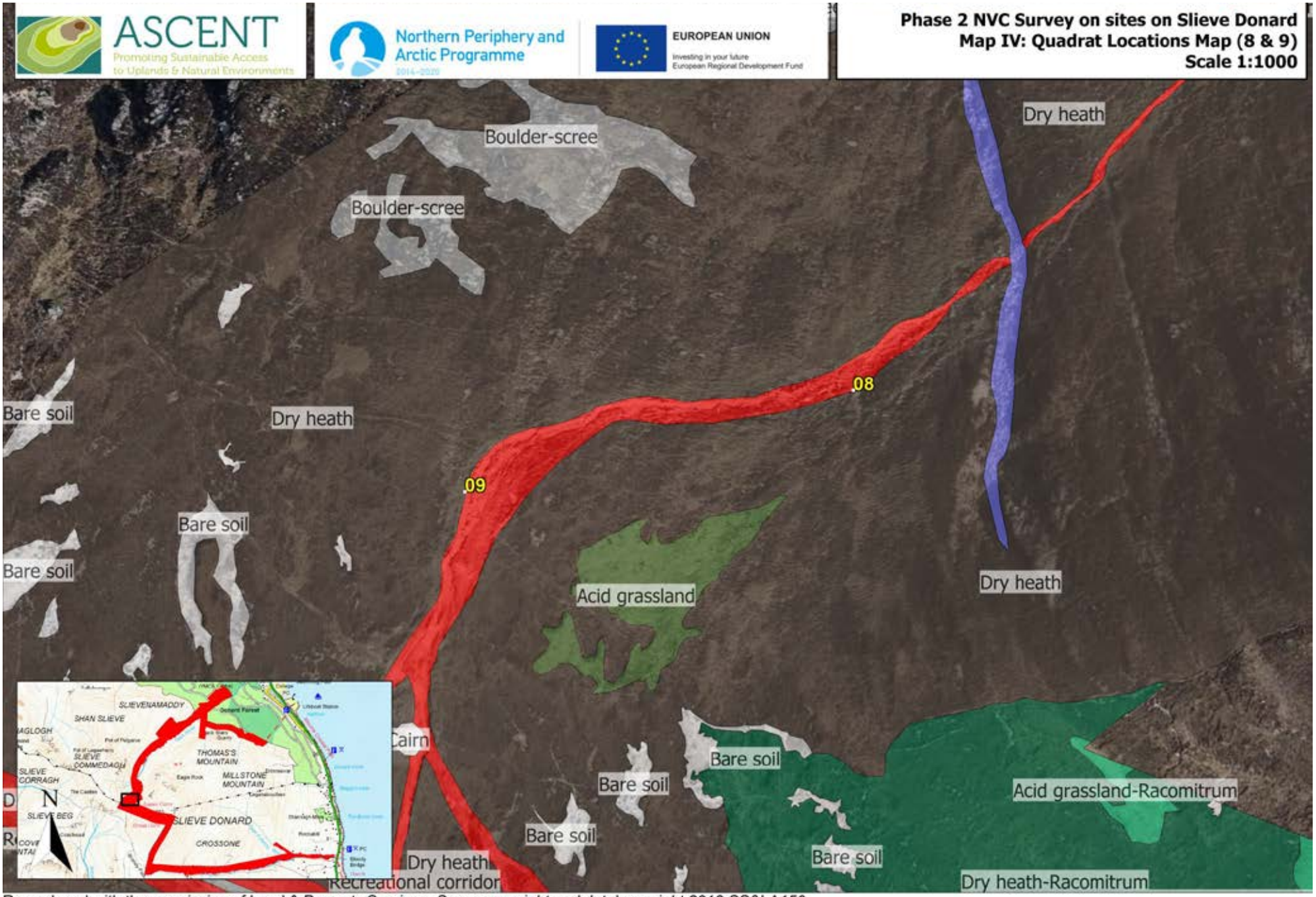
Date	**Sampling position**
01/12/2017	LS (SW)
Altitude	**Slope**
549 m	30%
Aspect	$\bar{X}$ **Soil depth**
Y 255º SW X 150º SE	4,62 cm
Bare rock / **Bare soil**	**Sample area**
10% / 50%	2 m x 2 m
$\bar{X}$ **Vegetation height**	**Layers cover**
22,69 cm	- / 40% / 2%
Fixed point photography nº	
IMGDQ08	

Species list:

Calluna vulgaris	6
Nardus stricta	5
Galium saxatile	5
Erica cinerea	4
Carex binervis	4
Hypnum spp.	2
Blechnum spicant	2
Huperzia selago	1

NVC classification: ~H10 *Calluna vulgaris-Erica cinerea* heath

SW



NVC record sheet: D 09

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard saddle	335040	328031	Before the cairn area	MVA

Site and vegetation description
The sample area has been placed on the side of a braiding line from the stone pitch.
The vegetation here is characterized by abundant mat-grass with mosaics of dwarf stunted heather and bell heather on a stony windswept area with low soil depth.
The vegetation is not currently damaged, but because of its location, just beside the braiding line, it is vulnerable in case of trampling pressure increase.

Date	**Sampling position**
01/12/2017	RS (SW)
Altitude	**Slope**
572 m	15%
Aspect	$\bar{X}$ **Soil depth**
Y 210º SW X 100º SE	1,5 cm
Bare rock / **Bare soil**	**Sample area**
0% / 10%	2 m x 2 m
$\bar{X}$ **Vegetation height**	**Layers cover**
14,88 cm	- / 90% / 10%
Fixed point photography nº	
IMGDQ09	

Species list:

Nardus stricta	7
Calluna vulgaris	5
Erica cinerea	4
Hypnum spp.	4
Carex binervis	2

NVC classification: sward of ~H10 *Calluna vulgaris-Erica cinerea* heath

NE

NVC record sheet: D 10

Location	Coordinates [●] X,Y		Region	Author
Donard saddle	334964	327905	Diversion towards the Castles	MVA

Site and vegetation description
The vegetation here is characterised by abundant mat-grass and woolly fringe moss, with creeping stunted shoots of heather and bell heather.
The sample area has been placed on the side of a braiding section respect to the main path line, on a damaged surrounding area, frequently trampled by walkers.

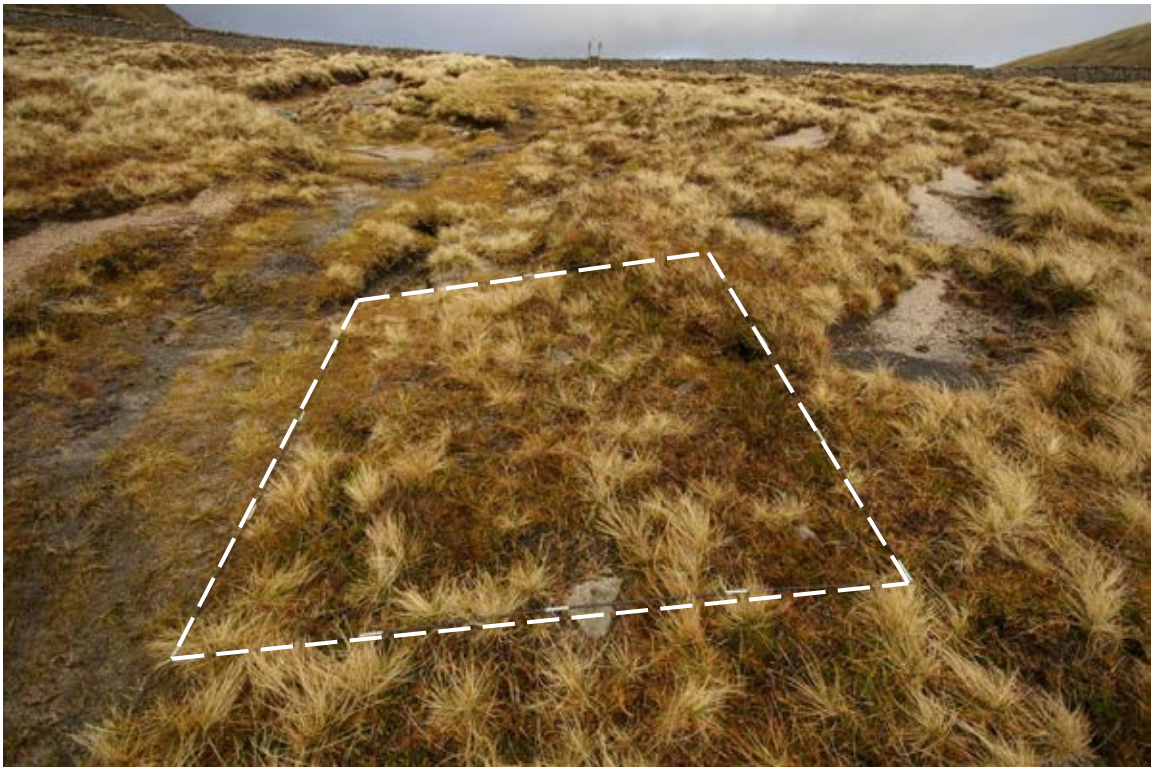
Date 07/12/2017	**Sampling position** LS (NE)
Altitude 577 m	**Slope** 5%
Aspect Y 40º NE X 285º NW	**$\bar{X}$ Soil depth** 14,76 cm
Bare rock 1% / **Bare soil** 5%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 8,72 cm	**Layers cover** - / 60% / 35%
Fixed point photography nº IMGDQ10	

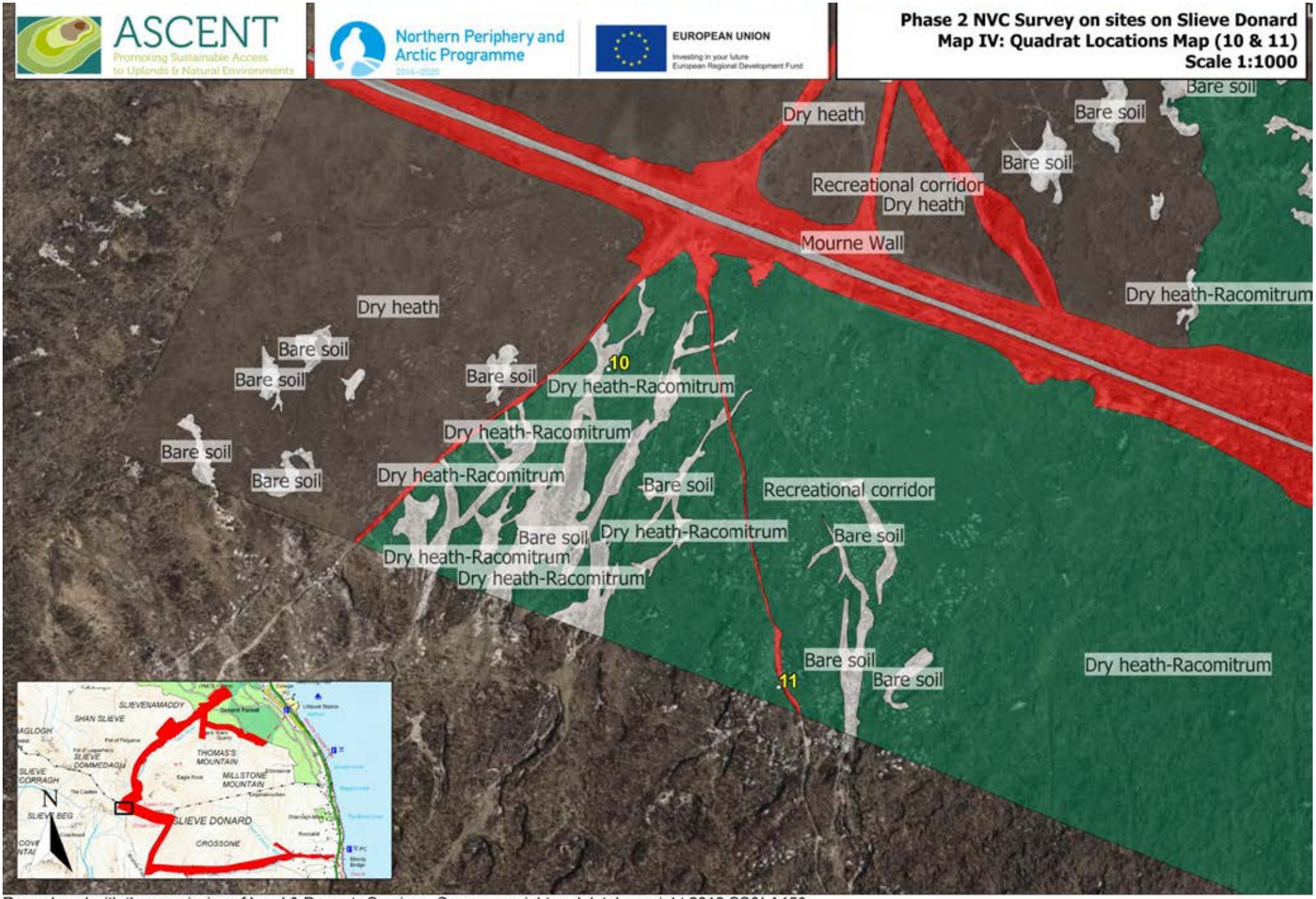
Species list:

Racomitrium lanuginosum	7
Nardus stricta	6
Calluna vulgaris	6
Erica cinerea	5
Carex binervis	4
Hypnum spp.	4
Potentilla erecta	1
Blechnum spicant	1
Campylopus introflexus	1

NVC classification:
~H10b *Calluna vulgaris-Erica cinerea heath Racomitrium lanuginosum* sub-community

NE





NVC record sheet: D 11

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard saddle	335003	327831	Diversion towards Brandy Pad	MVA

Site and vegetation description
The vegetation here is characterised by abundant mat-grass and woolly fringe moss, with creeping stunted shoots of heather and bell heather.
The sample area has been placed on the side of the main path line, just after a stone step frequently avoided by walkers whom divert at that point over the vegetation especially on the way down.

Date 23/01/2018	**Sampling position** LS (NW)
Altitude 572m	**Slope** 5 %
Aspect Y 340º NW X 240º SW	**$\bar{X}$ Soil depth** 15cm
Bare rock 5% / **Bare soil** 20%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 14cm	**Layers cover** - / 75% / 55%
Fixed point photography nº IMGDQ11	

Species list:

Nardus stricta	8
Calluna vulgaris	7
Hypnum spp.	7
Carex binervis	6
Erica cinerea	5
Racomitrium lanuginosum	5
Agrostis vinealis	2
Molinia caerulea	1
Potentilla erecta	1

NVC classification:

~H10b *Calluna vulgaris-Erica cinerea heath Racomitrium lanuginosum* sub-community

NW

NVC record sheet: D 12

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard NW Slope	335182	327877	First 1/3 part slope	MVA

Site and vegetation description
The north-west facing slope of Donard on a section with abundant walking path braiding, with scars produced mainly by walkers on the way down avoiding the main line beside the Mourne Wall.
Characteristic upper slope vegetation with abundant mat-grass and woolly fringe-moss with interspersed sedges and grasses.
The sample area has been placed in the middle of the two main trampling scars.

Date 07/12/2017	**Sampling position** LS (SE)
Altitude 621 m	**Slope** 10%
Aspect Y 130º SE X 20º NE	**$\bar{X}$ Soil depth** 8,59 cm
Bare rock 5% / **Bare soil** 10%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 22,69 cm	**Layers cover** - / 55% / 30%
Fixed point photography nº IMGDQ12	

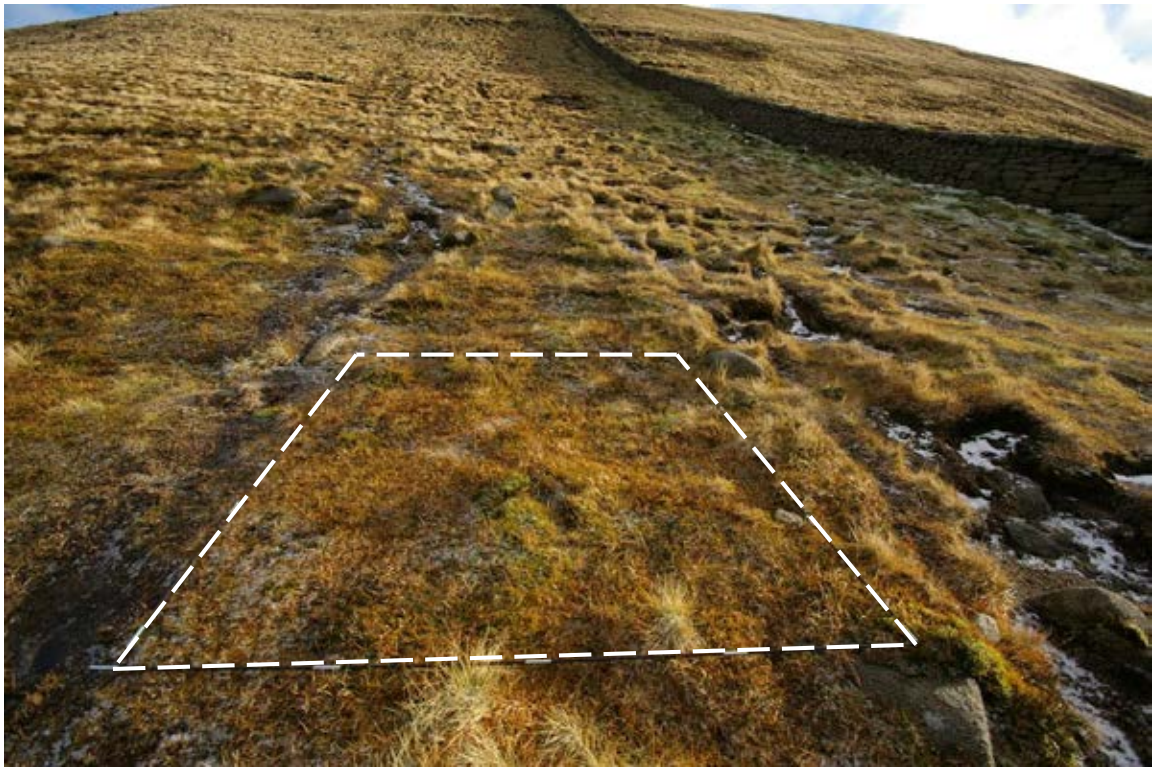
Species list:

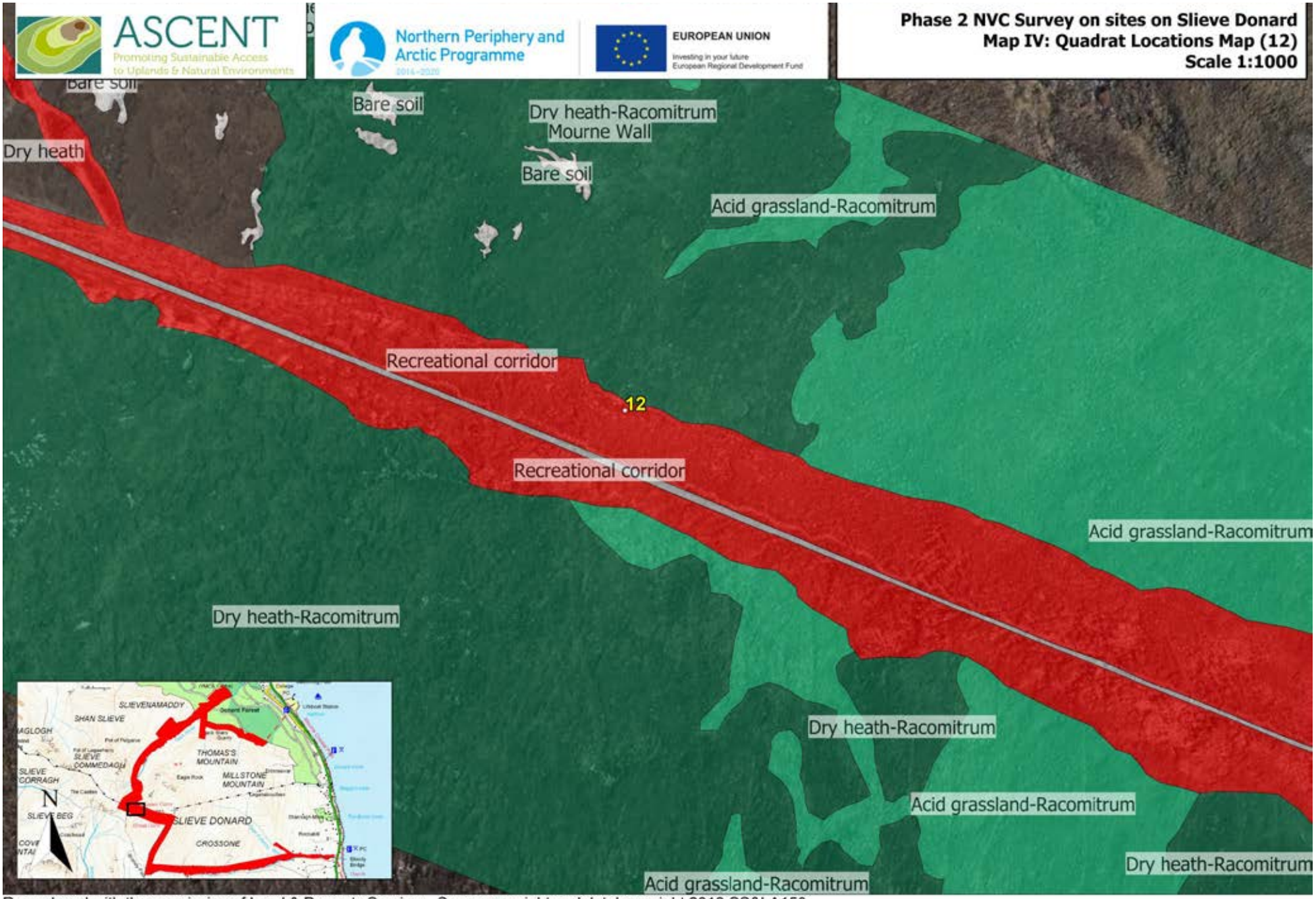
Nardus stricta	7
Racomitrium lanuginosum	6
Molinia caerulea	6
Calluna vulgaris	5
Erica cinerea	4
Carex binervis	3
Agrostis vinealis	3
Potentilla erecta	1
Hypnum spp.	1

NVC classification:

~H10b *Calluna vulgaris-Erica cinerea heath Racomitrium lanuginosum* sub-community

SE





NVC record sheet: D 13

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard NW Slope	335431	327752	Recreational corridor beside the wall	MVA

Site and vegetation description

The north-west facing slope of Donard in the other side of the Mourne Wall, a section characterized as well by abundant walking braiding lines, with scars produced mainly by walkers on the way down avoiding the main line beside the wall.

Characteristic upper slope vegetation with mat-grass and woolly fringe-moss with interspersed sedges and grasses with locally abundant crowberry, especially on the shelter of interspersed rocks.

The sample area has been placed on the side of the main trampling diverting scar.

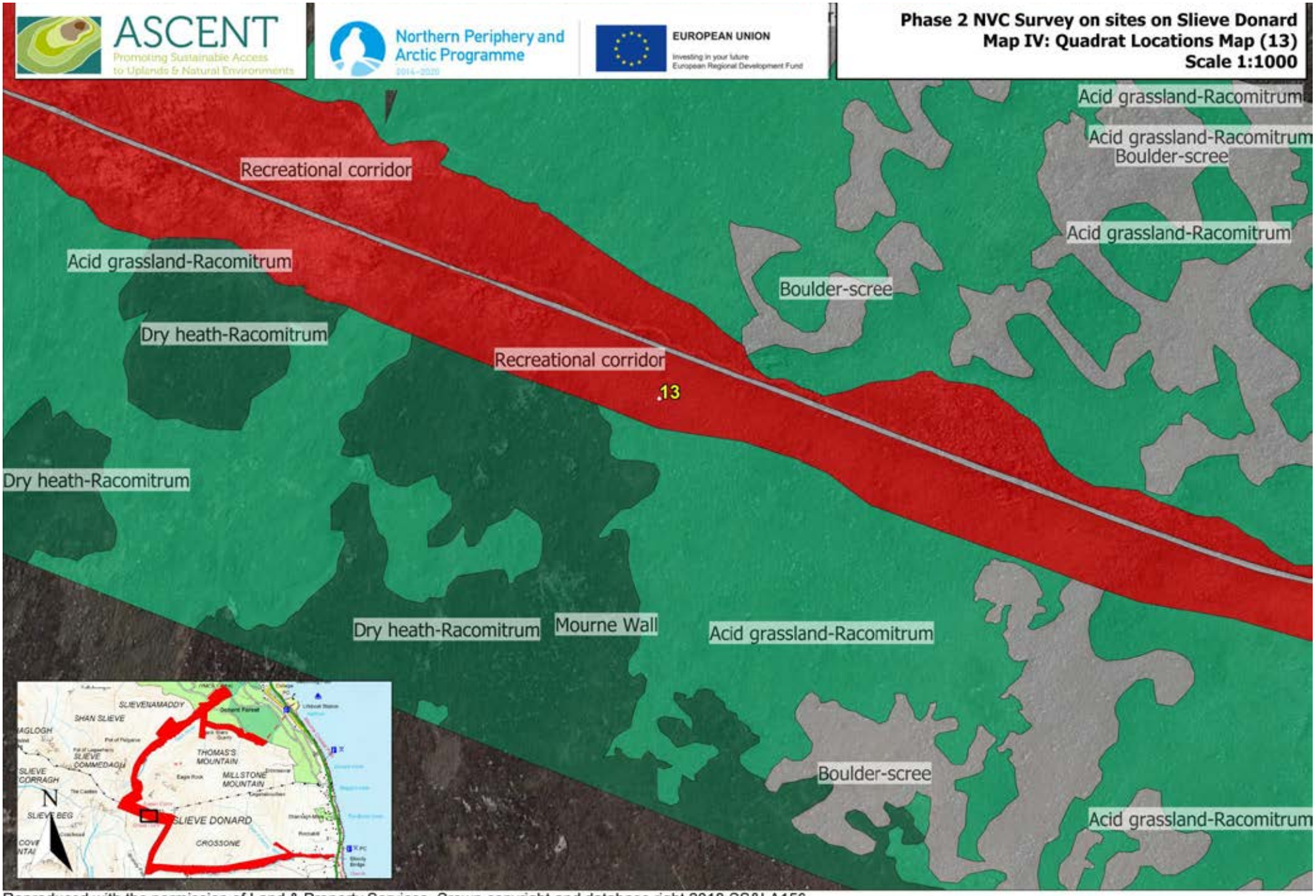
Date	**Sampling position**
23/01/2018	LS (SE)
Altitude	**Slope**
739 m	10 %
Aspect	**$\bar{X}$ Soil depth**
Y 125º SE X 45º NE	11 cm
Bare rock / **Bare soil**	**Sample area**
5% / 1%	2 m x 2 m
$\bar{X}$ Vegetation height	**Layers cover**
6 cm	- / 95% / 70%
Fixed point photography nº	
IMGDQ13	

Species list:

Racomitrium lanuginosum	8
Carex bigelowii	7
Nardus stricta	7
Calluna vulgaris	6
Galium saxatile	4
Empetrum nigrum	2
Festuca vivipara	2
Polytrichum spp.	1
Cladonia spp.	1

NVC classification: ~U10 stiff sedge-woolly fringe-moss heath

SE



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NVC record sheet: D 14

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard Summit	335764	327704	Recreational corridor beside the cairn	MVA

Site and vegetation description
The area immediately above the summit of Donard is characterized by a wide group of braiding lines, with abundant trampling scars parallel respect to the Mourne Wall.
The vegetation here consists of a complex mixture of various grasses, sedges and mosses, dominated by mat-grass and woolly fringe-moss.
The sample area has been placed on the side of the last main braiding line, immediately down before the cairn.

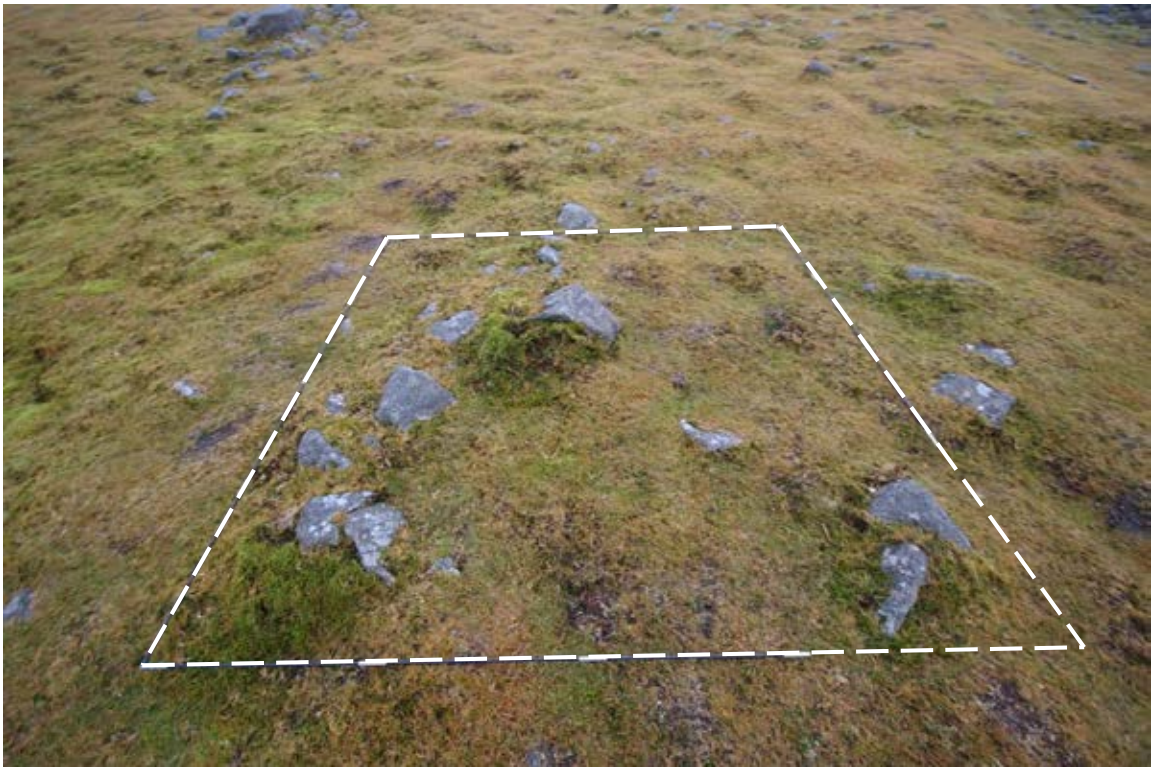
Date 23/01/2018	**Sampling position** RS (NE)
Altitude 845 m	**Slope** 5%
Aspect Y 85º NE X 350º NW	**$\bar{X}$ Soil depth** 8 cm
Bare rock 15% / **Bare soil** 5%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 5 cm	**Layers cover** - | 80% | 50%
Fixed point photography nº IMGDQ14	

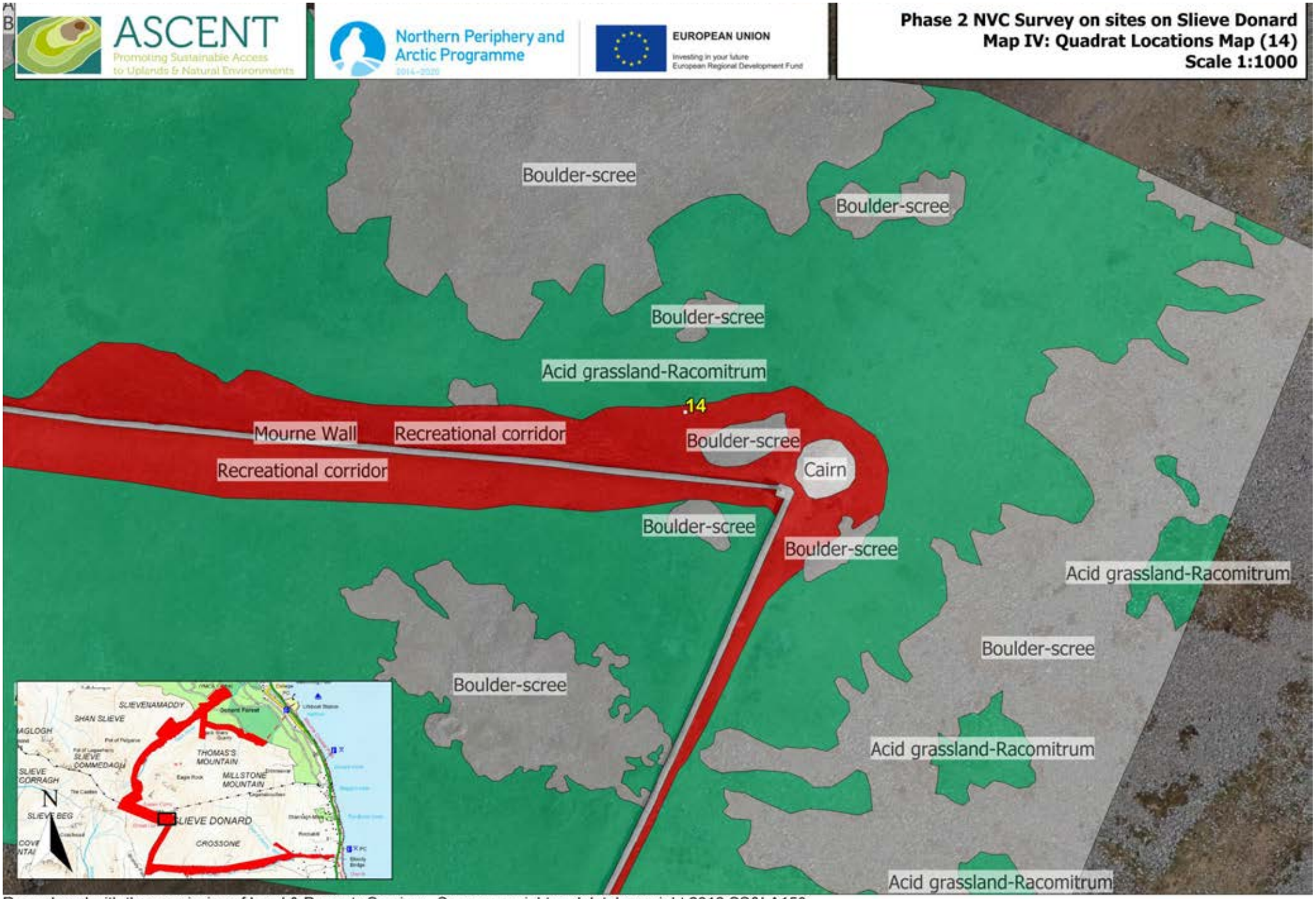
Species list:

Nardus stricta	8
Racomitrium lanuginosum	7
Festuca vivipara	5
Polytrichum spp.	5
Carex bingelowii	4
Galium saxatile	4
Hypnum spp.	2
Vaccinium myrtillus	1
Cladonia spp.	1

NVC classification: ~U10 stiff sedge-woolly fringe-moss heath

NE





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NVC record sheet: D 15

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard SE Slope	335513	327163	Middle of the slope	MVA

Site and vegetation description
The south-east facing slope of Donard on that area is characterized by stunted bushes of heather and bell heather with mosaics of mat-grass and purple moor-grass.
Sample area has been placed just beside an eroded scree area close to the Mourne Wall, where a part of the top rocks have been recently collapsed. Especially walkers on the way down avoid that complicated area and follow the edge of that area producing several scarps and braiding lines. The quadrat has been placed in the middle of two of these lines.

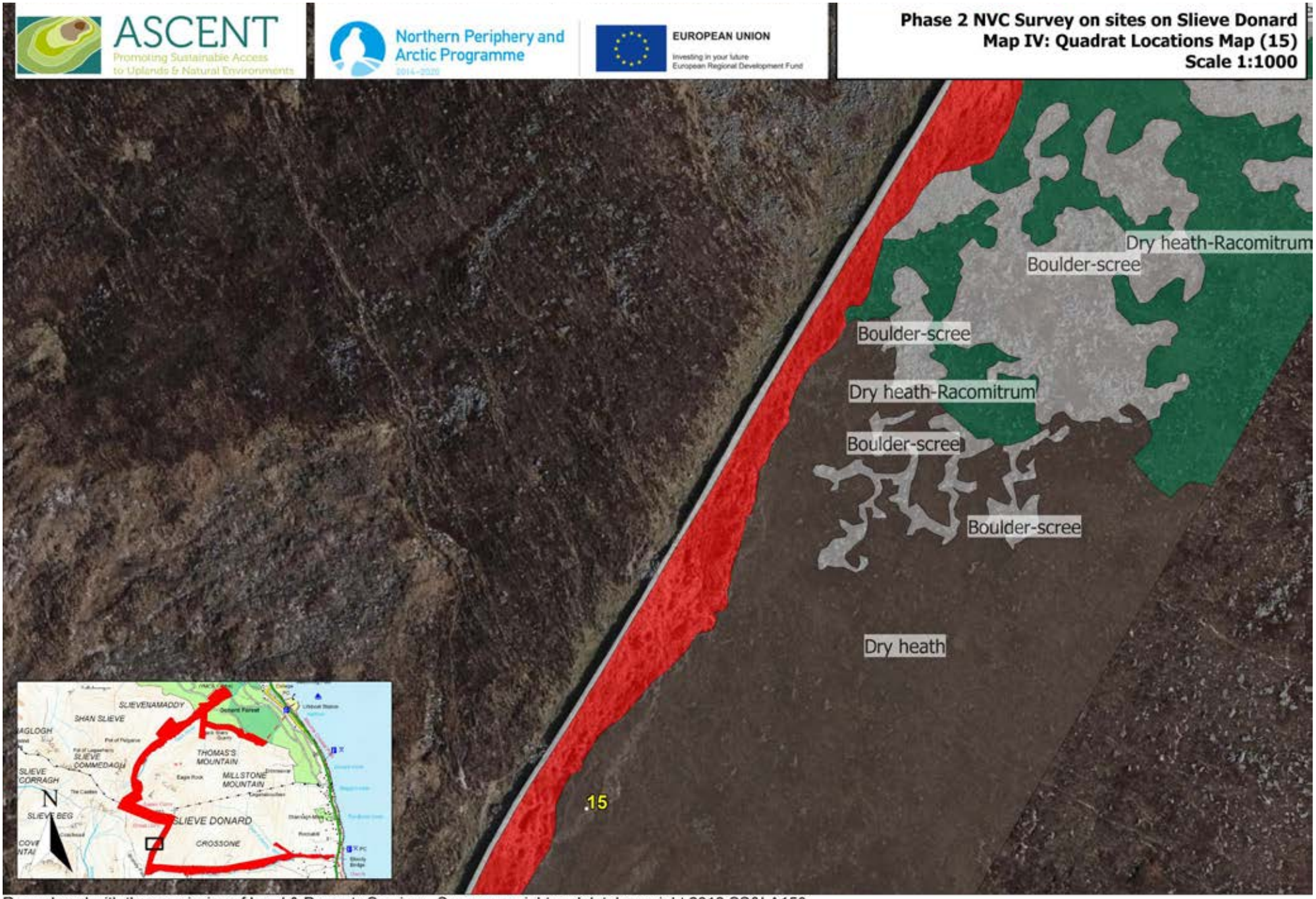
Date 05/12/2017	**Sampling position** RS (NE)
Altitude 634 m	**Slope** 35%
Aspect Y 35º NE X 305º NW	**$\bar{X}$ Soil depth** 30,71 cm
Bare rock 0% / **Bare soil** 5%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 18,04 cm	**Layers cover** - / 95% / 15%
Fixed point photography nº IMGDQ15	

Species list:

Calluna vulgaris	7
Nardus stricta	5
Hypnum spp.	5
Erica cinerea	4
Molinia caerulea	4
Potentilla erecta	1

NVC classification: ~H10 *Calluna vulgaris-Erica cinerea* heath

NE



NVC record sheet: D 16

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Donard SE Slope	335399	326867	Lower slope section	MVA

Site and vegetation description
Sample area has been placed at the lower south-east facing slope of Donard, on the side of a path braiding area with several trampling scarps. The farthest braiding line respect to the Mourne Wall pass through the quadrat assessment area.
Deergrass is the most abundant plant throughout this area, dominating extensive areas, with high cover of heather and bell heather on slightly hummocks (mosaics of H10 heath and M15 wet heath).
Walkers divert on that section because of the severe erosion of the main path line, heavily eroded with a deep scarp, taking diversion on the near grassy surface to avoid the muddy area.

Date	**Sampling position**
06/12/2017	RS (NE)
Altitude	**Slope**
548 m	15%
Aspect	$\bar{X}$ **Soil depth**
Y 35º NE X 315º NW	20,71 cm
Bare rock / **Bare soil**	**Sample area**
0% / 5%	2 m x 2 m
$\bar{X}$ **Vegetation height**	**Layers cover**
19,85 cm	- / 95% / 15%
Fixed point photography nº	
IMGDQ16	

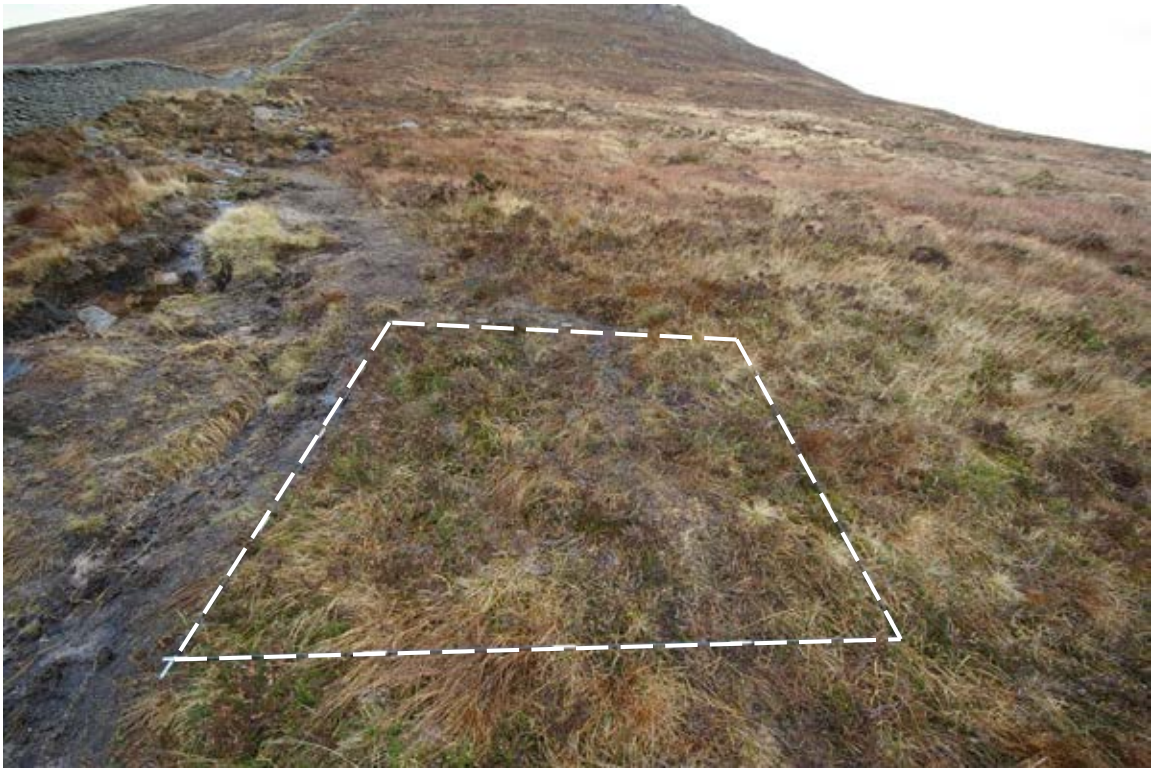
Species list:

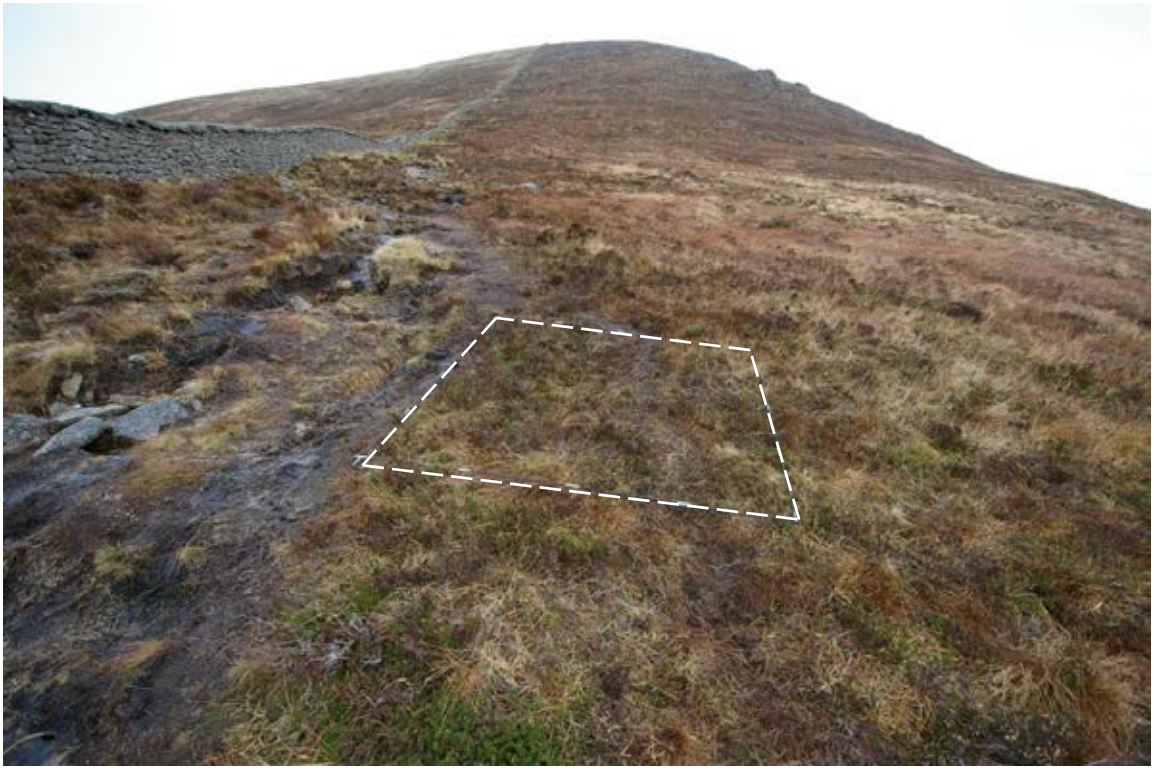
Trichophorum cespitosum	7
Calluna vulgaris	5
Erica cinerea	5
Racomitrum lanuginosum	5
Hypnum spp.	4
Molinia caerulea	4
Polygala serpyllifolia	2
Potentilla erecta	1

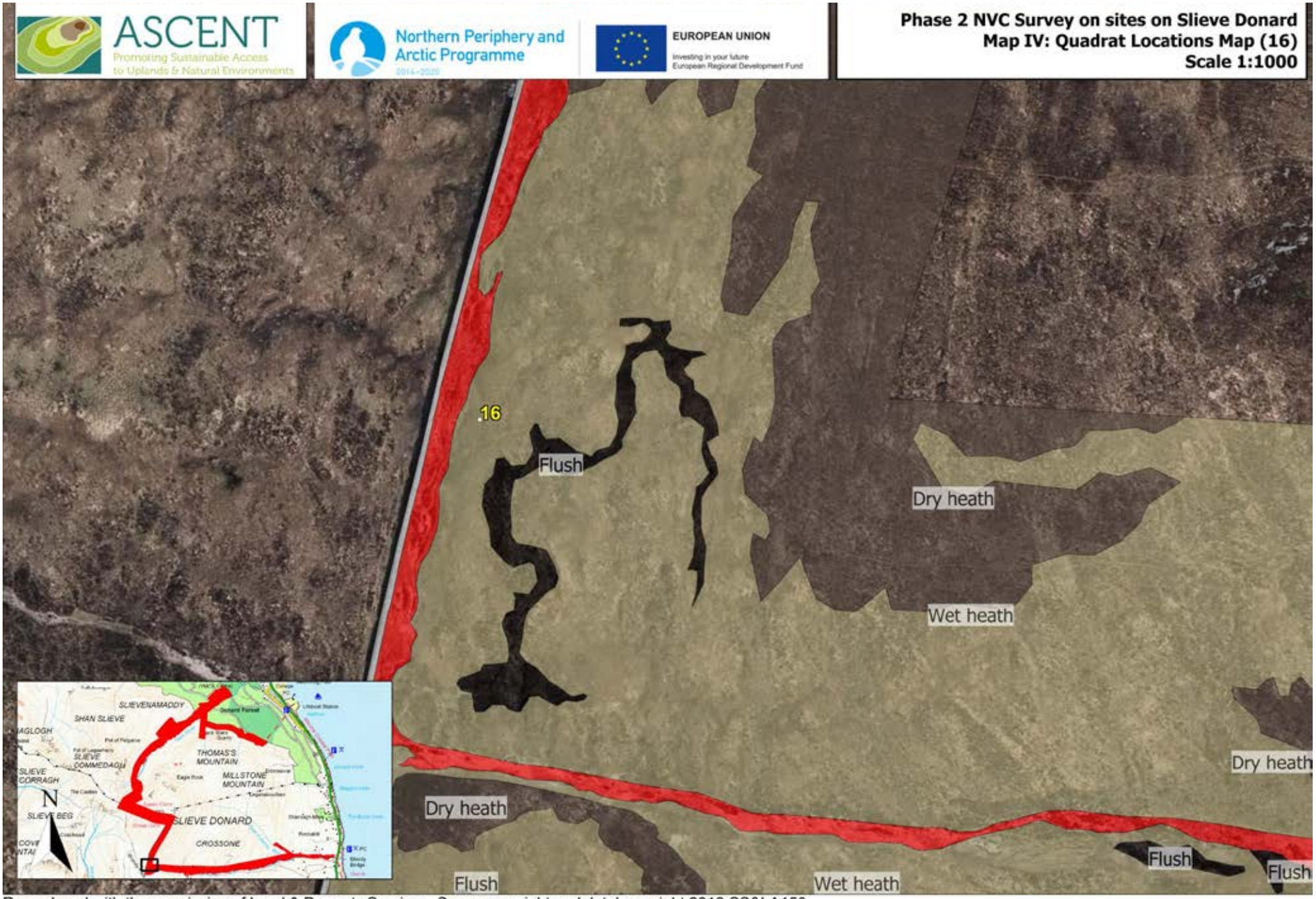
NVC classification:

~H10b *Calluna vulgaris-Erica cinerea heath Racomitrum lanuginosum* sub-community

NE







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NVC record sheet: D 17

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Bog of Donard	335875	326748	Side of the wide braiding area	MVA

Site and vegetation description

Here at the lower foot of Donard the vegetation is dominated by a mixture of heather and bell heather bushes with areas of tussocky purple moor-grass, including frequent to abundant in areas deergrass. Mosses are frequent in most areas, with *Hypnum spp.* abundant at higher levels.

The sample area has been set up covering an area between the two upper braiding lines respect to the main path line.

Date	**Sampling position**
06/12/2017	RS (NW)
Altitude	**Slope**
484 m	10%
Aspect	$\bar{X}$ **Soil depth**
Y 275º NW X 185º SW	34,84 cm
Bare rock / **Bare soil**	**Sample area**
0% / 5%	2 m x 2 m
$\bar{X}$ **Vegetation height**	**Layers cover**
19,82 cm	- / 95% / 80%
Fixed point photography nº	
IMGDQ17	

Species list:

Hypnum spp.	9
Erica cinerea	7
Calluna vulgaris	5
Trichophorum cespitosum	5
Molinia caerulea	4

NVC classification: ~H10 *Calluna vulgaris-Erica cinerea heath*

SE

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NVC record sheet: D 18

Location	**Coordinates [●] X,Y**		**Region**	**Author**
Bloody Bridge river	337264	326825	Path section towards the quarry	MVA

Site and vegetation description
Bare peat and scree exposed path section along the south-east foot area of Donard. Wet heath area characterized with abundant deergrass and stunted bushes of western gorse, and flushed areas towards the river slope dominated by black bog rush and purple moor-grass.
The sample area has been placed at the side of the path, beside the rock screes and just before a gently flushed area, with a mix of vegetation stands, moss patches and bare soil.

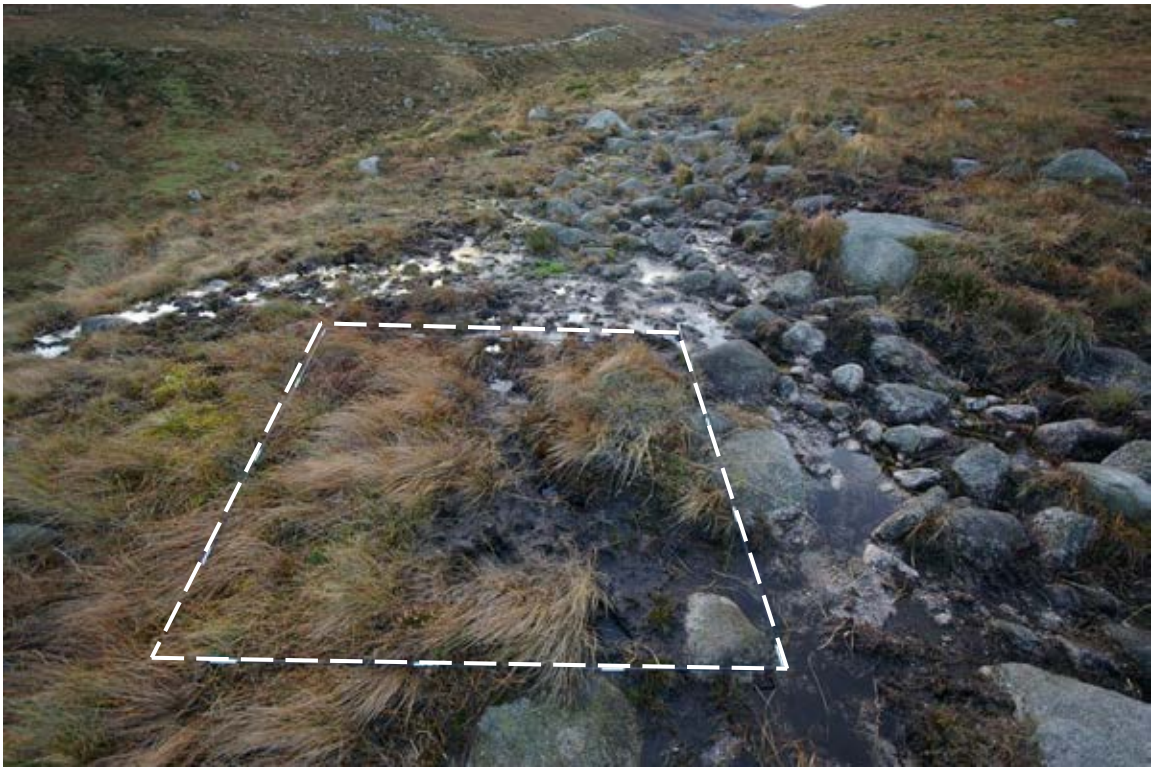
Date 03/12/2017	**Sampling position** LS (SW)
Altitude 273 m	**Slope** 5%
Aspect Y 245º SW X 150º SE	**$\bar{X}$ Soil depth** 17,92 cm
Bare rock 0% / **Bare soil** 25%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 19,82 cm	**Layers cover** - / 75% / 10%
Fixed point photography nº IMGDQ18	

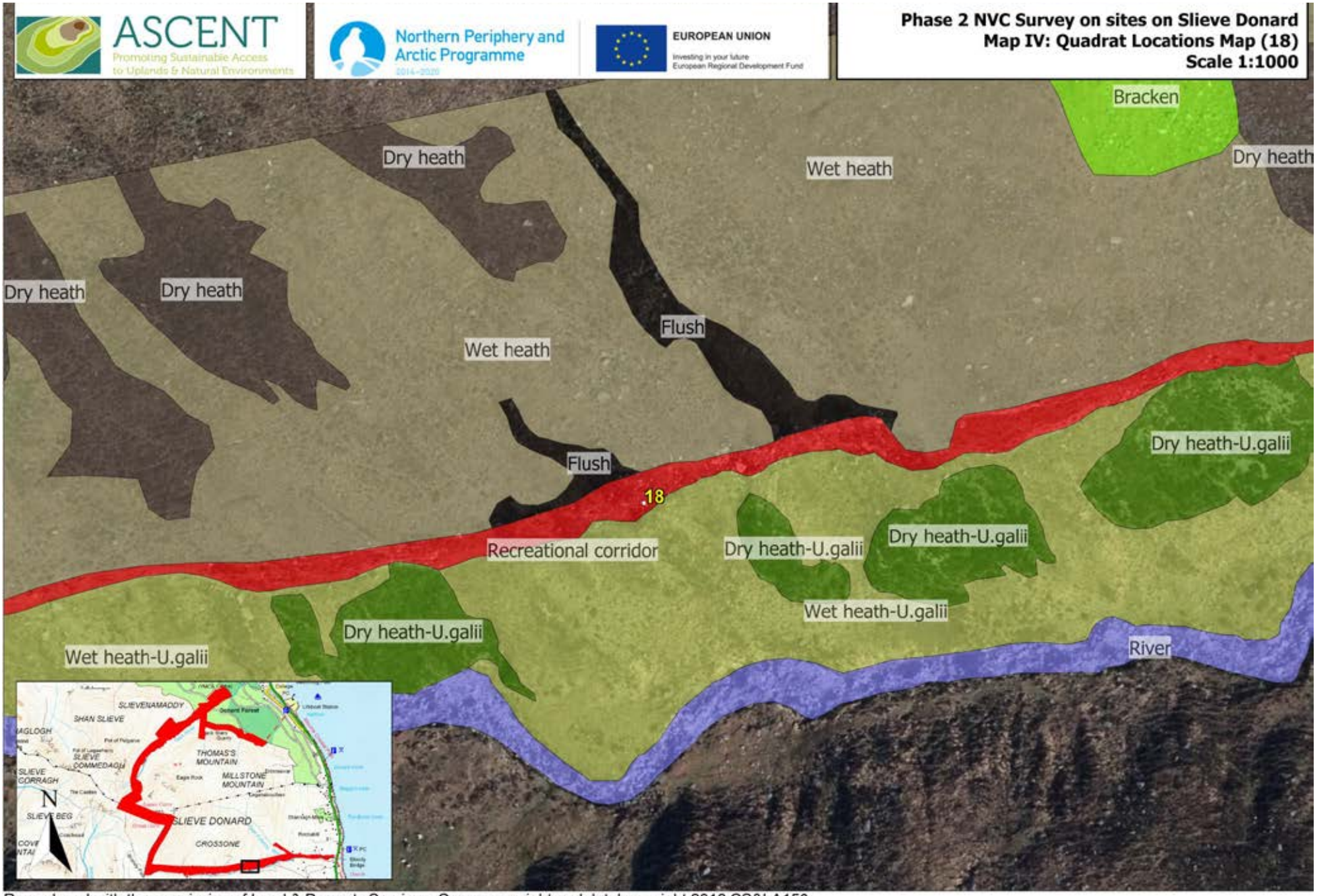
Species list:

Trichophorum cespitosum	7
Shoenus nigricans	4
Calluna vulgaris	4
Sphagnum spp.	4
Erica tetralix	3
Erica cinerea	2
Juncus squarrosus	1
Molinia caerulea	1
Carex demissa	1
Hypnum spp.	1
Campylopus introflexus	1

NVC classification: ~M15 *Trichophorum cespitosum-Erica tetralix wet heath*

SW





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NVC record sheet: D 19

Location	Coordinates [●] X,Y		Region	Author
Glen Fofanny river	337769	327196	Way up towards Millstone mountain	MVA

Site and vegetation description

South-east slope of Millstone mountain following the left side of Fofanny river. Sample area has been placed at the side of the main path line towards the river slope. The quadrat of 2 square metre perfectly fits in between that main path line and a parallel braiding line produced by upper diversion of walkers, especially used on the way down.

The vegetation here, heavily grazed, consists of western gorse bushes frequently cropped into tight domes and open grassy areas.

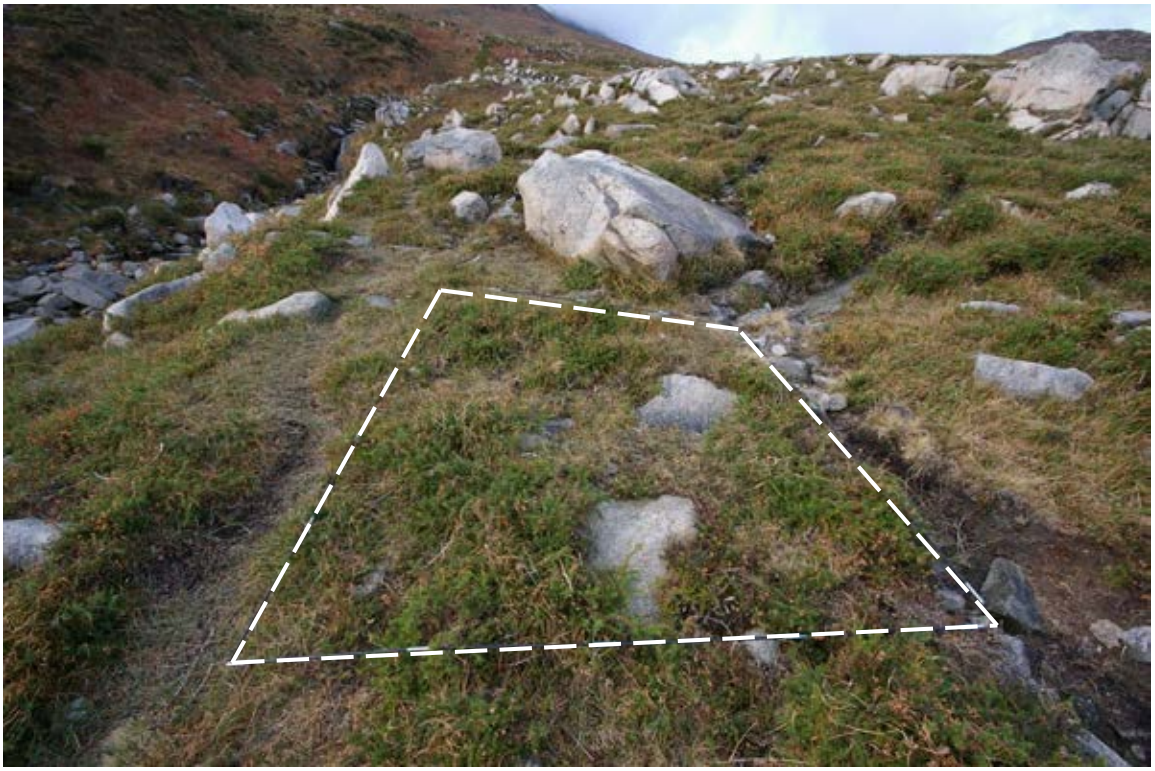
Date 03/12/2017	**Sampling position** LS (NW)
Altitude 188 m	**Slope** 10%
Aspect Y 300º SW X 205º SE	**$\bar{X}$ Soil depth** 6,09 cm
Bare rock 15% / **Bare soil** 0%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 13,78 cm	**Layers cover** - / 80% / 5%
Fixed point photography nº IMGDQ19	

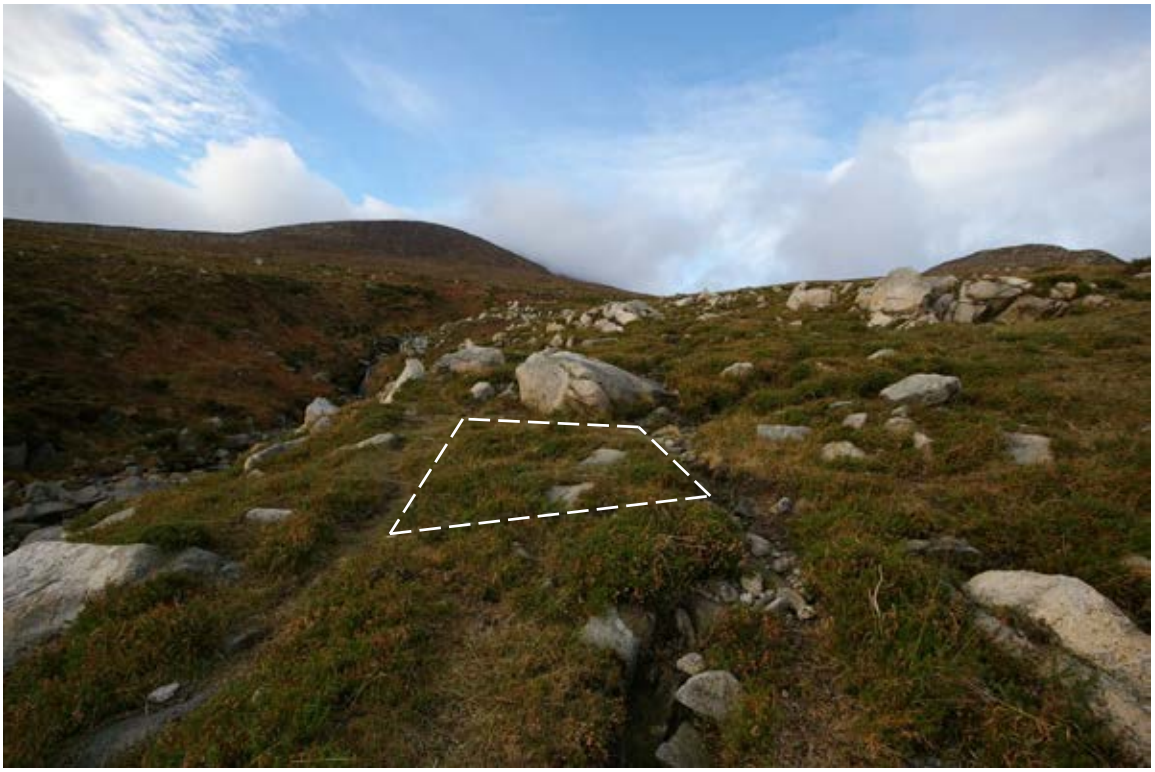
Species list:

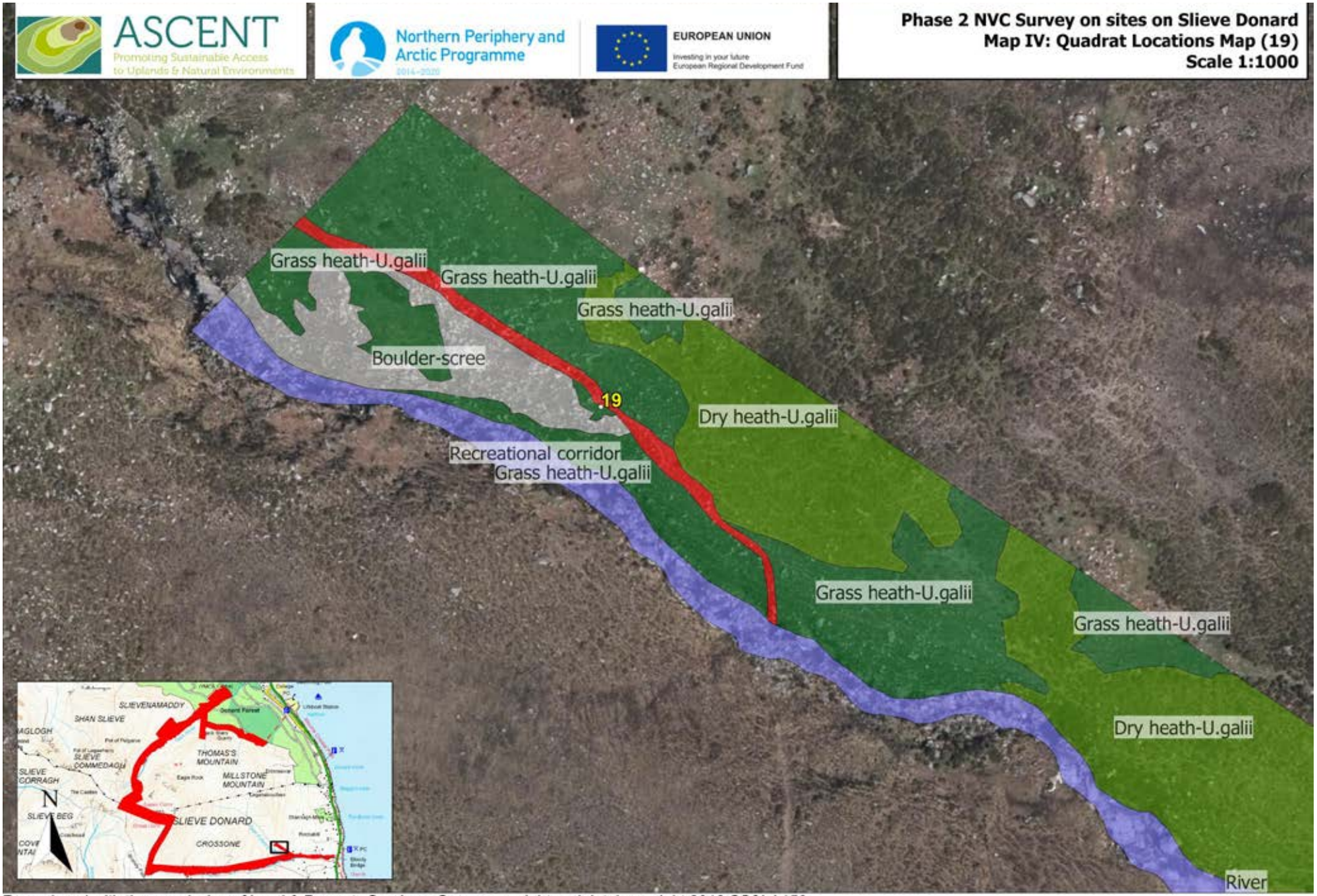
Ulex galii	8
Erica cinerea	5
Molinia caerulea	5
Nardus stricta	4
Carex binervis	4
Campylopus introflexus	4
Potentilla erecta	2
Polygala serpillifolia	1

NVC classification: ~H8 *Calluna vulgaris-Ulex gallii* heath

SW







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NVC record sheet: D 20

Location	Coordinates [●] X,Y		Region	Author
Bloody Bridge river	337264	326825	Before the wood bridge	MVA

Site and vegetation description
Lower area of Bloody Bridge river path on a section of path diversion beside a long boulder. Walkers avoiding that boulder surface beside the river are walking on a patch of wet heath, with burned dead stands of western gorse and bog myrtle.
The vegetation here, after different burning events, is dominated by vigorous purple moor-grass, flushed in places with frequent bog myrtle patches.

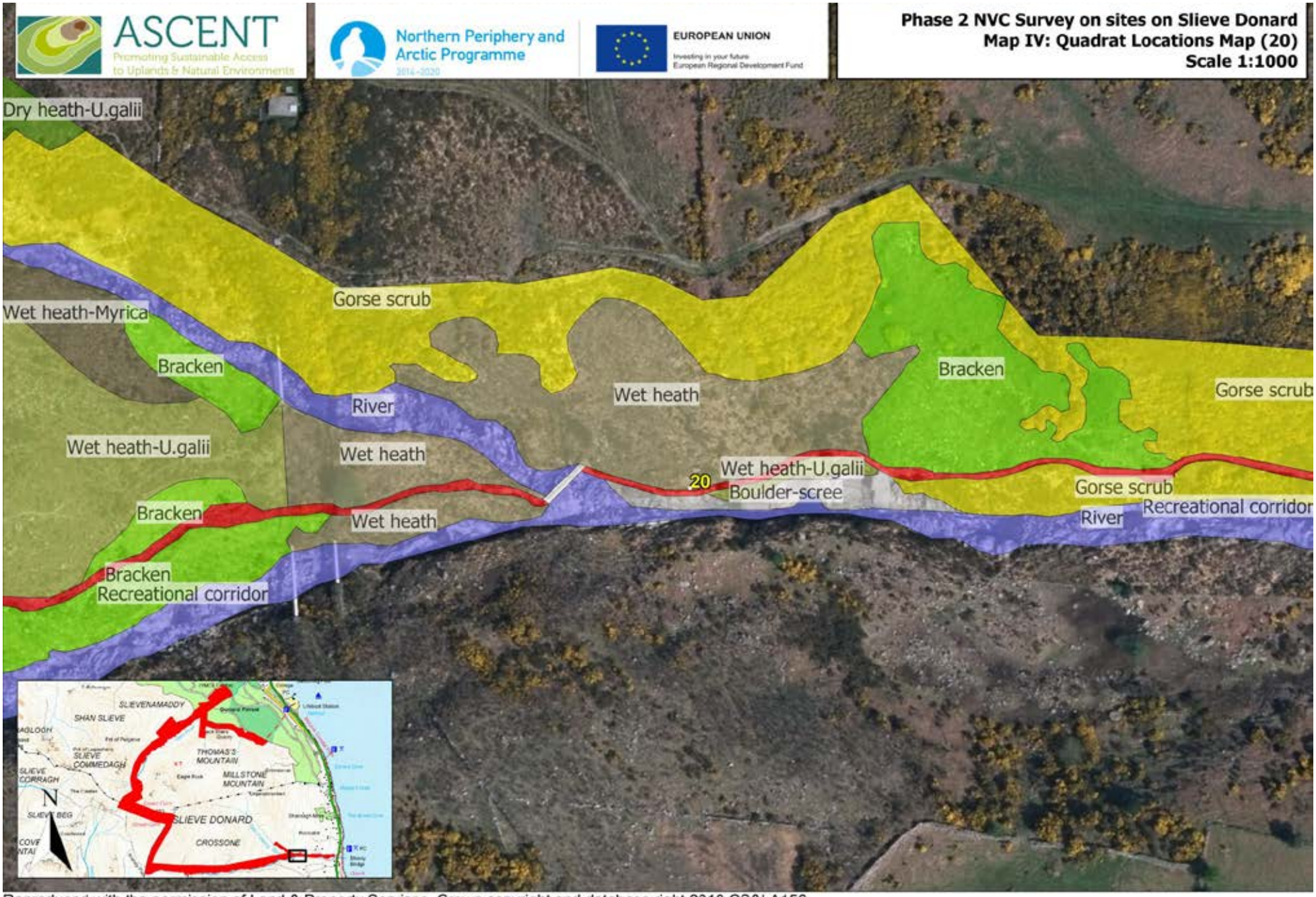
Date 03/12/2017	**Sampling position** RS (NW)
Altitude 100 m	**Slope** 10%
Aspect Y 290º NW X 180º S	**$\bar{X}$ Soil depth** 22,56 cm
Bare rock 0% / **Bare soil** 15%	**Sample area** 2 m x 2 m
$\bar{X}$ Vegetation height 68,18 cm	**Layers cover** - | 70% | 15%
Fixed point photography nº IMGDQ20	

Species list:

Molinea careluea	7
Sphagnum spp.	5
Erica tetralix	4
Erica cinerea	4
Ulex galii	4
Schoenus nigricans	4
Potentilla erecta	3
Pedicularis silvatica	2
Hypochaeris radicata	2
Calluna vulgaris	1
Myrica gale	1

NVC classification: ~M15 *Trichophorum cespitosum-Erica tetralix wet heath*

NW



Annex II:

Maps

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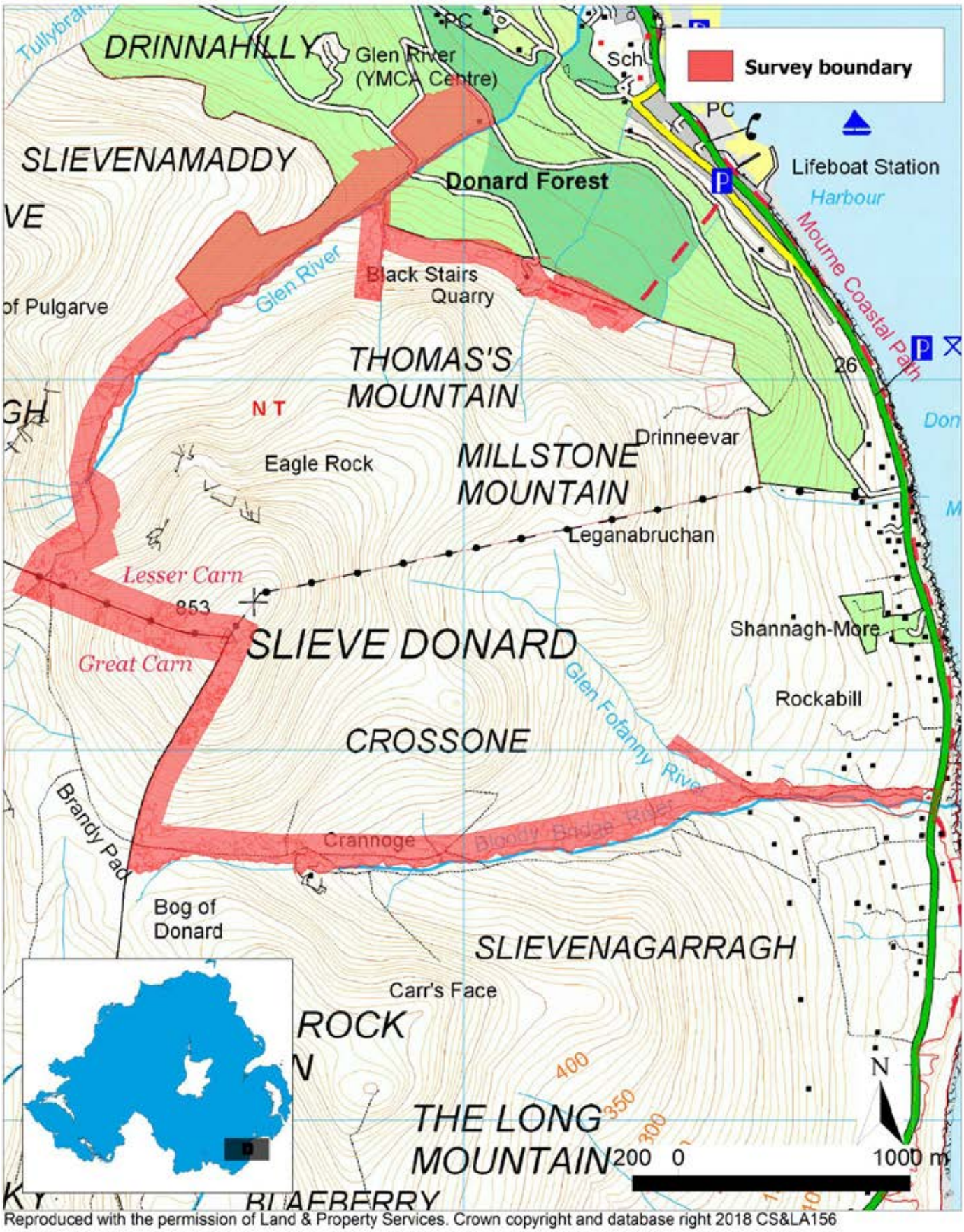
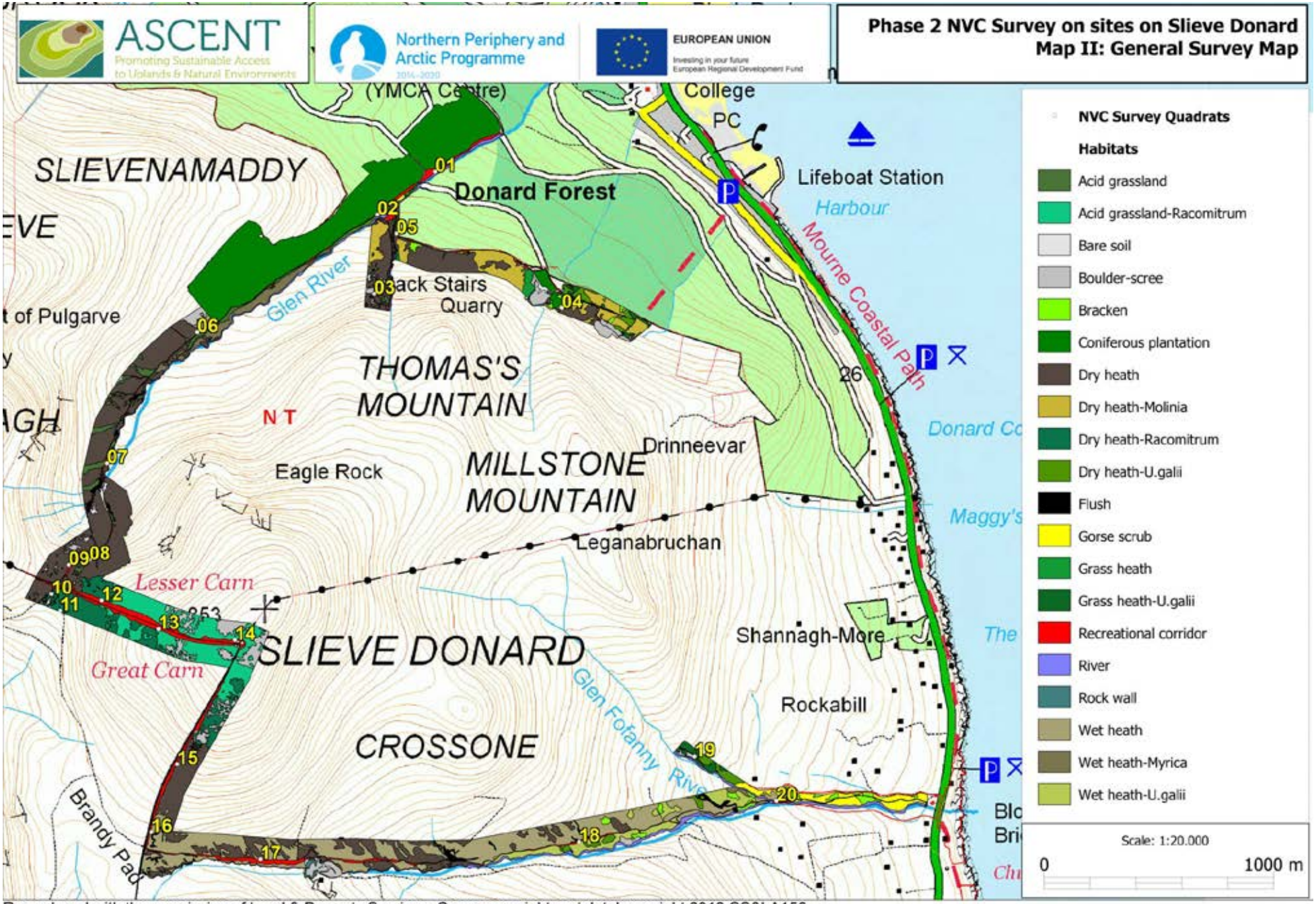
Phase 2 NVC Survey on sites on Slieve Donard
Map I: Location Map
J360285
Scale: 1:20.000





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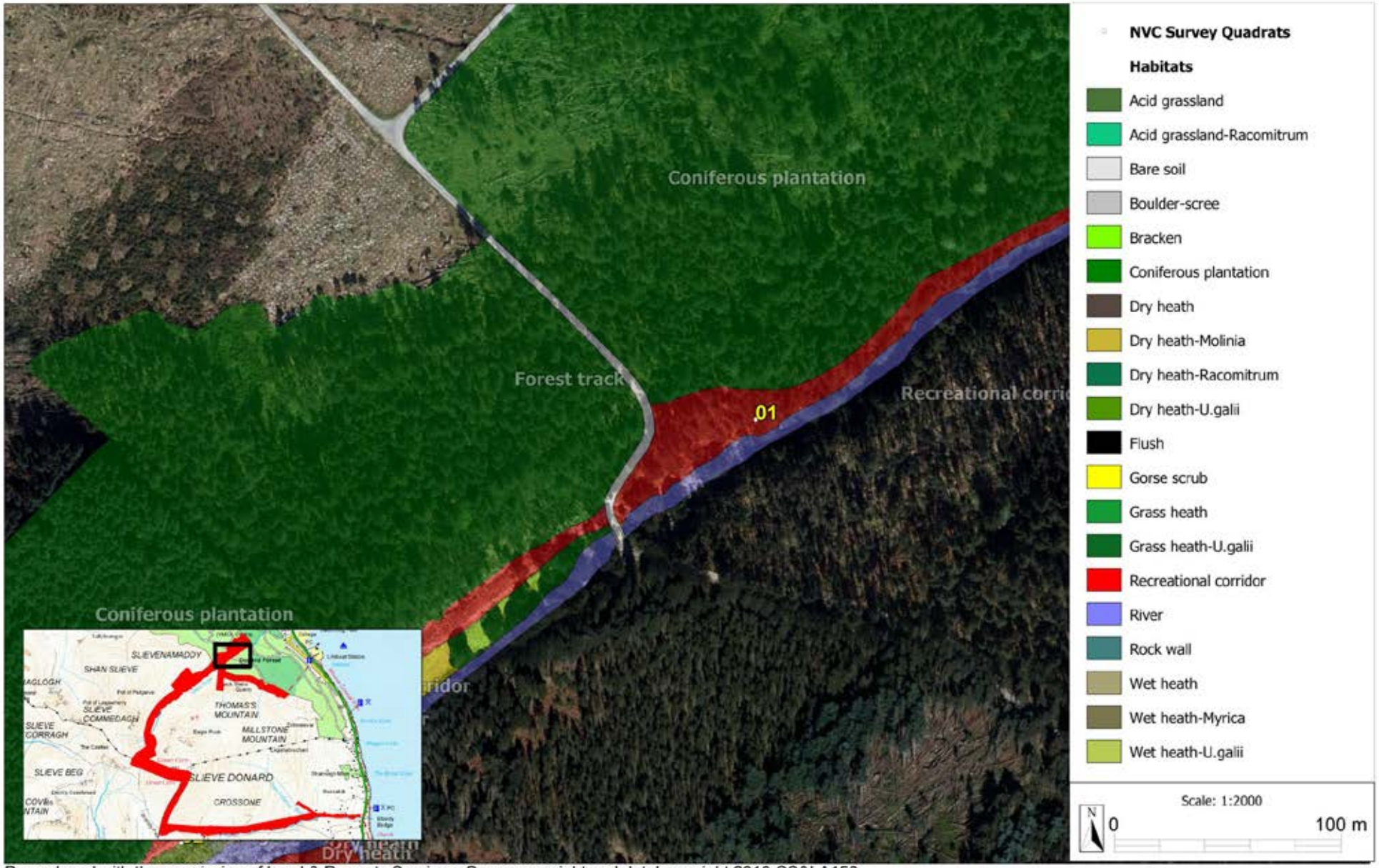
Phase 2 NVC Survey on sites on Slieve Donard
Map III: Quadrat Locations Map (1)



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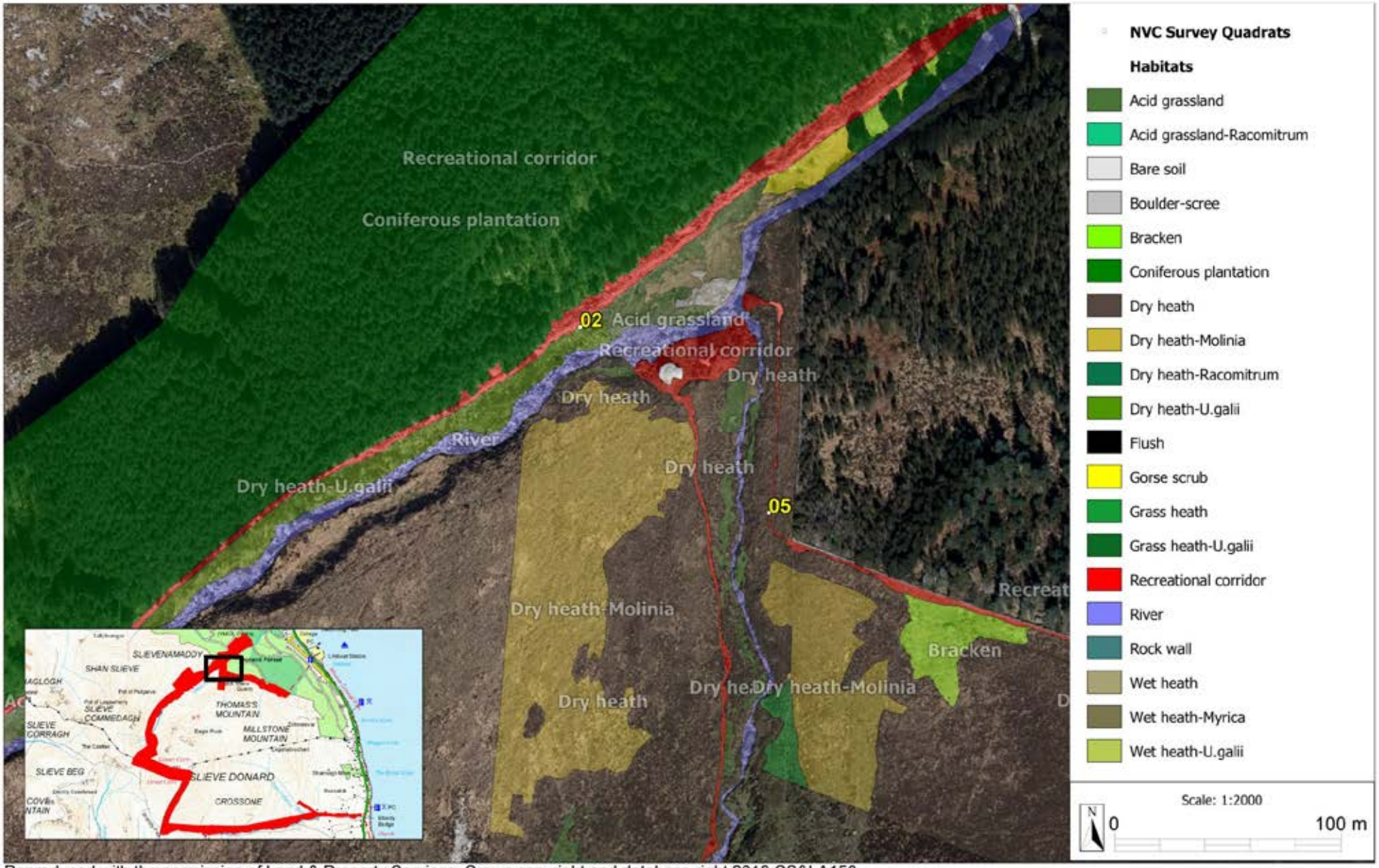
Phase 2 NVC Survey on sites on Slieve Donard
Map III: Quadrat Locations Map (2 & 5)



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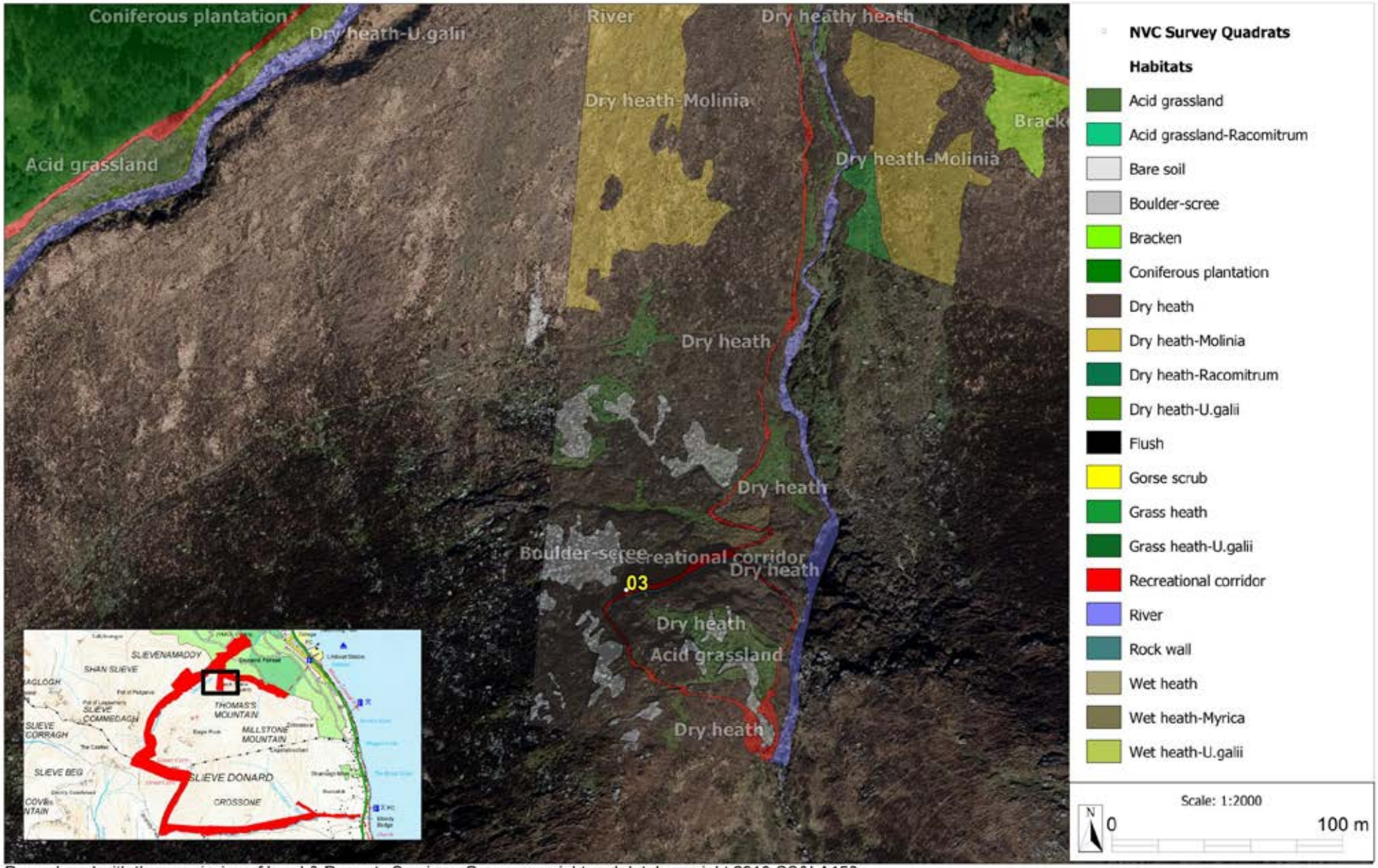
Map III: Quadrat Locations Map (3)



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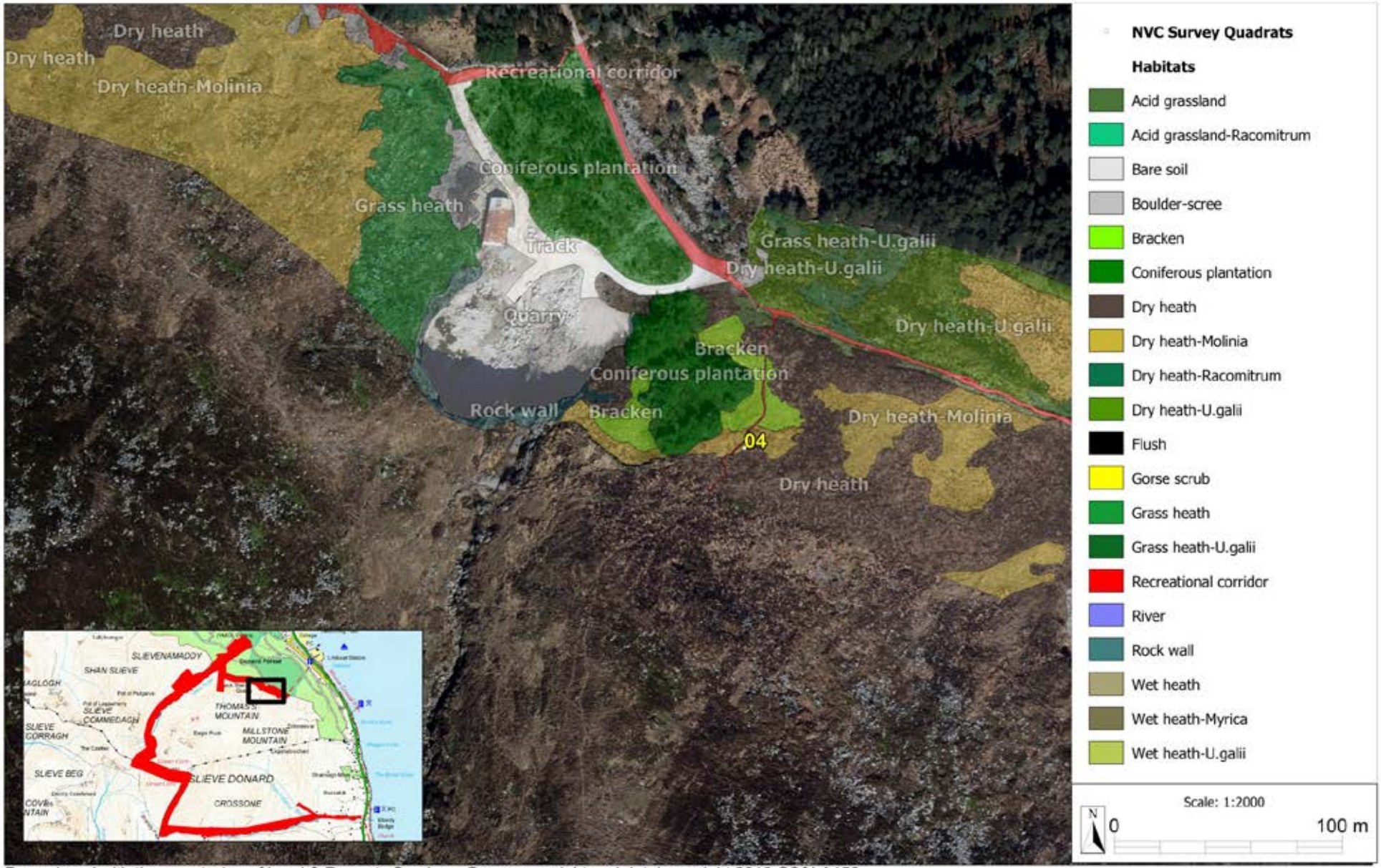
Map III: Quadrat Locations Map (4)



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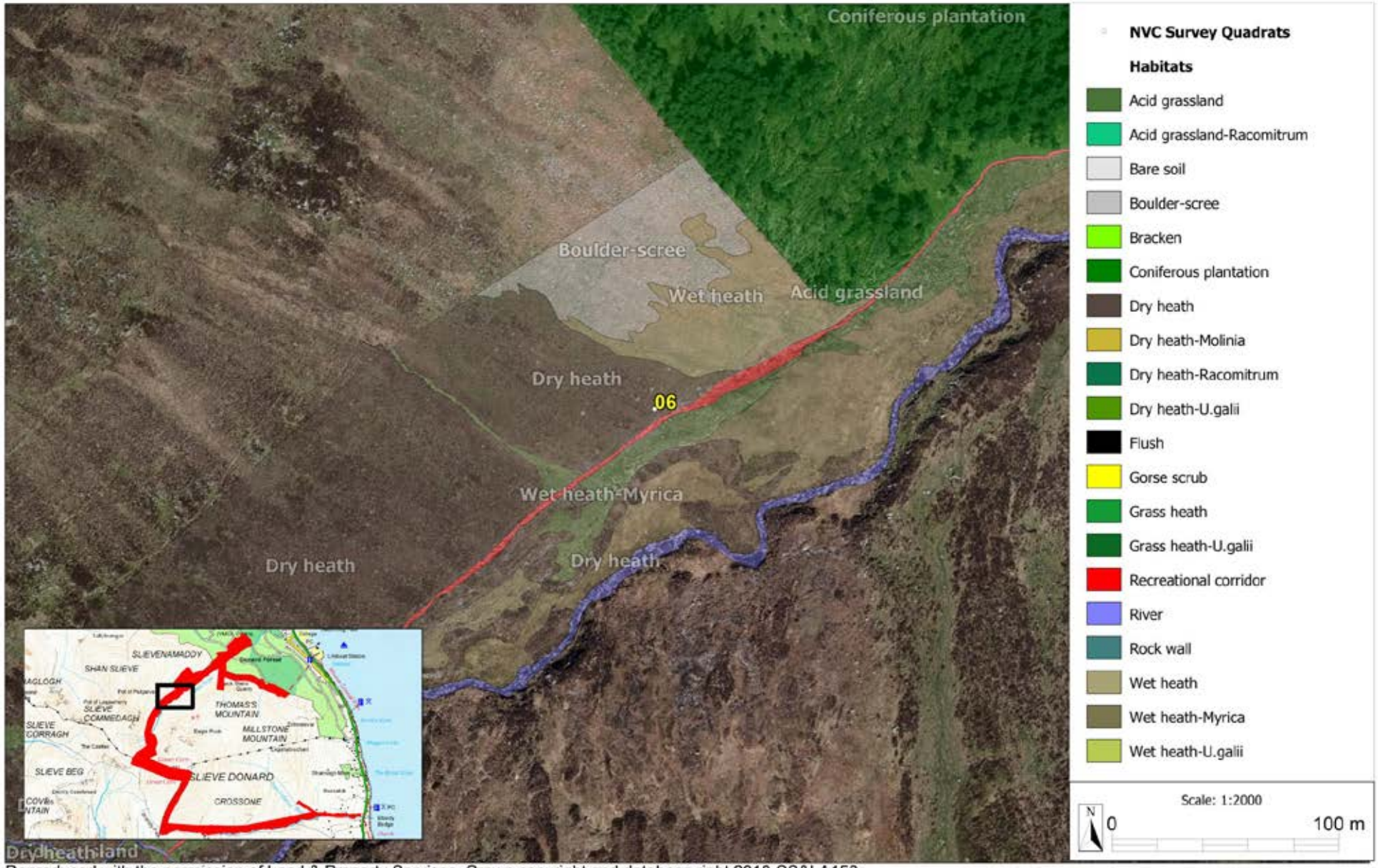
Map III: Quadrat Locations Map (6)



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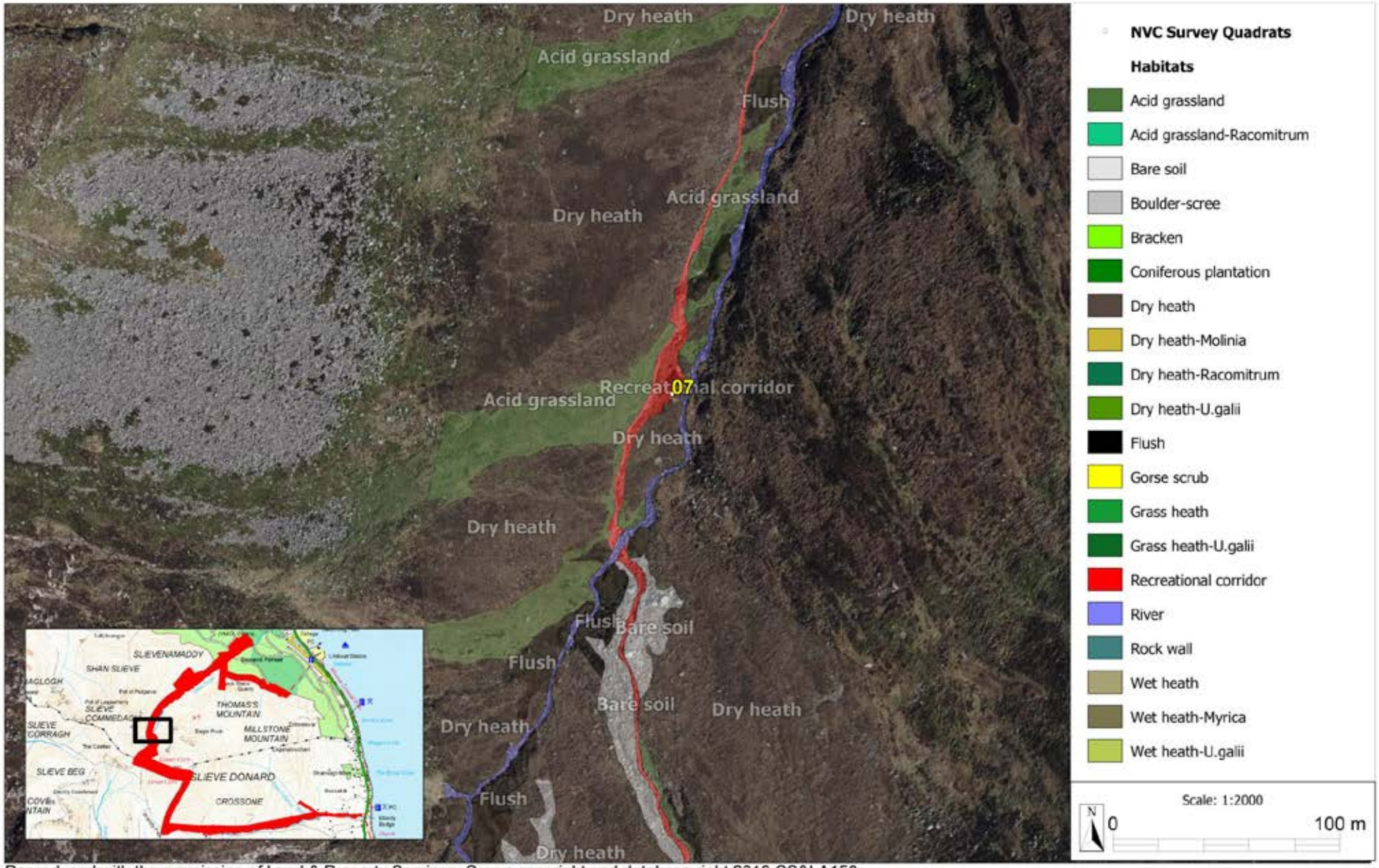
Map III: Quadrat Locations Map (7)



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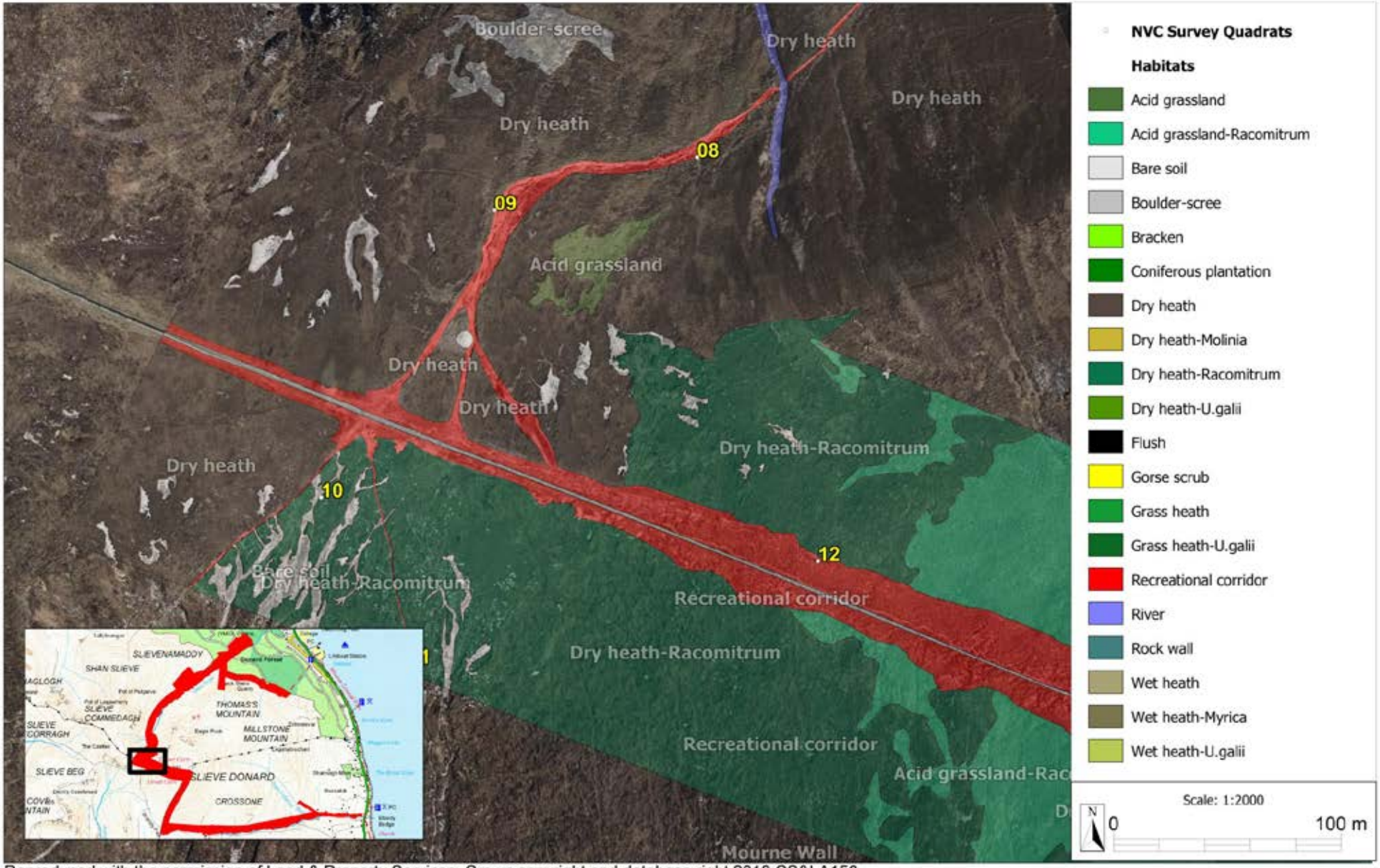
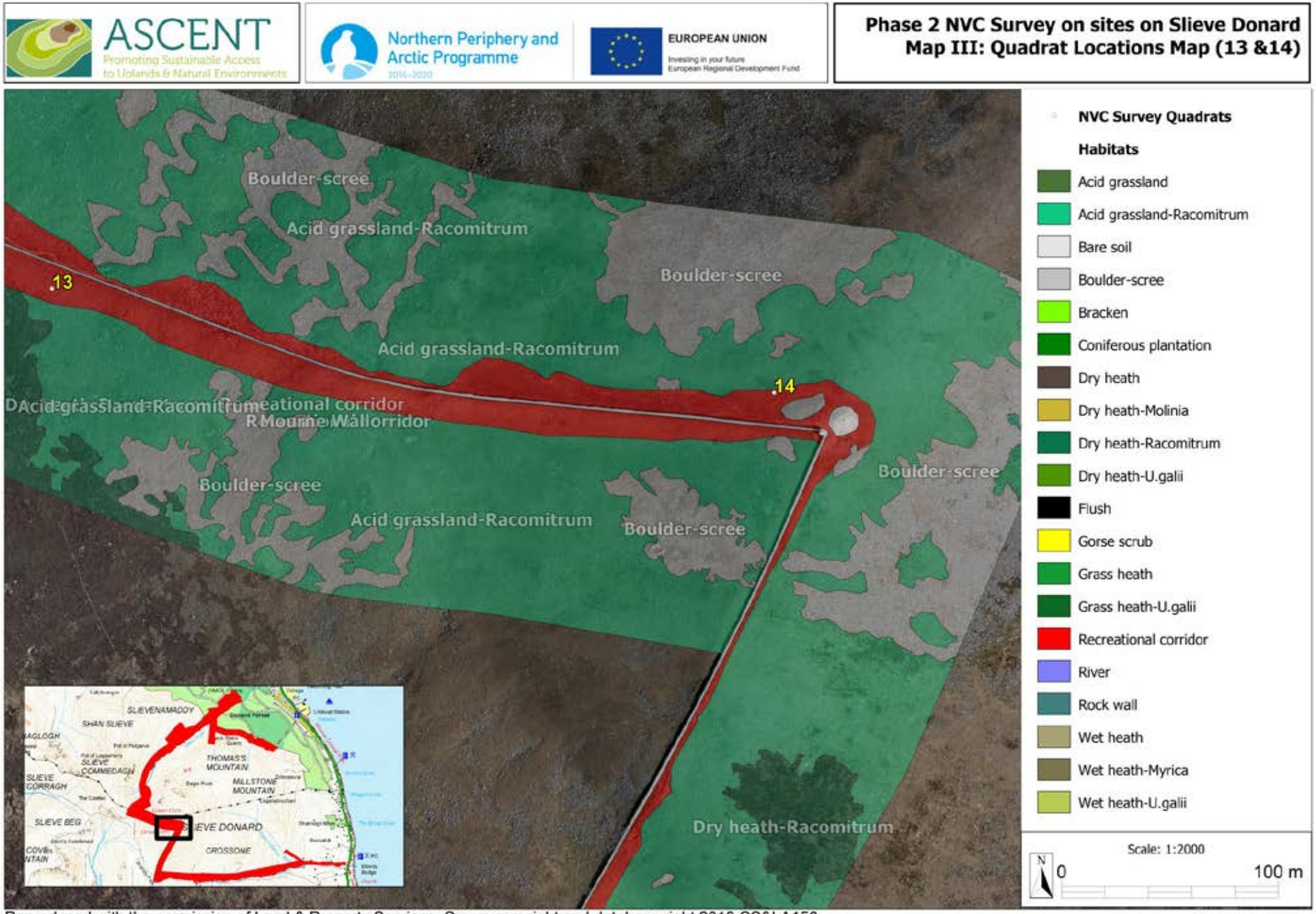
Phase 2 NVC Survey on sites on Slieve Donard
Map III: Quadrat Locations Map (8-12)





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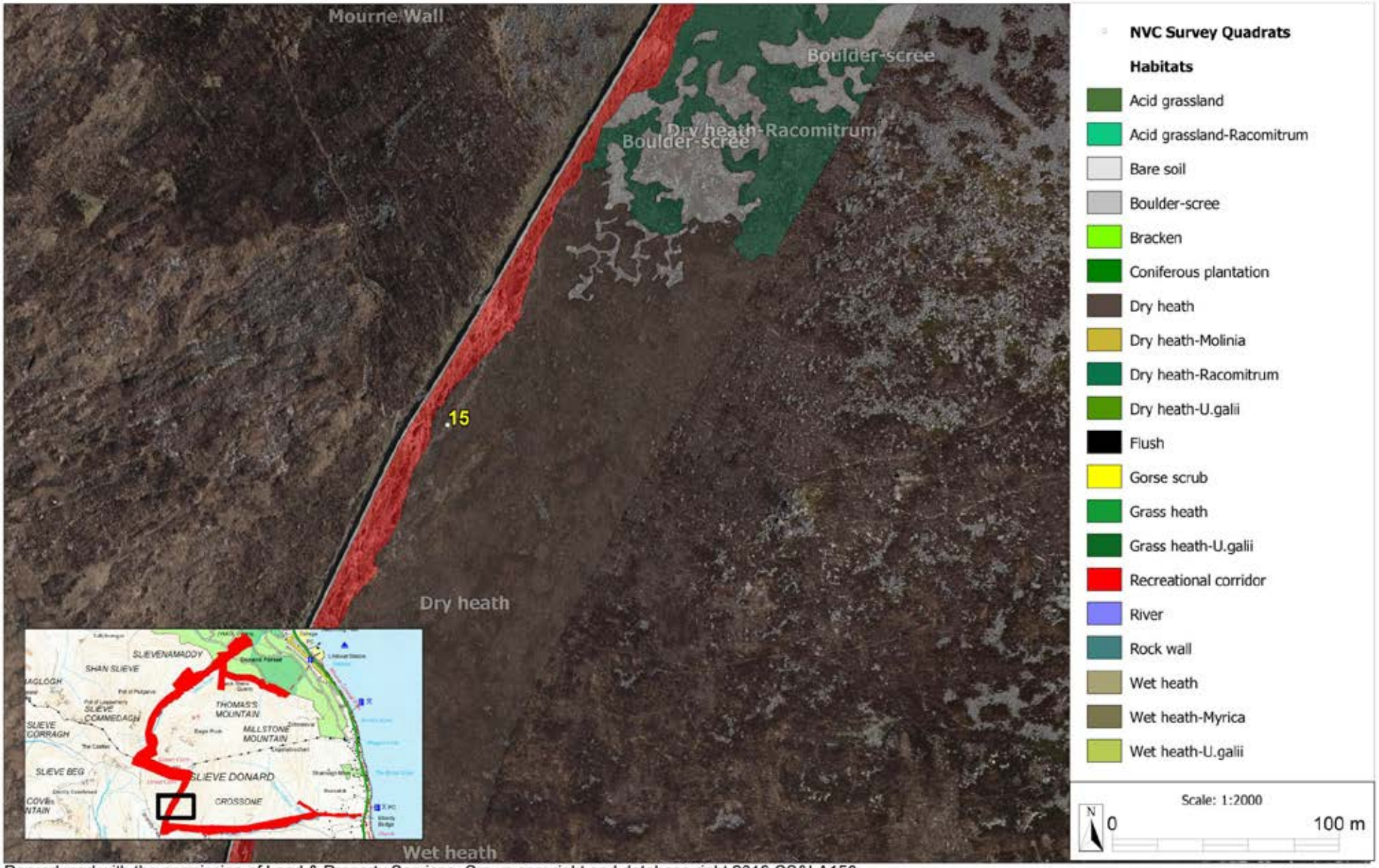
Map III: Quadrat Locations Map (15)



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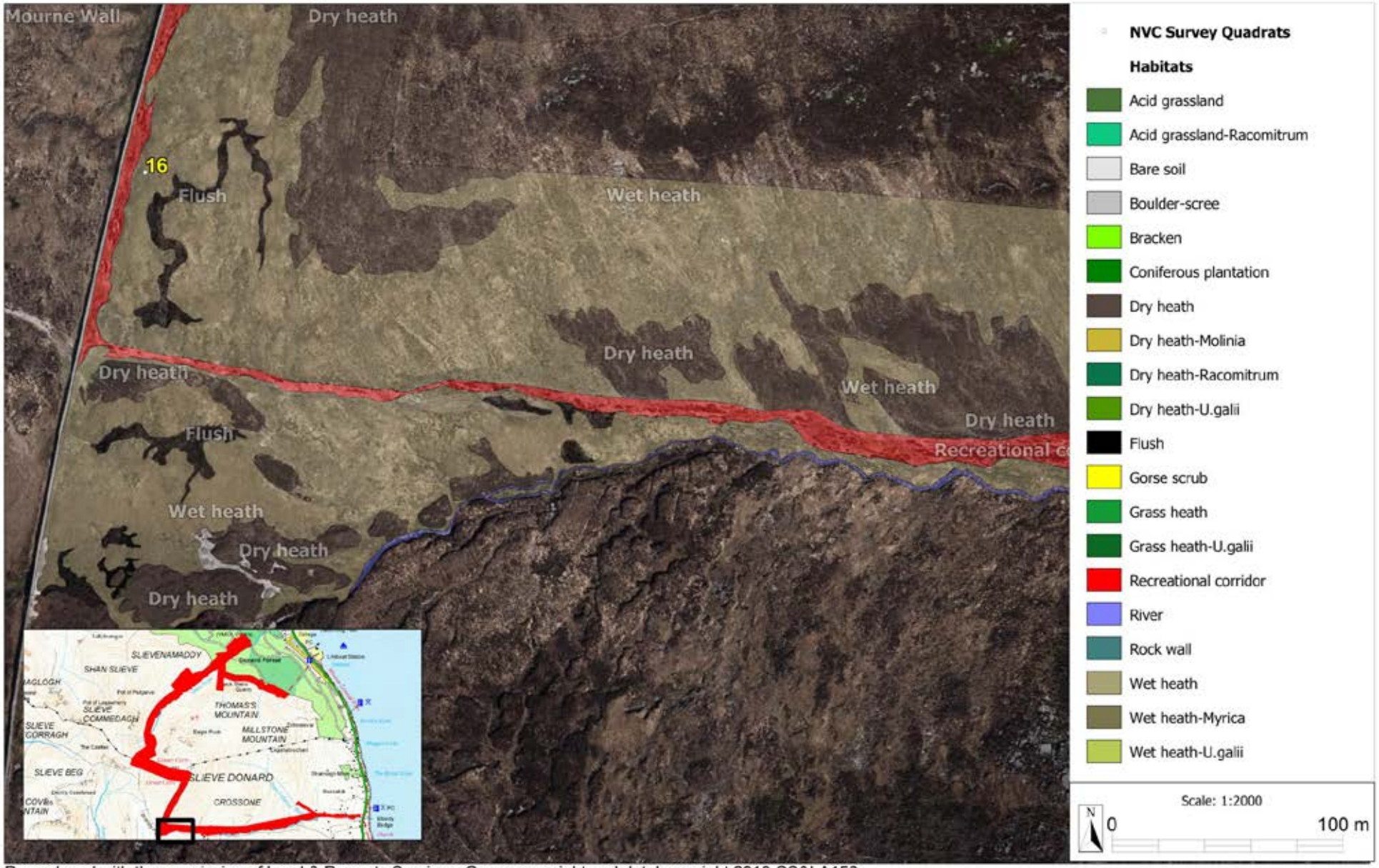
Map III: Quadrat Locations Map (16)



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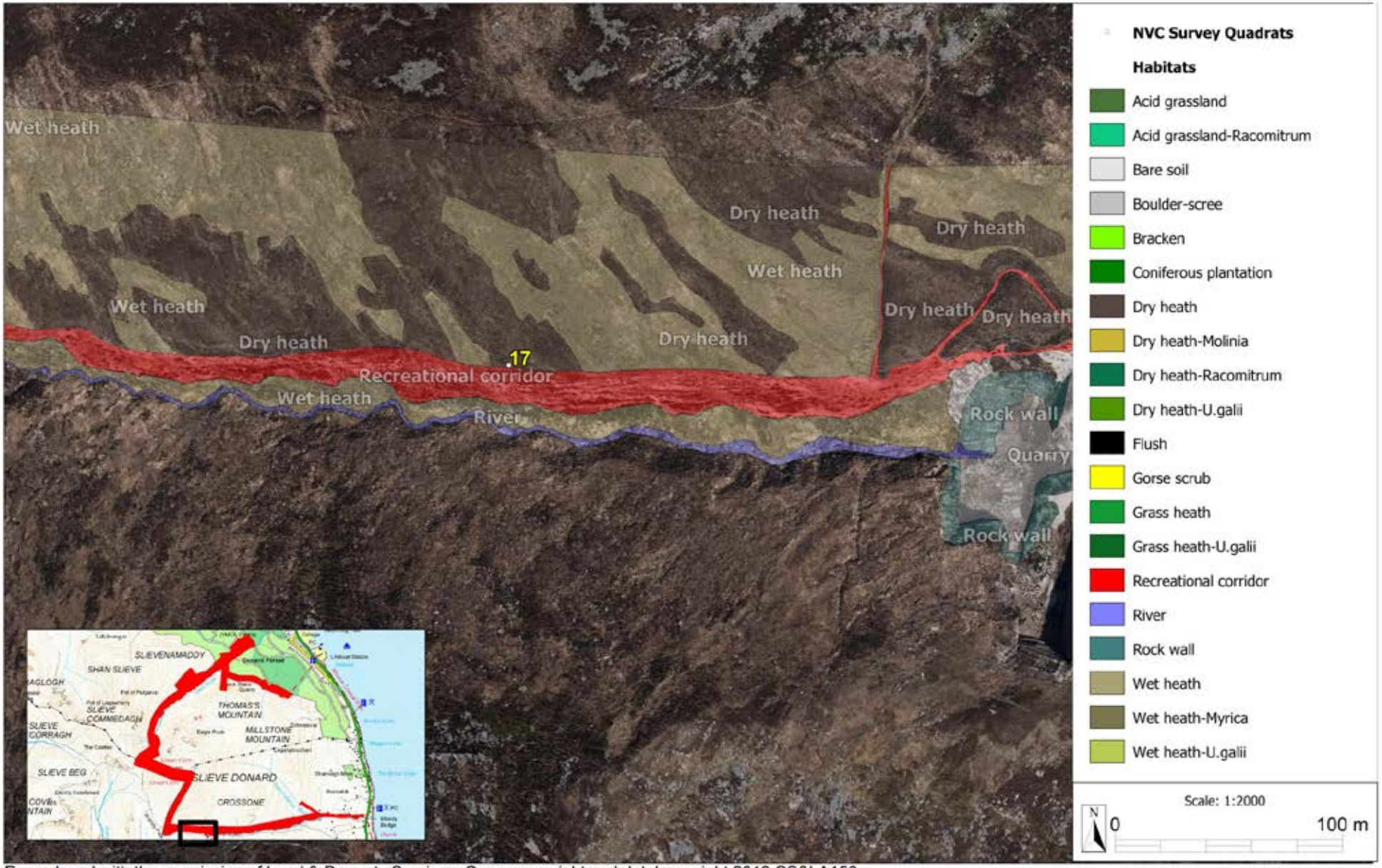
Map III: Quadrat Locations Map (17)



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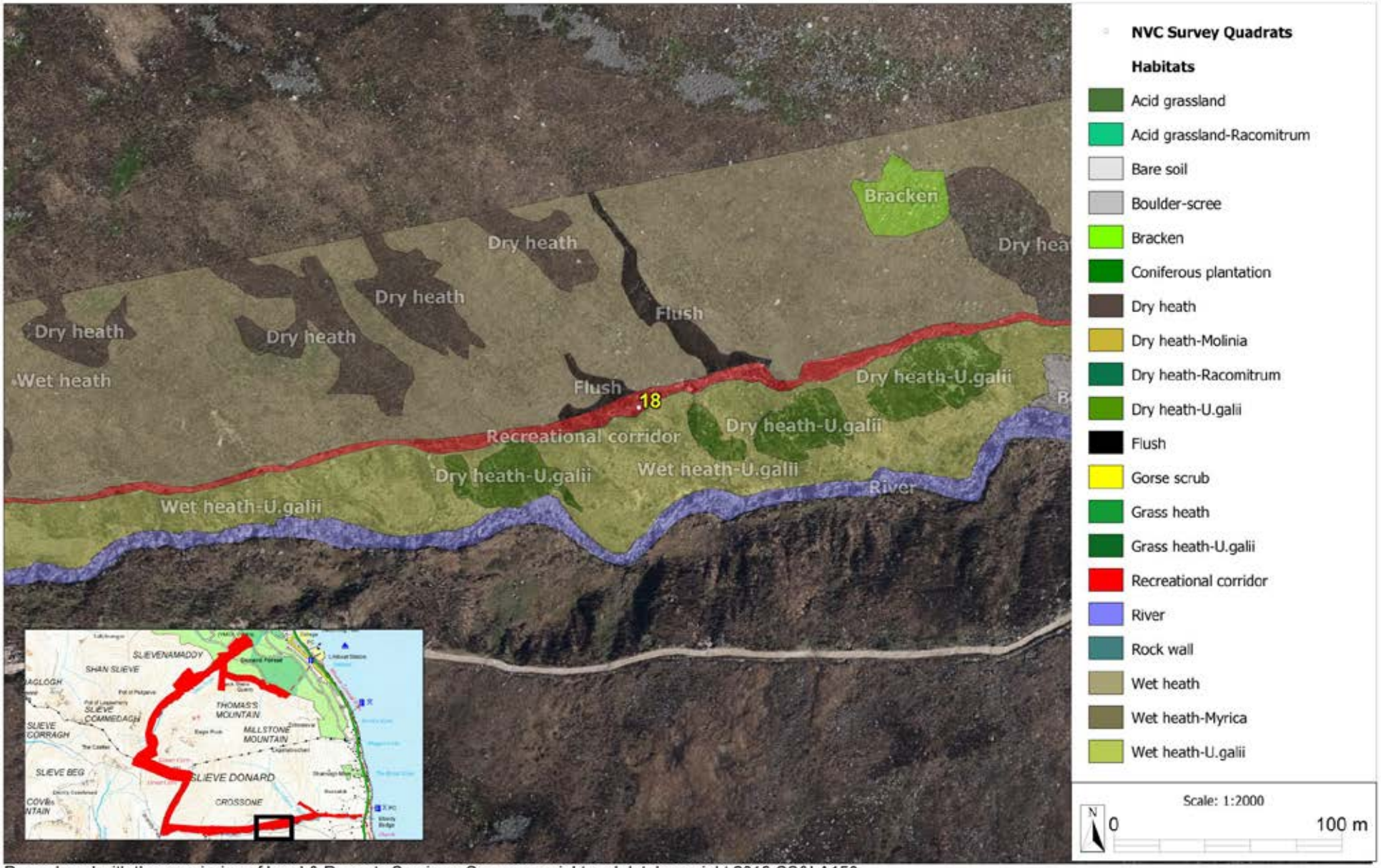
Map III: Quadrat Locations Map (18)



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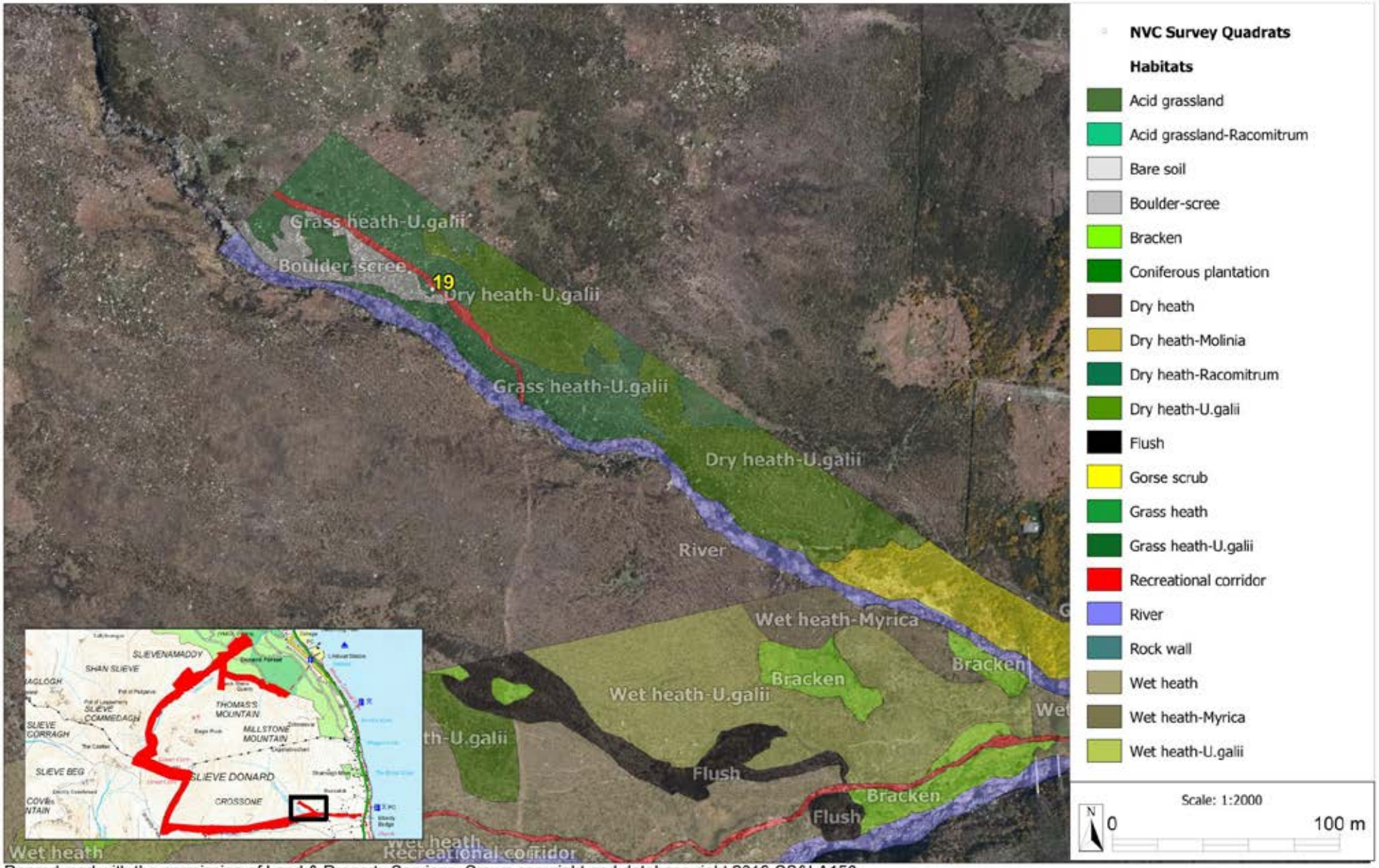
Map III: Quadrat Locations Map (19)



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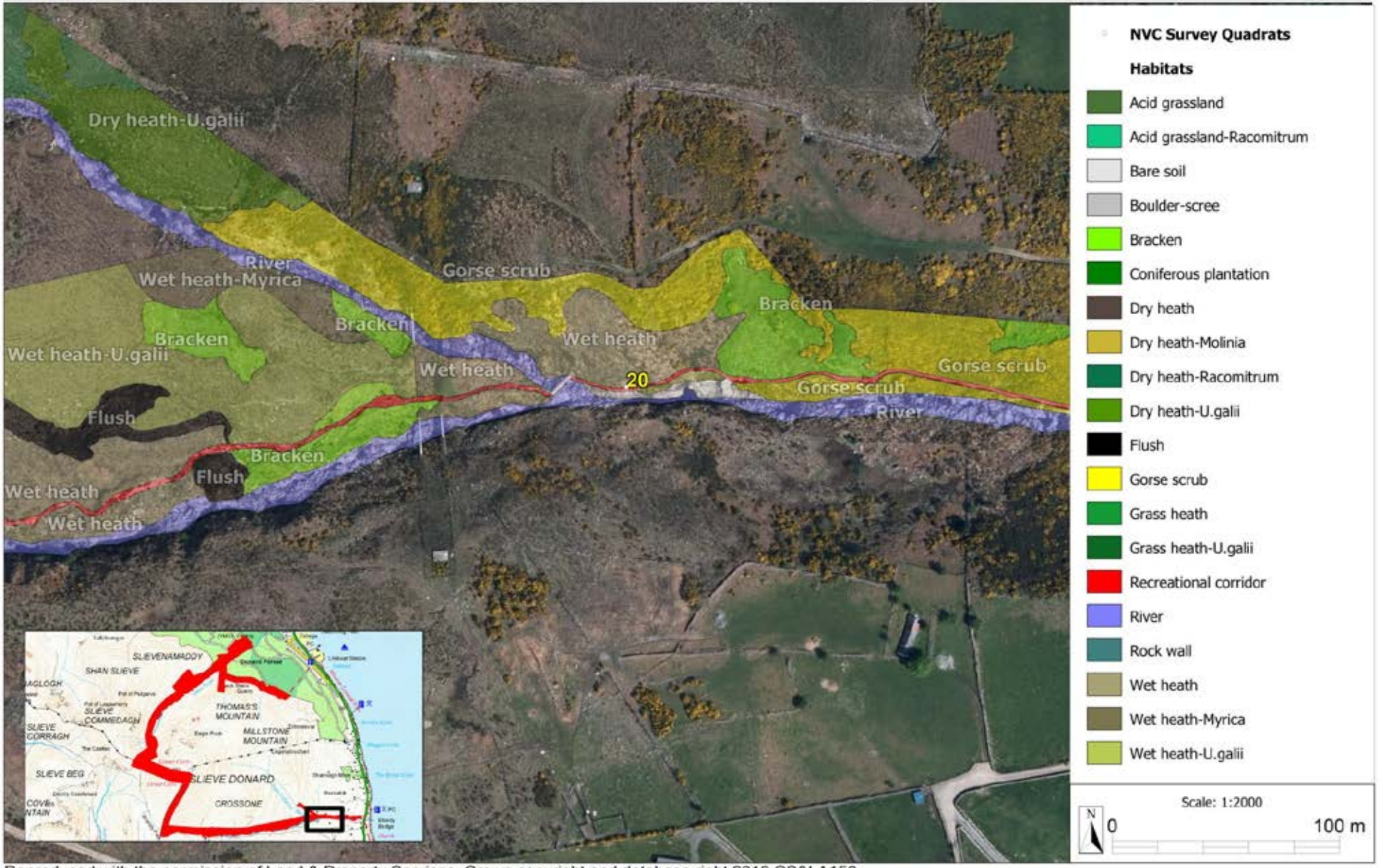
Map III: Quadrat Locations Map (20)



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