National Survey of Upland Habitats

(Phase 3, 2012-2013)

Site Report No. 14:

Slieve League cSAC (000189), Co. Donegal

Philip M. Perrin, Jenni R. Roche, Simon J. Barron, Orla H. Daly, Rory L. Hodd, Caoimhe S. Muldoon and Kristi J. Leyden

February 2013

Commissioned by National Parks and Wildlife Service

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Cover photo: Cliffs and heathland on Slieve League, Co. Donegal, taken by Philip Perrin.

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EXECUTIVE SUMMARY

- Slieve League cSAC (000189), in County Donegal was surveyed as part of the National Survey of Upland Habitats (NSUH) in September 2012.
- The area of the site is 39.3 km^2. Using GIS and aerial photograph interpretation, the site was divided into 712 polygons, each representing an area of relatively homogeneous habitat mosaic. Each polygon was surveyed on the ground to create a habitat map for the site.
- A total of 20 Annex I habitats, 57 Fossitt habitats and 72 provisional upland vegetation communities were recorded. Annex I habitats comprise 57.9% of the site. The Annex I upland habitats present which are primary focus habitats for the NSUH are *7130 Active blanket bog (25.0%), 4030 Dry heath (16.5%), 4010 Wet heath (8.3%), 4060 Alpine and Boreal heath (2.5%), 8110 Siliceous scree (1.4%), 7130 Inactive blanket bog (0.6%), 8220 Siliceous rocky slopes (0.1%), 7140 Transition mires (0.1%), *Rhynchosporion* depressions (0.1%), 8210 Calcareous rocky slopes (0.05%), 7230 Alkaline fens (0.02%) and 8120 Calcareous scree (0.001%).
- Rare and notable species recorded during the survey include *Adelanthus lindenbergianus, Saxifraga aizoides*, *Saxifraga oppositifolia*, *Thalictrum alpinum*, *Leiocolea fitzgeraldiae* and *Anthelia juratzkana.*
- The primary area of botanical interest is the corrie to the south-west of Lough Agh, the cliffs of which support important calcicole species, with rare hepatic mat species found on the corrie floor. The summit and eastern ridges of Slieve League support areas of 4060 Alpine and Boreal heath and 6150 Siliceous alpine and boreal grassland, within which grow a number of arctic-alpine species. Several important bryophyte species have previously been recorded from the slopes behind the beach at Trabane.
- The conservation status of the upland Annex I habitats that form the primary focus of the NSUH was assessed. A total of 39 monitoring stops were recorded in these habitats. The conservation status of 7230 Alkaline fens, 8110 Siliceous scree and 8210 Calcareous rocky slopes were assessed as Favourable and 7140 Transition mires was assessed as Unfavourable – Inadequate. The remaining primary focus habitats were assessed as Unfavourable – Bad.
- The main impacts/activities affecting the site are sheep grazing, peat cutting and erosion
- It is recommended that

  Whilst destocking levels implemented *c.* 2002 according to Commonage Framework Plans appear to have resulted in some improvement to Annex I habitats, continued monitoring is required to assess the recovery of these habitats. The available data do not support an increase in stocking levels.

  Appropriate regulation of turf-cutting by machine is required within the site.

  The feasibility of active restoration measures in severely eroded bog should be examined if these areas are required to achieve Favourable conservation status.

* Priority Annex I habitat

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ESRI format point shapefile with monitoring stop / relevé data

ESRI format point shapefile with rare and notable species data

Microsoft Excel format polygon attributes table

Microsoft Excel format image databank

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Turboveg relevé database

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1. INTRODUCTION

Overview

1.1 The principal objectives of the National Survey of Upland Habitats (NSUH) are to classify and map the location and extent of upland habitats within a range of sites using the schemes of Fossitt (2000) and Annex I of the EU Habitats Directive, and to assess the conservation status of a suite of upland Annex I habitats. Selected sites largely comprise upland candidate Special Areas of Conservation (cSACs). The assessment procedure involves evaluation of habitat condition indicators at a network of monitoring stops (point samples) distributed across the range of these habitats at the surveyed sites.

1.2 These data are required to provide a scientific basis for the development of policies and management practices for the maintenance (or restoration) of favourable conservation status of Annex I habitats and to provide a scientific basis for monitoring of their status into the future. This site report should be read in conjunction with Irish Wildlife Manual No. 48 (Perrin *et al.*, 2010) and No. 79 (Perrin *et al.*, 2014) which detail the methodologies used for all aspects of this survey. These were initially devised during a scoping study and pilot survey of upland habitats completed in 2009 (Perrin *et al.*, 2009).

1.3 This report summarises the results of the field survey of Slieve League cSAC (000189) for the NSUH (Phase 3, 2012-13). Section 2 of this report presents a detailed description of the habitats within the site, which should be read in conjunction with the relevant O.S. Discovery Series map and the figures associated with the report. It also contains summary statistics on the extent of each habitat type recorded and a compilation of rare and notable floral records for the site.

1.4 Section 3 presents a detailed account of the conservation assessment for the upland Annex I habitats that are the primary focus of the NSUH. This is presented on a habitat-by-habitat basis and for each habitat the parameters of area, structure and functions and future prospects are examined. Available data from the Commonage Framework Plan are also presented.

1.5 Section 4 of this report recommends amendments to the Natura 2000 Standard Data Form based on the results of this survey and makes additional recommendations in regard to monitoring and management.

1.6 Fieldwork was conducted in September 2012. The boundary of the cSAC as used in this survey is the version that was provided by NPWS in April 2012.

Background site information

1.7 Slieve League cSAC, Co. Donegal, (Fig. 1) is a relatively small site, being 39.3 km^2 in extent. It stretches along the coastline from near Doon Point just west of Glencolumbkille around to Teelin Point just south of Teelin village (O.S. Discovery Series map 10) with an exclusion area around the village of Malin Beg in the west of the site. The site comprises a marine area of coastal waters and a terrestrial area 32.4 km in extent. The underlying geology of the terrestrial area is mainly quartzite and schists with some areas of quartzofeldspathic and micaceous

psammite, dolomitic marble and diamictite. The two main peaks are Slieve League (alt. 595 m) and Leahan (alt. 427 m). On the northern side of Slieve League is a large corrie in which lies Lough Agh.

1.8 The site has been designated for a number of Annex I habitats (Table 1). The full category titles for Annex I habitats mentioned in this report are found in Appendix 1.

Table 1: Annex I habitat data from the Natura 2000 Standard Data Form for Slieve League cSAC. Data retrieved from www.npws.ie 23rd October 2012. Rep. = Representativity, Surf. = Relative Surface, Cons. = Conservation status, Glob. = Global Assessment.

Annex I code	**Habitat**	**Area (%)**	**Rep.**	**Surf.**	**Cons.**	**Glob.**
1170	Reefs	5	A	C	A	A
1230	Vegetated sea cliffs	9	A	B	A	A
4010	Wet heaths	10	B	B	B	C
4060	Alpine and Boreal heaths	17	A	B	A	A
*7130/7130	Blanket bogs	14	B	C	B	B
8210	Calcareous rocky slopes	1	A	C	A	A
8220	Siliceous rocky slopes	1	B	C	A	B

2. FIELD SURVEY

Description of habitats

Malin More and Malin Beg

2.1 At the northern end of the site is the flat and relatively low-lying headland of Malin More, the highest point being only 131 m in altitude. The headland is fringed by high cliffs classified as **CS1 Rocky sea cliffs** in the classification scheme of Fossitt (2000). On these cliffs occur frequent patches of **HH1 Dry siliceous heath** and **ER3 Siliceous scree and loose rock** and they also support **PF1 Rich fen and flush** with *Schoenus nigricans* and *Scorpidium scorpioides*. On top of the cliffs is a fairly broad zone of coastal grassland which, for the purposes of this survey, has been classified as **GS1 Dry calcareous and neutral grassland**. This grassland contains a suite of maritime species including *Plantago maritima*, *Plantago coronopus* and *Armeria maritima* and the maritime bryophyte *Fossombronia angulosa*. Further inland this habitat gives way to a more acidic sward with *Nardus stricta* (**GS3 Dry-humid acid grassland**) and then an expanse of **PB2 Upland blanket bog**. The bog is in rather poor condition and is characterised by *Calluna vulgaris*, *Juncus squarrosus*, *Eriophorum angustifolium*, *Erica tetralix* and *Sphagnum capillifolium*. In places the bog has dried out and forms a community of **HH1 Dry siliceous heath** dominated by *C. vulgaris*.

2.2 To the south of Malin More lies the village of Malin Beg. Most of this area is excluded from the cSAC, leaving only a narrow strip of designated terrestrial habitat around the coastline. This comprises **CS1 Rocky sea cliffs**, **LR1 Exposed rocky shores** and coastal grassland (**GS1 Dry calcareous and neutral grassland**). Also located here is the largest beach in the site, Trabane (**LS2 Sand shores**).

Leahan and the Owenwee valley

2.3 East of Malin Beg stands the hill of Leahan. The summit and northern spur support an extensive area of **HH4 Montane heath** dominated by low-growing *Calluna vulgaris* and *Racomitrium lanuginosum* and supporting several *Cladonia* spp. This heath occurs in mosaic with some areas of **PB5 Eroding blanket bog** and loose rock (**ER3 Siliceous scree and loose rock**). On the steeper, upper western slopes, areas of **HH1 Dry siliceous heath** with *C. vulgaris, Erica cinerea* and *Carex binervis* occur in mosaic with **HH3 Wet heath** and **PB2 Upland blanket bog** . On the lower western slopes are the main expanses of **HH3 Wet heath** within the site and extensive stands of *Pteridium aquilinum* (**HD1 Dense bracken**). The main species within the **HH3 Wet heath** here are *Trichophorum germanicum*, *C. vulgaris* and *Molinia caerulea*, with *Myrica gale* occurring on the lowest slopes to the north. A sizeable area (*c.* 25 ha) of peat cutting (**PB4 Cutover bog**) occurs on the western slopes of Leahan; this area of bog is being actively cut by machine (sausage cutter).

2.4 On the eastern slopes of Leahan is a very large expanse of **PB2 Upland blanket bog** that extends into the broad valley between Leahan and Slieve League, which is drained by the Owenwee River (**FW1 Eroding / upland rivers**). The main communities are dominated by *Calluna vulgaris* with *Trichophorum germanicum* and/or *Eriophorum vaginatum*, with *Molinia*

caerulea locally abundant. Near to the upper reaches of the Owenwee is a small area of patterned **PB3 Lowland blanket bog** with *Drosera anglica, Drosera intermedia, Sphagnum magellanicum* and *Sphagnum austinii*. An unusual bog community found near to the sea cliffs has a high cover of *Succisa pratensis.* The streams feeding into the Owenwee are flanked by areas of **PF2 Poor flush and fen** characterised by *Juncus* spp. and *Sphagnum* spp.

2.5 At the foot of Leahan, to the northeast, lies Lough Auva, which is classified as a lowland example of **FL2 Acid oligotrophic lakes**, although its proximity to the blanket bog lends it some dystrophic characters. To the west of Lough Auva is an area of intensive peat cutting by machine.

Slieve League

2.6 The broad summit of Slieve League is a mosaic of loose rock and **HH4 Montane heath** with some remnant haggs of **PB2 Upland blanket bog**. The montane heath also extends down the mountain on the landward side for some 200 m, with the main species being *Calluna vulgaris*, *Erica. cinerea* and *Racomitrium lanuginosum. Carex bigelowii*, *Salix herbacea*, *Empetrum nigrum* and *Arctostaphylos uva-ursi* also occur here and bright orange patches of *Herbertus aduncus* are abundant on the northern slopes. Lower down on the landward slopes, *R. lanuginosum* becomes scarcer and the vegetation changes into **HH1 Dry siliceous heath** with *C. vulgaris* and *Rhytidiadelphus loreus* and **PB2 Upland blanket bog** with *C. vulgaris* and *Eriophorum vaginatum*. The vegetation of this slope then transitions into a rather poor variant of **GS3 Dry-humid acid grassland**. At the foot of the mountain adjacent to the forestry that marks the edge of the site are areas of **PB2 Upland blanket bog**, within which may be found rushy flushes. Amongst these flushes are some areas of **PF3 Transition mire and quaking bog** in which *Carex rostrata*, *Juncus acutiflorus* and a diversity of *Sphagnum* spp. occur.

2.7 On the seaward side of the mountain, the land drops away in steep cliffs clad in **HH1 Dry siliceous heath**. Beneath these cliffs is a sizeable area of land (labelled on the O.S. map as another Malin Beg) generally not accessed by grazing sheep, and here the heather is tall and leggy. *Empetrum nigrum* is frequent here and *Arctostaphylos uva-ursi* and *Juniperus communis* occur in exposed locations. There are also extensive areas of *Pteridium aquilinum* (**HD1 Dense bracken**) and scree (**ER3 Siliceous scree and loose rock**). Amongst the scree can be found *Dryopteris dilatata*, *Hymenophyllum wilsonii* and *Sedum anglicum*. Small areas of **ER2 Exposed calcareous rock**, with *Saxifraga oppositifolia* and *Asplenium trichomanes*, occur on these slopes. Below this area are steep sea cliffs (**CS1 Rocky sea cliffs**) which are eroding severely in places.

Lough Agh

2.8 Cut into the northern side of Slieve League is the corrie of Lough Agh (**FL2 Acid oligotrophic lakes**), out of which the stream of Sruhangarve flows, through **PB2 Upland blanket bog**, to the foot of the mountain. Around the lake, the vegetation is mainly **GS3 Dry-humid acid grassland** with *Nardus stricta* and *Agrostis capillaris*, but on the steeper slopes and cliffs which are less intensively grazed, **HH1 Dry siliceous heath** with *Calluna vulgaris* is abundant, along with extensive stands of mixed northern hepatic mat, containing *Herbertus aduncus* and the rare *Adelanthus lindenbergianus*. The rear wall forms a steep face of over 250 m composed chiefly of

siliceous rock with clefts supporting *Dryopteris dilatata*, *Sedum rosea*, *Jasione montana*, *Pellia epiphylla* and *Amphidium mougeotii* (**ER1 Exposed siliceous rock**). At the bottom of the cliff face, and on the less steep southern wall of the corrie, are areas of scree (**ER3 Siliceous scree and loose rock**) where can be found *Hymenophyllum wilsonii* and *Racomitrium lanuginosum.* The main area of botanical interest on the site is the rear wall, where a band of calcareous rock occurs (**ER2 Exposed calcareous rock)**. In crevices here grow *Saxifraga aizoides*, *Saxifraga oppositifolia*, *Festuca rubra, Carex flacca* and *Thalictrum alpinum* with a suite of calciphile bryophytes including some important species, such as *Orthothecium rufescens*. These calcareous rocky slopes are also the only known locality of the endemic hawkweed, *Hieracium hartii.* Below this band of rock are some marginal examples of calcareous scree (**ER4 Calcareous scree and loose rock**).

The Pilgrim's Path

2.9 On the east side of Slieve League is a valley through which winds a popular walking route to the summit known as the Pilgrim's Path. In the bottom of the valley is Croleavy Lough (**FL2 Acid oligotrophic lakes**) an infilling lake around which can be found area of **FS1 Reed and large sedge swamps**. Also on the valley floor can be found areas of **PF2 Poor fen and flush** and of **PF3 Transition mire and quaking bog**. There are also small but interesting areas here of **PF1 Rich fen and flush** with *Schoenus nigricans*, *Scorpidium revolvens*, *Carex viridula*, *Carex panicea*, *Anagallis tenella*, *Campylium stellatum* and *Pellia endiviifolia*. The steeper sides of the valley are largely clothed in **HH1 Dry siliceous heath** with *Calluna vulgaris* and *Erica. cinerea*, with the lower slopes supporting communities of **PB2 Upland blanket bog** and **HH3 Wet heath**, some of them rather disturbed.

2.10 Above the Pilgrim's Path higher up in the valley on northeast facing slopes are considerable areas of scree (**ER3 Siliceous scree and loose rock**), in which can be found *Dryopteris dilatata*, *Racomitrium lanuginosum*, *Cladonia* spp. and *Scapania gracilis*. This area is below the narrow ridge of Keeringear and the minor peak of Crockrawer. In mosaic with the scree, areas of the **HH4 Montane heath** occur with *Calluna vulgaris*, *Empetrum nigrum*, *Erica cinerea*, *R. lanuginosum* and *Herbertus aduncus*. This heath spreads around the head of the valley and on to the top of the unnamed eastern summit that is separated from the main summit by the narrow path of One Man's Pass. There are considerable areas of loose rock (**ER3 Siliceous scree and loose rock**) on the eastern summit, close to the ruins of an oratory and church. Just below this, on southeast facing slopes, are sections of **PB2 Upland blanket bog** with *C. vulgaris* and *E. vaginatum*.

Lergadaghtan Mountain to Golandoo

2.11 Lergadaghtan Mountain is essentially an eastern spur of Slieve League overlooking the village of Carrick. Along the top of the spur is a stretch of **ER3 Siliceous scree and loose rock**, but most of the eastern slopes are dominated by **HH1 Dry siliceous heath** with *Calluna vulgaris*, *Erica cinerea*, *Empetrum nigrum*, *Vaccinium myrtillus* and *Sphagnum capillifolium*. Towards the bottom of the slopes can be found areas of **HH3 Wet heath** with *Trichophorum germanicum*, *C. vulgaris* and *Molinia caerulea*.

2.12 Further north towards Golandoo, the heath gives way to **PB2 Upland blanket bog**, with some patches of **HD1 Dense bracken**. Amongst the bog on flat land near the Owenwee River (**FW2 Depositing / lowland rivers**) are areas of bog rich in *Rhynchospora alba* with *Narthecium ossifragum*, *Erica tetralix*, *Erica cinerea*, *Calluna vulgaris* and *Molinia caerulea*.

Bunglass to Teelin Point

2.13 From Teelin village, a road leads up to the car park and viewing point at Bunglass. From here the spectacular main coastal cliffs can be seen. These are covered mainly in tall, ungrazed **HH1 Dry siliceous heath,** amongst which are discrete patches of scree (**ER3 Siliceous scree and loose rock**) and considerable areas of **HD1 Dense bracken**. Lower sections of the cliffs, which drop in an unbroken gradient into the sea, were classified as **RS1 Rocky sea cliffs**. A badly eroded footpath leads up from the car park, taking a multitude of hillwalkers up to The Eagle's Nest and then along Keeringear towards One Man's Pass. Most of the area above the cliffs is rocky **HH1 Siliceous dry heath**, but on exposed ground around the Eagle's Nest **HH4 Montane heath** occurs. *Racomitrium lanuginosum* is not as abundant here as is normal in this habitat but the *Calluna* is markedly windclipped and *Juniper communis* and *Arctostaphylos uva-ursi* are very frequent hereabouts.

2.14 Close to the Bunglass road is an unusual area of fen / soakway (**PF2 Poor fen and flush**) with *Hypericum elodes*, *Potamogeton polygonifolius*, *Isolepis fluitans* and *Sphagnum denticulatum*. To the south and east of the Bunglass road, grassland becomes the main vegetation type with **GS3 Dry-humid acid grassland** predominating but with coastal grassland (**GS1 Dry calcareous and neutral grassland**) occurring above the cliffs (**RS1 Rocky sea cliffs**). Coastal grassland is particularly frequent at Teelin Point. At Rinnakill is an area of **PB2 Upland blanket bog** surrounding Lough Farlaggy (**FL1 Dystrophic lakes**).

2.15 A selection of photographs taken during fieldwork of landscapes, habitats and species are presented in Appendix 2.

Habitat statistics

2.16 The NSUH maps habitats and vegetation communities on a polygon basis. Following aerial photograph interpretation, a survey site is divided into numerous polygons based on areas of homogeneous patternation and topography. The majority of these polygons represent mosaics of habitats rather than single habitats. Each polygon is surveyed on the ground and the habitats and vegetation communities present in each are listed and their percentage cover estimated. For further details see Perrin *et al.* (2009; 2014). The field maps for this site, which present the amended and numbered polygons, accompany this report (Field maps 1-9).

2.17 The most abundant habitat within a polygon is termed the primary habitat. The primary Fossitt habitat types for Slieve League cSAC are shown in Fig. 2 and the primary Annex I habitat types are presented in Fig. 3. It is important to note that these maps do not convey the full complexity of habitats within the site. For full details of the habitat composition of each polygon refer to

the polygon attribute table associated with the GIS. This information also accompanies this report in Microsoft Excel format.

Table 2: Extent of Fossitt habitats within Slieve League cSAC.

Fossitt code	Habitat	Area (ha)	% of site
BL1	Stone walls and other stonework	1.3	0.03
BL2	Earth banks	0.04	0.001
BL3	Buildings and artificial surfaces	6.8	0.2
CB1	Shingle and gravel banks	0.2	0.004
CC1	Sea walls, piers and jetties	0.1	0.003
CS1	Rocky sea cliffs	68.9	1.8
CS2	Sea stacks and islets	15.5	0.4
CS3	Sedimentary sea cliffs	0.1	0.003
ED1	Exposed sand, gravel or till	3.9	0.1
ED2	Spoil and bare ground	21.2	0.5
ED3	Recolonising bare ground	1.0	0.02
ED4	Active quarries and mines	0.4	0.01
ER1	Exposed siliceous rock	88.0	2.2
ER2	Exposed calcareous rock	2.0	0.05
ER3	Siliceous scree and loose rock	107.3	2.7
ER4	Calcareous scree and loose rock	0.08	0.002
FL1	Dystrophic lakes	2.1	0.05
FL2	Acid oligotrophic lakes	28.5	0.7
FP1	Calcareous springs	0.07	0.002
FP2	Non-calcareous springs	0.7	0.02
FS1	Reed and large sedge swamps	1.2	0.03
FW1	Eroding/upland rivers	11.5	0.3
FW2	Depositing/lowland rivers	1.7	0.04
FW4	Drainage ditches	0.7	0.02
GA1	Improved agricultural grassland	10.1	0.3
GS1	Dry calcareous and neutral grassland	98.9	2.5
GS2	Dry meadows and grassy verges	0.4	0.01
GS3	Dry-humid acid grassland	370.9	9.4
GS4	Wet grassland	43.8	1.1
HD1	Dense bracken	79.7	2.0
HH1	Dry siliceous heath	645.0	16.4
HH2	Dry calcareous heath	2.2	0.1
HH3	Wet heath	324.0	8.3
HH4	Montane heath	122.5	3.1
LR1	Exposed rocky shores	23.4	0.6
LR2	Moderately exposed rocky shores	5.3	0.1
LR3	Sheltered rocky shores	1.4	0.04
LR5	Sea caves	0.5	0.01
LS1	Shingle and gravel shores	3.1	0.1
LS2	Sand shores	6.6	0.2
LS5	Mixed sediment shores	0.1	0.003
MW1	Open marine water	545.6	13.9
MW2	Sea inlets and bays	90.2	2.3

Table 2: continued.

Fossitt code	Habitat	Area (ha)	% of site
PB2	Upland blanket bog	1002.7	25.5
PB3	Lowland blanket bog	8.6	0.2
PB4	Cutover bog	22.8	0.6
PB5	Eroding blanket bog	23.1	0.6
PF1	Rich fen and flush	2.0	0.05
PF2	Poor fen and flush	122.0	3.1
PF3	Transition mire and quaking bog	4.0	0.1
WD4	Conifer plantation	0.2	0.006
WD5	Scattered trees and parkland	0.04	0.001
WL1	Hedgerows	0.2	0.004
WL2	Treelines	0.1	0.004
WN6	Wet willow-alder-ash woodland	0.01	0.0004
WS1	Scrub	2.9	0.1
WS3	Ornamental / non-native shrubs	0.01	0.0002
	Total site area	3926.0	

Table 3: Extent of Annex I habitats within Slieve League cSAC. *denotes priority habitat.

Annex I code	Habitat	Area (ha)	% of site
1140	Mudflats and sandflats	6.6	0.2
1230	Vegetated sea cliffs	84.4	2.2
3110	Lowland oligotrophic lakes	18.8	0.5
3130	Upland oligotrophic lakes	9.8	0.2
3160	Dystrophic lakes	1.1	0.03
4010	Wet heath	324.0	8.3
4030	Dry heath	647.1	16.5
4060	Alpine and Boreal heath	97.4	2.5
6150	Siliceous alpine and boreal grassland	2.6	0.1
*6230	Species-rich *Nardus* grassland	4.8	0.1
6430	Hydrophilous tall herb communities	0.1	0.002
*7130	Active blanket bog	982.3	25.0
7130	Inactive blanket bog	22.6	0.6
7140	Transition mires	4.0	0.1
7150	*Rhynchosporion* depressions	3.9	0.1
7230	Alkaline fens	0.7	0.02
8110	Siliceous scree	55.5	1.4
8120	Calcareous scree	0.05	0.001
8210	Calcareous rocky slopes	1.9	0.05
8220	Siliceous rocky slopes	7.6	0.2
8330	Sea caves	0.5	0.01
	non-Annex I habitats	1650.5	42.0
	Total site area	3926.0	
	Total area of Annex I habitats	2275.5	58.0

Table 4: Extent of provisional vegetation communities (Perrin *et al.*, 2014) within Slieve League cSAC.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
PO1	*Menyanthes trifoliata - Carex limosa* pool community			
PO1b	aquatic sub-community	0.2	0.004	100
SW1	*Potamogeton polygonifolius* soakway	1.3	0.03	100
SPG1	*Philonotis fontana - Saxifraga stellaris* spring			
SPG1a	typical sub-community	0.1	0.004	18.3
SPG1b	species-poor *Sphagnum denticulatum* sub-community	0.6	0.01	73.0
SPG2	*Palustriella commutata* spring			
SPG2ii	non-Annex I variant	0.1	0.002	8.7
PFLU1	*Carex nigra/echinata - Sphagnum denticulatum* flush	18.9	0.5	13.9
PFLU2	*Juncus effusus - Sphagnum cuspidatum/palustre* flush	77.5	2.0	56.9
PFLU3	*Juncus acutiflorus/effusus - Calliergonella cuspidata* flush	34.9	0.9	25.6
PFLU4	*Molinia caerulea - Sphagnum palustre* flush			
PFLU4a	typical sub-community	1.0	0.03	0.7
PFLU5	*Carex rostrata – Sphagnum* spp. flush	3.8	0.1	2.8
RFLU1	*Carex viridula oedocarpa - Pinguicula vulgaris - Juncus bulbosus* flush			
RFLU1a	brown moss sub-community	0.4	0.01	17.6
RFLU1b	species-poor sub-community	0.9	0.02	41.5
RFLU3	*Carex panicea - Carex viridula* subsp. *oedocarpa* flush	0.4	0.01	14.5
RFLU4	*Schoenus nigricans – Scorpidium scorpioides* flush	0.3	0.01	14.5
RFEN1	*Carex rostrata* fen			
RFEN1b	species-rich sub-community	0.2	0.004	7.5
UG1	*Agrostis capillaris - Festuca ovina* upland grassland			
UG1a	typical sub-community	101.1	2.6	26.7
UG1b	*Sphagnum* spp. sub-community	9.1	0.2	2.4
UG1c	species-rich calcareous sub-community	4.7	0.1	1.3
UG1d	*Juncus squarrosus* sub-community	47.7	1.2	12.6
UG2	*Nardus stricta - Galium saxatile* upland grassland			
UG2a	typical sub-community	85.9	2.2	22.7
UG2b	*Sphagnum* spp. sub-community	11.5	0.3	3.0
UG2c	species-rich sub-community	0.01	0.0002	0.002
UG2d	*Juncus squarrosus* sub-community	110.7	2.8	29.2
UG4	*Molinia caerulea – Anthoxanthum odoratum* wet grassland	7.9	0.2	2.1
UG5b	*Festuca ovina –Agrostis capillaris* calcareous grassland	0.04	0.001	0.01
BK1	*Pteridium aquilinum* community	79.7	2.0	100
DH3	*Calluna vulgaris - Erica cinerea* dry heath	513.6	13.1	79.6
DH4	*Calluna vulgaris - Sphagnum capillifolium* dry /damp heath	125.6	3.2	19.5
DH5	*Calluna vulgaris – Antennaria dioica* dry heath	2.2	0.1	0.3
DH6	*Calluna vulgaris -Vaccinium myrtillus* dry heath	4.1	0.1	0.6
WH1	*Schoenus nigricans - Erica tetralix* wet heath			
WH1a	continuous cover sub-community	4.4	0.1	1.4
WH1b	open sub-community	0.1	0.003	0.04
WH2	*Trichophorum germanicum - Cladonia* spp. - *Racomitrium lanuginosum* wet heath	0.004	0.0001	0.001

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
WH3	*Calluna vulgaris - Molinia caerulea - Sphagnum capillifolium* wet/damp heath	79.2	2.0	24.4
WH4	*Trichophorum germanicum- Eriophorum angustifolium* wet heath			
WH4a	typical sub-community	16.3	0.4	5.0
WH4b	*Calluna vulgaris* sub-community	163.7	4.2	50.5
WH4c	*Juncus squarrosus* sub-community	24.1	0.6	7.4
WH5	*Trichophorum germanicum - Nardus stricta - Racomitrium lanuginosum* montane wet heath	7.8	0.2	2.4
WH6	*Schoenus nigricans – Molinia caerulea – Myrica gale* wet heath	28.4	0.7	8.8
MH1	*Calluna vulgaris - Racomitrium lanuginosum* montane heath			
MH1a	typical sub-community	63.1	1.6	51.9
MH1b	*Juncus squarrosus* sub-community	14.9	0.4	12.2
MH2	*Vaccinium myrtillus - Racomitrium lanuginosum - Herbertus aduncus* montane heath	12.6	0.3	10.3
MH3	*Vaccinium myrtillus - Rhytidiadelphus loreus - Anthoxanthum odoratum* montane heath	0.4	0.01	0.3
MH4	*Calluna vulgaris - Juniperus communis* subsp. *nana* montane heath	5.5	0.1	4.5
MH5	*Nardus stricta - Carex binervis - Racomitrium lanuginosum* montane grass-heath	10.2	0.3	8.3
MH6	*Carex bigelowii - Racomitrium lanuginosum* montane vegetation			
MH6a	typical sub-community	0.8	0.02	0.7
MH7	*Nardus stricta - Carex bigelowii* montane vegetation			
MH7a	typical sub-community	1.8	0.05	1.5
MH8	*Festuca vivipara – Thymus polytrichus – Galium saxatile* montane vegetation	12.4	0.3	10.2
BB1	*Schoenus nigricans - Eriophorum angustifolium* bog			
BB1a	continuous cover sub-community	0.1	0.002	0.01
BB2	*Schoenus nigricans – Sphagnum* spp. bog	0.03	0.001	0.003
BB3	*Eriophorum vaginatum – Sphagnum papillosum* bog	33.9	0.9	3.5
BB4	*Trichophorum germanicum - Eriophorum angustifolium* bog	331.1	8.4	34.1
BB5	*Calluna vulgaris - Eriophorum* spp. bog			
BB5a	typical sub-community	509.5	13.0	52.5
BB5b	*Juncus squarrosus* sub-community	93.6	2.4	9.6
BB7	*Eriophorum angustifolium* bog	2.0	0.05	0.2
HW1	*Sphagnum denticulatum/cuspidatum* hollow			
HW1i	upland variant	12.0	0.3	18.6
HW1ii	lowland variant	0.01	0.0002	0.01
HW1iii	flush variant	1.7	0.04	2.7
HW2	*Eriophorum angustifolium - Sphagnum fallax* hollow			
HW2i	upland variant	22.6	0.6	35.1
HW3	*Rhynchospora alba* hollow	3.9	0.1	6.0
HW4	*Eleocharis multicaulis* hollow			
HW4i	bog variant	2.7	0.1	4.1
HW4ii	flush variant	22.4	0.5	33.3
DP1	*Campylopus introflexus - Polytrichum* spp. degraded peat community	0.9	0.02	88.7
DP2	*Nardus stricta – Eriophorum angustifolium* degraded peat community	0.1	0.003	11.3

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
TH1	*Luzula sylvatica - Vaccinium myrtillus* tall herb vegetation			
TH1i	rock face variant	0.1	0.004	40.2
TH1ii	dry heath variant	0.1	0.004	39.8
TH3	*Sedum rosea - Angelica sylvestris* tall herb vegetation	0.1	0.002	20.0
SC1	Siliceous scree community	0.6	0.02	100
RS1	*Saxifraga spathularis - Asplenium adiantum-nigrum* rock cleft community	0.3	0.01	82.7
RS2	*Saxifraga aizoides - Asplenium* spp. - *Orthothecium rufescens* rock cleft community	0.1	0.002	17.3
HM1	*Calluna vulgaris - Scapania gracilis* hepatic mat			
HM1i	non-Annex I grassland variant	0.1	0.002	3.3
HM1iii	dry heath variant	0.1	0.003	3.7
HM1v	montane heath variant	0.03	0.001	1.2
HM1vi	non-Annex I siliceous rock variant	0.03	0.001	1.0
HM1vii	Annex I siliceous rock variant	0.05	0.001	1.7
HM1viii	siliceous scree variant	0.01	0.0003	0.5
HM1ix	upland bog variant	0.01	0.0002	0.3
HM2	*Calluna vulgaris - Herbertus aduncus* hepatic mat			
HM2i	non-Annex I grassland variant	0.04	0.001	0.04
HM2iii	dry heath variant	1.5	0.04	53.0
HM2v	montane heath variant	0.8	0.02	30.2
HM2vi	non-Annex I siliceous rock variant	0.01	0.0002	0.3
HM2vii	Annex I siliceous rock variant	0.03	0.001	1.0
HM2viii	siliceous scree variant	0.05	0.001	1.7
HM2ix	upland bog variant	0.02	0.001	0.8
	Total area of vegetation communities	2729.6	69.5	
	Not covered	903.5	23.0	
	Non-vegetation cover types	292.8	7.5	
	Total site area	3926.0		

2.18 A total of 57 Fossitt (2000) habitats were recorded during this survey within Slieve League cSAC and details of their coverage are presented in Table 2. **PB2 Upland blanket bog** was the most extensive habitat covering 25.5% of the site, followed by **HH1 Dry siliceous heath** at 16.4%, **MW1 Open marine water** at 13.9% **GS3 Dry-humid acid grassland** at 9.4% and **HH3 Wet heath** at 8.3%.

2.19 A total of 21 Annex I habitats were recorded during this survey within Slieve League cSAC, covering 58.0% of the site (Table 3). The main Annex I habitat was ***7130 Active blanket bogs** which covered 25.0% of the site, followed by **4030 Dry heaths** and **4010 Wet heaths** which covered 16.5 % and 8.3% of the site respectively. The next most frequent habitat was **4060 Alpine and Boreal heaths** at 2.5%. Note that significant areas of non-Annex habitats may occur within an SAC. These may occur in intimate mosaic with Annex I habitats. They may have an important protective or support function in relation to associated Annex habitats, be the target

of restoration objectives or improve the coherence and connectivity between fragmented areas of Annex I habitat.

2.20 A total of 72 provisional upland vegetation communities and sub-communities (Perrin *et al.*, 2014) were recorded within Slieve League cSAC. Details of their coverage are presented in Table 4.

2.21 Gradated maps displaying the cover of Annex I habitats currently assessed under the NSUH plus **6150 Siliceous alpine and boreal grassland** and **6430 Hydrophilous tall herb communities** are shown in Figs. 4a-o. These maps present the actual distributions of individual habitats within the site which may be masked in the primary habitat maps which show only the most extensive habitat in each polygon.

Rare and notable flora

2.22 Rare and notable plant records for the site are listed in Table 5 and their locations, where accurately known, are presented in Figs. 5a-b. The list is compiled from records made during the present survey and from existing records. For each species it is indicated whether it is listed on the Flora Protection Order, 1999 and/or the relevant Red Data List. For vascular plants this is Curtis & McGough (1988) and for bryophytes it is Lockhart *et al*. (2012). For lichens a preparatory list provided by D. McFerran, National Museums Northern Ireland was used; this is very much provisional and IUCN status has not been assigned to these species. Notable records comprise plants which are not rare but are of particular interest in an upland context.

2.23 Some rare arctic-alpines were recorded during the NSUH at this site. *Arctostaphylos uva-ursi*, *Carex bigelowii* and *Salix herbacea* were found on the summit of Slieve League in 2012. *A. uva-ursi* is also frequent on the seaward slopes of Slieve League and near the Eagles Nest. *Diphasiastrum alpinum* and the montane lichen *Cetraria islandica* were recorded on the upper slopes during the pilot survey in 2009.

2.24 Other rare species recorded by the NSUH include *Asplenium viride*, *Thalictrum alpinum*, *Saxifraga oppositifolia*, *Saxifraga aizoides* and *Oxyria digyna*, all recorded from the calcareous rocky slopes south of Lough Agh. *S. oppositifolia* was also recorded on south-facing cliffs below the summit of Slieve League, approximately 300m above the sea. *Vaccinium vitis-idaea* was noted near the top of Slieve League.

2.25 Previous records for rare plants come primarily from the corrie south of Lough Agh. Most of these records were initially made by Hart (1888), and have since been refound by a number of workers at different times. Rare species previously recorded on Slieve League, but not refound during the present survey, include *Adiantum capillus-veneris*, *Saussurea alpina*, *Dryas octopetala* and *Polygonum viviparum* however this does not denote their absence as the NSUH survey is not targeted at locating rare species. The rare maritime species *Lathyrus japonicus* was recorded from close to Trabane in 1982.

2.26 Rare bryophytes recorded during the present survey include the Vulnerable oceanic liverwort *Adelanthus lindenbergianus* which was found in a hepatic mat in the upper reaches of the corrie

southwest of Lough Agh. This is a new record for this site and the first time the species has been recorded in southern Donegal. *Glyphomitrium daviesii* was found growing on siliceous scree on the seaward slopes of Slieve League. This species is rare in Ireland outside of the Roundstone area in Galway and has not been found on this site before. The Near Threatened liverwort *Leiocolea fitzgeraldiae* was recorded from a calcareous ledge in the corrie south of

Table 5: Records of rare and notable plant species from Slieve League cSAC.

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Vascular plants						
Adiantum capillus-veneris	-	-	-	1883-1884, 1992		1, 4, 5
Arctostaphylos uva-ursi	-	-	-	1883-1884, 2012	•	5
Asplenium viride	-	-	-	1883-1884, 1967, 2012	•	5, 6
Carex bigelowii	-	-	-	1883-1884, 2012	•	4, 5
Cystopteris fragilis	-	-	-	1883-1884, 1967, 2012	•	5, 6
Diphasiastrum alpinum	-	-	-	1883-1884, 2009	•	4, 5
Dryas octopetala	-	-	-	1883-1884, 1967		5, 6
Hieracium hartii	-	-	-	1884-1885, 2006, 2008		2, 9
Lathyrus japonicus	DD	•	-	1982		1, 2, 4
Ophioglossum azoricum	-	-	-	1998		1
Oxyria digyna	-	-	-	1883-1884, 1967, 2012	•	5, 6
Polygonum viviparum	DD	•	-	1883-1884, 1967, 1991		2, 4, 5, 6, 11
Polystichum lonchitis	RA	-	-	1883-1884, 1967		2, 4, 5, 6
Sagina subulata	-	-	-	1992		1
Salix herbacea	-	-	-	1883-1884, 2012	•	4, 5
Saussurea alpina	RA	-	-	1883-1884, 1967, 1998		1, 2, 4, 5, 6
Saxifraga aizoides	RA	-	-	1883-1884, 1967, 1990, 1998, 2012	•	1, 2, 4, 5, 6
Saxifraga oppositifolia	RA	-	-	1883-1884, 1967, 1998, 2001, 2012	•	1, 2, 5, 6
Thalictrum alpinum	-	-	-	1883-1884, 1967, 1992, 1998, 2012	•	5, 6
Vaccinium vitis-idaea	-	-	-	1883-1884, 2012	•	5
Bryophytes						
Adelanthus lindenbergianus	VU	-	-	2012	•	-
Anthelia juratzkana	NT	-	-	2001, 2008, 2012	•	1
Arctoa fulvella	VU	-	-	1970		2, 4, 10
Bartramia ithyphylla	VU	-	-	1903		1
Campylopus subulatus	VU	-	-	1970, 2008		1, 2, 4, 10
*Cephalozia lunulifolia**	-	-	-	2012	•	-
*Conocephalum salebrosum**	-	-	-	2012	•	-
Dichodontium flavescens	-	-	-	2008		1
Dicranella cerviculata	NT	-	-	?		10
Dicranella subulata	-	-	-	1970		1
Ditrichum zonatum	EN	-	-	2008		1, 10
Fossombronia angulosa	-	-	-	2012	•	-
Glyphomitrium daviesii	-	-	-	2012	•	-
Gymnomitrion concinnatum	EN	-	-	1961, 1967, 1970		1, 2, 4, 6, 10
Hylocomiastrum umbratum	NT	-	-	?		10
Kiaeria blyttii	-	-	-	1970		1, 2, 4
*Leiocolea fitzgeraldiae**	NT	-	-	2012	•	-
Marsupella sphacelata	VU	-	-	1902, 1907, 2001, 2008		1, 2, 4, 7, 10
Mnium thomsonii	NT	-	-	2001		1, 10
Nardia geoscyphus	NT	-	-	1970, 2001, 2012	•	1. 2, 4, 10

Table 5: continued.

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Orthothecium rufescens	NT	-	-	1967, 2001, 2008, 2012	•	1, 2, 4, 6, 10
Paraleptodontium recurvifolium	NT	-	-	1967		1, 2, 4, 6
Philonotis rigida	VU	-	-	1963, 2001, 2004		1, 2, 4, 10
Pohlia elongata var. *elongata*	NT	-	-	?		10
Ptilidium ciliare	-	-	-	1970		1, 2, 4
Rhizomnium pseudopunctatum	NT	-	-	?		10
Scapania gymnostomophila	VU	-	-	2001, 2004		1, 10
Scapania subalpina	DD	-	-	1907		7
Solenostoma subellipticum	NT	-	-	2001		1, 10
Sphagnum capillifolium subsp. *capillifolium**	DD	-	-	2012	•	-
Tortula atrovirens	NT	-	-	2001		1, 10
Tortula viridifolia	-	-	-	1963		1, 2, 4
Algae						
Schmitzia hiscockiana	-	-	-	?		2, 3
Lichens						
Cetraria islandica	-	-	-	2009	•	-
Cladonia rangiferina	•	-	-	1983		1
Fuscidea austera	-	-	-	1994		12
Gyalidea hyalinescens	•	-	-	1994		12
Pilophorus strumaticus	•	-	-	1994		12
Placidiopsis custnani	•	-	-	2002		8
Toninia fusispora	-	-	-	1994		12
Toninia thiopsora	•	-	-	1994		12

* Denotes new or updated vice county record from NSUH fieldwork

Previous records:
1, NPWS Recorder database and associated data
2, Natura 2000 Standard Data Form
3, cSAC site synopsis
4, NPWS draft Conservation Plan
5, Hart (1888)
6, Birks *et al*. (1969)
7, McArdle (1909)
8, LichenIreland database
9, Rich *et al.* (2010)
10, Lockhart *et al.* (2012)
11, Curtis (1993)
12, Gilbert & Fryday (1996)

Red Data List:
EN, Endangered
VU, Vulnerable
RA, Rare
NT, Near Threatened
DD, Data Deficient

Lough Agh, new to Co. Donegal. This species is endemic to Ireland and Britain, and was previously known in Ireland only from Sligo, Leitrim, Fermanagh and Mayo. Also found in the corrie were *Orthothecium rufescens*, which was recorded from the calcareous rock face and *Anthelia juratzkana*, recorded from siliceous rocks. Both species have very restricted distributions in Ireland.

2.27 Previous rare bryophyte records from the Lough Agh corrie include the Endangered *Ditrichum zonatum*, found in 2008, and *Gymnomitrion concinnatum*, not seen since 1970. The Vulnerable montane moss *Arctoa fulvella* was also last seen in the corrie in 1970. Several rare species have also been recorded from area around Trabane, including *Philonotis rigida* and *Scapania gymnostomophila* (both Vulnerable), *Solenostoma subellipticum* and *Tortula atrovirens* (both Near

Threatened) and *Tortula viridifolia*. The pleurocarpous moss *Pylaisia polyantha* has previously been reported as occurring on Slieve League. However, no correctly identified specimens of this species from Ireland have been found, so it has been deleted from the Irish flora (Lockhart *et al*., 2012). A record for *Ditrichum flexicaule* is likely to refer to the common *Ditrichum gracile*, as the taxonomy of these species has changed since the record was made.

2.28 A list of all vascular plants, bryophytes and lichens recorded during the NSUH survey is presented in Appendix 3.

Fauna

2.29 Faunal records during this survey include Irish hare (*Lepus timidus hibernicus*), Rabbit (*Oryctolagus cuniculus*), Common frog (*Rana temporaria*) and Common lizard (*Zootoca vivipara*). Bird species noted during this survey include Chough (*Pyrrhocorax pyrrhocorax*) which is listed on Annex I of the Birds Directive and Red grouse (*Lagopus lagopus*).

2.30 Previous faunal records from the site include Peregrine falcon (*Falco peregrinus*), Merlin (*Falco columbarius*), Golden plover (*Pluvialis apricaria*), Barnacle goose (*Branta leucopsis*) and Greenland white-fronted goose (*Anser albifrons flavirostris*), all listed on Annex I of the Birds Directive. Other bird records include Cormorant (*Phalacrocorax carbo*), Fulmar (*Fulmarus glacialis*), Kittiwake (*Rissa tridactyla*), Herring gull (*Larus argentatus*), Great black-backed gull (*Larus marinus*), Razorbill (*Alca torda*), Guillemot (*Uria aalge*), Puffin (*Fratercula arctica*) and Ring ouzel (*Turdus torquatus*). In the marine areas of the site, Grey seal (*Halichoerus grypus),* Pink sea fan (*Eunicella verrucosa*), Red sea fingers (*Alcyonium glomeratum*) and Rose coral (*Pentapora foliacea*) have been found.

3. CONSERVATION ASSESSMENT

3.1 The conservation status of Annex I habitats that form the primary focus of the NSUH was assessed using the methodology detailed in Perrin *et al*. (2014). The assessments comprise three parameters: area, structure and functions, and future prospects. The area parameter examines gains or losses in an Annex I habitat. The structure and functions parameter examines the vegetation composition and structure of the habitats and the physical structure of the substrate. A total of 39 monitoring stops were recorded within Slieve League cSAC for this purpose (Fig. 6 and Table 6); 2 additional relevés were recording in habitats that were not assessed. The future prospects parameter examines the current impacts/activities on the site that are affecting area and structure and functions, and predicts the future status of the habitat based on future trends where there is sufficient data. The future prospects parameter can also be informed by available data from the Commonage Framework Plan project (CFP).

Table 6: The number of monitoring stops recorded in primary focus Annex I habitats

Annex I code	Habitat	Number of stops
4010	Wet heaths	6
4030	Dry heaths	8
4060	Alpine and Boreal heaths	5
*6230	Species-rich *Nardus* grasslands	1
*7130/7130	Blanket bogs	9
7140	Transition mires	1
7150	*Rhynchosporion* depressions	1
7230	Alkaline fens	1
8110	Siliceous scree	3
8120	Calcareous scree	1
8210	Calcareous rocky slopes	1
8220	Siliceous rocky slopes	2

Commonage Framework Plan

3.2 Surveys were initiated in 1998 to assess livestock impacts on commonages in Ireland and to devise Commonage Framework Plans (CFP) to improve commonage condition. Assessments were made on an area basis by dividing the commonage area into subunits which were areas of a consistent level of damage. Point sample assessments were made at a series of stations, of 10 x 10 m, within the subunits. The habitats identified by the CFP relevant to NSUH sites were blanket bog, wet heath, dry heath and upland grassland. The assessment scale used was undamaged (U), moderately damaged to undamaged (MU), moderately damaged (MM), moderately to severely damaged (MS), severely damaged (S) or very severely damaged (S*). Further details of the CFP methodology can be found in Anon. (1998) and use of this data by the NSUH has been reviewed by Perrin (2012).

3.3 Slieve League cSAC is predominantly commonage with these areas comprising 29.0 km² or 89.5% of the terrestrial area of the site. A baseline CFP survey of these areas occurred in 1999. An interim destocking level of 30% had been applied in Donegal prior to the CFP commencing. This was then adjusted using the CFP results *c.*2002. Results from this baseline survey are shown in Fig. 7. There has been no resurvey of this site.

3.4 The CFP baseline survey recorded 13 subunits within or partially within Slieve League cSAC (Table 7). These indicate commonage within the site was in moderate condition at this time with 43.0% of the area being assessed as undamaged (U) and only 1.3% of the area being assessed as moderately to severely damaged (MS) or worse.

Table 7: Frequency of CFP subunit damage levels in Slieve League cSAC baseline survey

Damage level	Frequency (*n* = 13)	Area %
U	1 (7.7%)	43.0
MU	7 (53.8%)	35.5
MM	2 (15.4%)	20.1
MS	3 (23.1%)	1.3
S/S*	0 (0.0%)	0.0

3.5 The CFP recorded 13 stations within Slieve League cSAC (Table 8). These indicate commonage within the site was in moderate condition at this time with only 23.1% of stations being undamaged (U) but no stations being moderately to severely damaged (MS) or worse.

Table 8: Frequency of CFP station damage levels in Slieve League cSAC baseline survey. Percentages indicate proportion of stations within each column.

Damage level	Wet heath/Dry heath/ Blanket bog (*n* = 12)	Upland grassland (*n* =1)	All habitats (*n* = 13)
U	3 (25.0%)	0 (0.0%)	3 (23.1%)
MU	8 (66.7%)	1 (100.0%)	9 (69.2%)
MM	1 (8.3%)	0 (0.0%)	1 (7.7%)
MS	0 (0.0%)	0 (0.0%)	0 (0.0%)
S/S*	0 (0.0%)	0 (0.0%)	0 (0.0%)

3.6 Summary data for some of the key indicators recorded at CFP stations are compared with NSUH data in Table 9. They suggest that there has been a slight increase in sward height, but also a slight increase in bare peat and a decrease in *Calluna* height. The data also suggest a minor decrease in *Calluna* cover.

3.7 The analysis of key indicator values is rather inconclusive and as there has been no CFP resurvey of this site it not possible to derive much from the other data. However, the fact that a reduction of stock numbers occurred in over 57% of the commonage may be seen as a positive

trend for **4010 Wet heaths**, **4030 Dry heaths** and ***7130/7130 Blanket bogs** and other habitats where grazing has been recorded as an impact

Table 9: Mean values for key indicators from CFP stations in the Slieve League cSAC baseline survey with related data from NSUH survey.

	Wet heath/Dry heath/ Blanket bog		**Upland grassland**
	CFP (***n* = 12**)	**NSUH** (***n* = 29**)	**CFP** (***n* = 1**)
Bare peat cover (%)	0.3	2.7	0
Sward height (cm)	14.6	21.2	10
Calluna height (cm)	20.9	16.2†	-
Calluna cover			
D (>50%)	6 (50.0%)	13 (44.8%)	-
A (26-50%)	5(41.7%)	12 (41.4%)	-
O or F (≤25%)	1 (8.3%)	4 (13.8%)	-
Absent	0 (0.0%)	0 (0.0%)	-
Not recorded	0 (0.0%)	0 (0.0%)	-

† Dwarf shrub height is used here as an estimate of *Calluna* height

4010 Wet heaths

Area

3.8 Changes in the area of **4010 Wet heaths** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 10). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. The main losses in area of **4010 Wet heaths** were due to new roads (0.17 ha) and agricultural intensification (0.07). These impacts and trends are discussed later under future prospects. The overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate.

Structure and functions

3.9 Six monitoring stops were recorded in **4010 Wet heaths** within Slieve League cSAC (Table 11). In the assessment of structure and functions, three monitoring stops failed one criterion or more. Following a review of the ecological condition of those stops, expert judgement determined that one should pass because the failure was marginal. This reduced the number of monitoring stops that failed to two, resulting in an overall failure rate of 33.3%. The structure and functions of **4010 Wet heaths** were therefore assessed as Unfavourable – Bad.

3.10 The vegetation composition was poor in some cases, with failures being recorded under four criteria. One **4010 Wet heaths** monitoring stop (16.7%) failed due to inadequate cover of *Cladonia* spp., *Sphagnum* spp., *Racomitrium lanuginosum* and pleurocarpous mosses, excessive

cover of the negative indicator species *Agrostis capillaris* and excessive cover of non-native species in the local vicinity. Another monitoring stop (16.7%) failed due to inadequate cover of ericoid species.

Table 10: Impacts causing obvious losses in areas of 4010 Wet heaths, 1995-2012.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
A02.01	Agricultural intensification	0.00	0.07	0.00	0.07
C01	Mining and quarrying	0.00	0.04	0.00	0.04
D01.02	Roads, motorways	0.00	0.17	0.00	0.17
G01.03.02	Off-road motorized driving	0.00	< 0.01	0.00	<0.01
J02.07	Water abstractions from groundwater	0.00	< 0.01	0.00	<0.01
All impacts		0.00	0.29	0.00	0.29
% of habitat		0.00	0.09	0.00	0.09
% loss per year		0.00	0.02	0.00	<0.01

3.11 The vegetation structure of one **4010 Wet heaths** monitoring stop (16.7%) was poor, failing due to excessive levels of grazing.

3.12 The physical structure of **4010 Wet heaths** was poor in some cases, with 33.3% of monitoring stops failing due to excessive cover of disturbed bare ground within the monitoring stops and in the local vicinity. One of these stops (16.7%) also failed due to excessive drainage. These results indicate that sheep grazing, and associated trampling, is the main impact affecting **4010 Wet heaths** within Slieve League cSAC.

Future prospects

3.13 The impacts codes (Ssymank, 2009) and associated data recorded for **4010 Wet heath** are presented in Table 12. Eight impacts were recorded within **4010 Wet heaths**.

Agricultural intensification (A02.01)

3.14 There were some apparent losses of this habitat due to agricultural improvement.

Non-intensive sheep grazing (A04.02.02)

3.15 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The lower slopes of Slieve League and Leahan, located particularly close to access points, showed evidence of higher grazing intensity than the more remote, inaccessible areas. An area on the lower western slopes of Leahan was noted as exhibiting vegetation damage and soil exposure, where stocking intensity appeared to be highly concentrated. These are the areas where **4010 Wet heaths** are most abundant within the site (Fig. 4a). While it was acknowledged that erosion may be caused by a variety of factors, sheep grazing was said to accelerate the rate of erosion and hinder natural revegetation.

3.16 The present survey indicates that grazing by sheep is the dominant land use within **4010 Wet heaths** in Slieve League cSAC. This impact occurs throughout **4010 Wet heaths** (Table 12), with grazing being recorded at all monitoring stops. Grazing intensity varies across the site, with the proportion of dwarf shrub shoots showing signs of grazing ranging from 5 to 50%. Disturbed

Table 11: Monitoring criteria and failure rates for 4010 Wet heaths (n = 6).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	*Erica tetralix* present	20m radius	6	0	0
2	Cover of positive indicator species ≥ 50%	Relevé	6	0	0
3	Total cover of *Cladonia* species, *Sphagnum* species, *Racomitrium lanuginosum* and pleurocarpous mosses ≥ 10%	Relevé	6	1	16.7
4	Cover of ericoid species and *Empetrum nigrum* ≥ 15%	Relevé	6	1	16.7
5	Cover of dwarf shrub species < 75%	Relevé	6	0	0
6	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Ranunculus repens* collectively < 1%	Relevé	6	1	16.7
7	Cover of non-native species < 1%	Relevé	6	0	0
8	Cover of non-native species < 1%	Local vicinity	6	1	16.7
9	Cover of scattered native trees and scrub < 20%	Local vicinity	6	0	0
10	Cover of *Pteridium aquilinum* < 10%	Local vicinity	6	0	0
11	Cover of *Juncus effusus* < 10%	Local vicinity	6	0	0
Vegetation structure					
12	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	4	0	0
13	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	6	1	16.7
14	No signs of burning into the moss, liverwort or lichen layer, or exposure of peat surface due to burning	Local vicinity	6	0	0
15	No signs of burning inside boundaries of sensitive areas*	Local vicinity	6	0	0
Physical structure					
16	Cover of disturbed bare ground < 10%	Relevé	6	2	33.3
17	Cover of disturbed bare ground < 10%	Local vicinity	6	2	33.3
18	Area showing signs of drainage resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	6	1	16.7

*Sensitive areas
(a) Vegetation severely wind-clipped, mostly forming a mat less than 10 cm thick.
(b) Areas where soils are thin and less than 5 cm deep.
(c) Slopes greater than 1 in 3 (18°) and all the sides of gullies.
(d) Ground with abundant, and/or an almost continuous carpet of *Sphagnum*, liverworts and/or lichens.
(e) Pools, wet hollows, haggs and erosion gullies, and within 5 – 10 m of the edge of watercourses.
(f) Areas above 400 m in altitude.
(g) Areas within 50 m of functioning drains.

bare ground, which may be associated with trampling by sheep, was also recorded at the majority of monitoring stops. The intensity of this impact has been assessed as medium overall and its influence as negative. The trend was assessed as improving due to levels of destocking implemented through the CFP.

Mining and quarrying (C01)

3.17 There were some apparent losses of this habitat due to activities associated with quarrying.

Paths, tracks, cycling tracks (D1.01)

3.18 West of Golandoo, an area of **4010 Wet heath** has been excavated to create a track for quad bikes, leaving areas of bare peat and rock. The intensity of this impact has been assessed as high and its influence as negative (Table 12). The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Table 12: Assessment of impacts for 4010 Wet heaths. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A02.01	Agricultural intensification	High	Negative	< 1%	Inside	-0.75	Ins
A04.02.02	Non-intensive sheep grazing	Medium	Negative	100%	Inside	-3.0	Imp
C01	Mining and quarrying	High	Negative	<1%	Inside	-0.75	Ins
D01.01	Paths, tracks, cycling tracks	High	Negative	<1%	Inside	-0.75	Ins
D01.02	Roads, motorways	High	Negative	<1%	Inside	-0.75	Ins
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Inside	-0.50	Ins
I01	Invasive non-native species	Low	Neutral	0.02%	Inside	0	Ins
J02.07	Water abstractions from groundwater	High	Negative	<1%	Inside	-0.75	Ins
	Overall score					-7.25	

Roads and motorways (D01.02)

3.19 There were some apparent losses of this habitat due to the extension of small roads in various locations within the site.

Off-road motorised driving (G01.03.02)

3.20 There were some apparent losses of this habitat due to off-road motorized driving.

Invasive non-native species (I01)

3.21 *Campylopus introflexus* is a non-native pioneer moss species of bare peat which can become abundant after disturbance such as peat cutting, burning or drainage (Atherton *et al*., 2010). Carpets of the moss have been found to have a significant depressive effect on germination of *Calluna vulgaris* seeds and therefore this species can impact on re-establishment of heather (Equiha & Usher, 1993; Bernth, 1998). Klinck (2010) defined it as a mild or temporary invasive species as it does not have long-term effects on biodiversity.

3.22 *Campylopus introflexus* was recorded within one monitoring stop but was not sufficiently abundant to cause the stop to fail. The mean cover of *C. introflexus* within **4010 Wet heath** monitoring stops was 0.02% (Table 12). The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within 12 polygons dominated by **4010 Wet heath** during vegetation mapping. However, it was not recorded as forming extensive carpets; therefore this impact was assessed as being of low intensity and neutral influence.

Water abstractions from groundwater (J02.07)

3.23 There were some apparent losses of this habitat due to drainage ditches being extended into this habitat. Although the impact category does not accurately describe the impact in question it is the most appropriate option available on the list recommended by the EU for Habitats Directive Article 17 assessments (Ssymank, 2009).

3.24 The overall impacts score for **4010 Wet heaths** has been calculated as -7.25. This is well below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to levels of destocking implemented through the CFP and the impacts from some of the other impacts noted were not recorded in recent years. The future prospects for this habitat were however assessed as Unfavourable - Inadequate.

4030 Dry heaths

Area

3.25 Changes in the area of **4030 Dry heaths** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 13). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. Minor losses in area of **4030 Dry heaths** were recorded due to roads (<0.01) and off-road driving (<0.01). These impacts and trends are discussed later under future prospects. The overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate.

Table 13: Impacts causing obvious losses in areas of 4030 Dry heaths, 1995-2012.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
D01.02	Roads, motorways	0.00	<0.01	0.00	<0.01
G01.03.02	Off-road motorized driving	<0.01	0.00	0.00	<0.01
All impacts		<0.01	<0.01	0.00	<0.01
% of habitat		<0.01	<0.01	0.00	<0.01
% loss per year		<0.01	<0.01	0.00	<0.01

Structure and functions

3.26 Eight monitoring stops were recorded in **4030 Dry heaths** within Slieve League cSAC (Table 14). In the assessment of structure and functions, four monitoring stops failed one criterion or more. Following a review of the ecological condition of these stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 50.0%. The structure and functions of **4030 Dry heaths** were therefore assessed as Unfavourable – Bad.

Table 14: Monitoring criteria and failure rates for 4030 Dry heaths (n = 8).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of bryophyte or non-crustose lichen species present, excluding *Campylopus* spp. and *Polytrichum* spp. ≥ 3	Relevé	8	0	0
2	Number of positive indicator species present ≥ 2	Relevé	8	1	12.5
3a*	DH5 (Calcareous heaths): cover of positive indicator species 50-75%	Relevé	0	n/a	n/a
3b*	Siliceous heaths: cover of positive indicator species ≥ 50%		8	0	0
4	Proportion of dwarf shrub cover composed of *Myrica gale, Salix repens, Ulex gallii* collectively < 50%	Relevé	8	0	0
5	Cover of the following weedy negative indicator species: *Cirsium arvense, C. vulgare, Ranunculus repens,* large *Rumex* species (except *R. acetosa*), *Senecio jacobaea, Urtica dioica* collectively < 1%	Relevé	8	0	0
6	Cover of non-native species < 1%	Relevé	8	0	0
7	Cover of non-native species < 1%	Local vicinity	8	0	0
8	Cover of scattered native trees and scrub < 20%	Local vicinity	8	0	0
9	Cover of *Pteridium aquilinum* < 10%	Local vicinity	8	0	0
10	Cover of *Juncus effusus* < 10%	Local vicinity	8	0	0
Vegetation structure					
11	Senescent proportion of *Calluna vulgaris* cover < 50%	Relevé	8	0	0
12	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	8	2	25
13	No signs of burning inside boundaries of sensitive areas*	Local vicinity	7	0	0
14	Outside boundaries of sensitive areas, all growth phases of *Calluna vulgaris* should occur throughout, with ≥ 10% of cover in mature phase	Local vicinity	7	3	42.9
Physical structure					
15	Cover of disturbed bare ground < 10%	Relevé	8	0	0
16	Cover of disturbed bare ground < 10%	Local vicinity	8	1	12.5

*Sensitive areas
(a) Areas where soils are thin and less than 5 cm deep.
(b) Hill slopes greater than 1 in 2 (26°), and all the sides of gullies.
(c) Ground with abundant, and/or an almost continuous carpet of *Sphagnum,* liverworts and/or lichens.

(d) Areas of H21 and H22 heath as defined by the NVC (Rodwell 1991). These are heaths primarily composed of mixtures of *Calluna vulgaris* and *Vaccinium myrtillus* over a moist carpet of bryophytes that often has a high *Sphagnum* content. Within the provisional classification, these communities are comparable to DH4 and damper elements of DH6 respectively.
(e) Areas with noticeably uneven structure, at a spatial scale of around 1 m² or less. The unevenness (e.g. more commonly found in very old heather stands) will relate to distinct, often large, spreading dwarf-shrub bushes. The dwarf-shrub canopy will not be completely continuous, and some of its upper surface may be twice as high as other parts. Layering is likely to be present and may be common.
(f) Pools, wet hollows, haggs and erosion gullies, and within 5 – 10 m of the edge of watercourses.

Table 15: Assessment of impacts for 4030 Dry heaths. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Medium	Negative	62.5%	Inside	-2.0	Imp
D01.01	Paths, tracks, cycling tracks	High	Negative	<1%	Inside	-0.75	Ins
D01.02	Roads, motorways	High	Negative	<1%	Inside	-0.75	Ins
G01.02	Walking, horseriding and non-motorized vehicles	Medium	Negative	<1%	Inside	-0.5	Ins
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Inside	-0.5	Ins
J02.07	Water abstractions from groundwater	High	Negative	<1%	Inside	-0.75	Ins
	Overall score					-5.25	

3.27 The vegetation composition of **4030 Dry heaths** was poor in one case. One monitoring stop (12.5%) failed due to an inadequate number of positive indicator species. The vegetation structure of **4030 Dry heaths** was also poor in some cases. The structural diversity of *Calluna vulgaris* was poor at three (42.9%) monitoring stops. Two of these monitoring stops (25.0%) also exhibited excessive levels of browsing by sheep. The physical structure of **4030 Dry heaths** was poor at one monitoring stop (12.5%), where excessive cover of disturbed bare ground was recorded. These results indicate that grazing by sheep is the main impact affecting **4030 Dry heaths** within Slieve League cSAC.

Future prospects

3.28 Six impacts were recorded within **4030 Dry heaths** (Table 15).

Non-intensive sheep grazing (A04.02.02)

3.29 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The lower slopes of Slieve League and Leahan showed evidence of higher grazing intensity than the more remote, inaccessible summit areas. These are also the areas where **4030 Dry heaths** are most abundant within the site (Fig. 4b). While it was acknowledged that erosion may be caused by a variety of factors, sheep grazing was said to accelerate the rate of erosion and hinder natural revegetation. The Conservation Plan also indicated that areas of **4030 Dry heaths** with relatively tall *Calluna vulgaris* were noted on some slopes within the site.

Plate 1: 4030 Dry heath vegetation on the southern slopes below the summit of Slieve League, which is relatively inaccessible to grazing animals (Photo: Philip Perrin).

Plate 2: Erosion of 4030 Dry heaths, 4060 Alpine and Boreal heaths and *7130/7130 Blanket bog at One Man's Pass caused by walking (Photo: BEC Consultants, taken July 2009).

3.30 The present survey indicates that sheep grazing is the dominant land use within **4030 Dry heaths** in Slieve League cSAC. During the assessment of structure and functions, grazing was recorded at 62.5% of **4030 Dry heaths** monitoring stops, with 25.0% of stops failing due to excessive grazing. During vegetation mapping, overgrazing of **4030 Dry heaths** was recorded in two polygons on the north-western slop of Slieve League. In contrast, some areas, such as the slopes at Bunglass and on the seaward side of Slieve League (Plate 1), supported relatively tall stands of *Calluna vulgaris* with reasonably good structural diversity. Grazing intensity varies greatly across the site, with the proportion of dwarf shrub shoots showing signs of grazing ranging from 0 to 50%. The monitoring stops that exhibited higher levels of grazing also tended to exhibit higher coverage of disturbed bare ground, which may be associated with trampling by sheep. The intensity of this impact is assessed as medium overall and its influence as negative (Table 15). The trend was assessed as improving due to levels of destocking implemented through the CFP.

Paths, tracks, cycling tracks (D01.01)

3.31 There has been some apparent degradation of this habitat due to tracks.

Roads and motorways (D01.02)

3.32 There were some apparent losses of this habitat due to the extension of small roads in various locations within the site.

Walking, horseriding and non-motorized vehicles (G01.02)

3.33 Slieve League (595 m a.s.l.) is reported to have the highest sea cliffs in Europe. With its spectacular scenery, the site is a popular destination for tourists and hillwalkers. As stated by the Slieve League cSAC Conservation Plan (NPWS, 1998), several walking paths exist within the site. The most popular paths are located in the southern part of the site, extending up Slieve League, where **4030 Dry heaths** are abundant (Fig. 4b). The Pilgrim Path runs from the slopes above Teelin, past Croleavy Lough to a small, ruined church. It consists of a well-constructed track, with large flat stones laid on the remaining sections. This reduces peat erosion due to trampling. Another path runs from the car park at Bunglass, along the edge of the cliffs and over One Man's Pass, to the summit of Slieve League. This path is causing localised but severe peat erosion. Signs were erected encouraging walkers to use the Pilgrim Path rather than the Bunglass route in order to reduce erosion. Relatively high numbers of walkers were observed during the present survey. The *Sliabh Liag* Walkers hillwalking club also organises regular walks within the site (Anon. 2010).

3.34 These walking paths cross the surface of **4030 Dry heaths**, resulting in trampling and localised erosion (Plate 2). The intensity of this impact has been assessed as medium overall (Table 15), due to the relatively high numbers of walkers using the site, and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Off-road motorised driving (G01.03.02)

3.35 Tyre tracks from a scrambler bike were recorded within **4030 Dry heaths** on the northern slope of Slieve League. The intensity of this impact is assessed as medium (Table 15) and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Water abstractions from groundwater (J02.07)

3.36 There were some apparent losses of this habitat due to drainage ditches being extended into this habitat.

Erosion (K01.01)

3.37 The Slieve League cSAC Conservation Plan (NPWS, 1998) noted that heath habitats around Lergadaghtan Mountain showed signs of erosion, particularly on steep slopes. However, erosion was not found to be a significant issue within **4030 Dry heaths** in that area during the present survey. This impact has therefore been omitted from Table 15.

3.38 The overall impacts score for **4030 Dry heaths** has been calculated as -5.25. This is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to levels of destocking implemented through the CFP. The future prospects for this habitat were therefore assessed as Unfavourable – Inadequate.

4060 Alpine and Boreal heaths

Area

3.39 Changes in the area of **4060 Alpine and Boreal heaths** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.40 Five monitoring stops were recorded in **4060 Alpine and Boreal heaths** within Slieve League cSAC (Table 16). In the assessment of structure and functions, two monitoring stops failed one criterion each. Following a review of the ecological condition of the stops that failed one criterion or more, expert judgement determined that no changes should be made, resulting in an overall failure rate of 40.0%. The structure and functions of **4060 Alpine and Boreal heaths** were therefore assessed as Unfavourable - Bad.

3.41 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that a large area of good quality, relatively undisturbed, typical **4060 Alpine and Boreal heaths** occurred around the

summits of Leahan, Lergadaghtan and Slieve League, and by the inland and coastal cliffs of Slieve League. However, the assessment of structure and functions found that the vegetation composition of one **4060 Alpine and Boreal heaths** monitoring stop (20.0%) was poor, with excessive cover of the negative indicator species *Deschampsia flexuosa.* The vegetation structure of **4060 Alpine and Boreal heaths** was good, with no failures being recorded under the relevant criteria. The physical structure of one **4060 Alpine and Boreal heaths** monitoring stop (20.0%) was poor, with excessive cover of disturbed bare ground being recorded in the local vicinity due to the presence of a walking path. These results indicate that hillwalking is the main impact affecting **4060 Alpine and Boreal heaths** within Slieve League cSAC.

Table 16: Monitoring criteria and failure rates for 4060 Alpine and Boreal heaths (n = 5).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of bryophyte or non-crustose lichen species present ≥ 3	Relevé	5	0	0
2	Cover of positive indicator species ≥ 66%	Relevé	5	0	0
3	Cover of dwarf shrubs ≥ 10%	Relevé	5	0	0
4	Cover of the following negative indicator species: *Agrostis capillaris, A. vinealis, Anthoxanthum odoratum, Deschampsia flexuosa, Festuca ovina, F. vivipara, Galium saxatile, Potentilla erecta* and *Poa* spp. (except *Poa alpina*) collectively < 10%	Relevé	5	1	20.0
5	Cover of non-native species < 1%	Relevé	5	0	0
Vegetation structure					
6	Live leaves of *Carex bigelowii, Deschampsia flexuosa, Festuca ovina, F. vivipara* showing signs of grazing collectively < 10%	Relevé	5	0	0
7	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	5	0	0
8	No signs of burning inside feature	Local vicinity	5	0	0
Physical structure					
9	Cover of disturbed bare ground < 10%	Relevé	5	0	0
10	Cover of disturbed bare ground < 10%	Local vicinity	5	1	20.0

Future prospects

3.42 Four impacts were recorded within **4060 Alpine and Boreal heaths** (Table 17).

Non-intensive sheep grazing (A04.02.02)

3.43 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The more remote, inaccessible summit areas of Slieve League and Leahan showed evidence of lower grazing intensity than the lower slopes. These are also the areas where **4060 Alpine and Boreal heaths** are most abundant within the site (Fig. 4c).

3.44 Grazing by sheep occurs throughout **4060 Alpine and Boreal heaths** within Slieve League cSAC (Table 17), with grazing being recorded at all monitoring stops. However, the intensity of grazing was consistently low, with the proportion of dwarf shrub shoots showing signs of grazing ranging from 3 to 10%. No monitoring stops failed due to excessive grazing. As **4060 Alpine and Boreal heaths** can tolerate low levels of grazing, the influence of this impact has been assessed as neutral. The trend is assessed as improving due to destocking levels implemented through the CFP.

Walking, horseriding and non-motorized vehicles (G01.02)

3.45 As stated in paragraph 3.33, Slieve League is a popular destination for hillwalkers and several walking paths exist within the cSAC (NPWS, 1998). The most popular paths extend from the southern part of the site up Slieve League. The Pilgrim Path runs from the slopes above Teelin, past Croleavy Lough to a small, ruined church. It consists of a well-constructed track, with large flat stones laid on the remaining sections. This reduces peat erosion due to trampling. Another path runs from the car park at Bunglass, along the edge of the cliffs and over One Man's Pass, to the summit of Slieve League. This path is causing localised but severe peat erosion. Signs were erected encouraging walkers to use the Pilgrim Path rather than the Bunglass route in order to reduce erosion. Relatively high numbers of walkers were observed during the present survey. The *Sliabh Liag* Walkers hillwalking club also organises regular walks within the site (Anon. 2010).

3.46 At high altitudes and in certain exposed locations, these walking paths cross the surface of **4060 Alpine and Boreal heaths**, resulting in trampling and localised erosion (Plate 2). One **4060 Alpine and Boreal heaths** monitoring stop failed the assessment of structure and functions due to its proximity to a heavily eroded walking path. The intensity of this impact has been assessed as high overall, due to the relatively high numbers of walkers using the site, and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Table 17: Assessment of impacts for 4060 Alpine and Boreal heaths. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Inside	0	Imp
G01.02	Walking, horseriding and non-motorized vehicles	High	Negative	<1%	Inside	-0.75	Ins
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Inside	-0.5	Ins
I01	Invasive non-native species	Low	Neutral	0.02%	Inside	0	Ins
	Overall score					-1.25	

Off-road motorised driving (G01.03.02)

3.47 Tyre tracks from a scrambler bike were recorded within **4060 Alpine and Boreal heaths** at Keeringear and on the northern slope of Slieve League (Plate 3). The intensity of this impact has

been assessed as medium and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Plate 3: Tyre tracks from scrambler bike in 4060 Alpine and Boreal heaths (Photo: BEC Consultants)

Invasive non-native species (I01)

3.48 *Campylopus introflexus* is a non-native pioneer moss species of bare peat which can become abundant after disturbance such as peat cutting, burning or drainage (Atherton *et al*., 2010). Carpets of the moss have been found to have a significant depressive effect on germination of *Calluna vulgaris* seeds and therefore this species can impact on re-establishment of heather (Equiha & Usher, 1993; Bernth, 1998). Klinck (2010) defined it as a mild or temporary invasive species as it does not have long-term effects on biodiversity.

3.49 *Campylopus introflexus* was recorded within one monitoring stop, but was not sufficiently abundant to cause the stop to fail. However, this stop failed due to excessive cover of disturbed bare ground. Colonisation by *C. introflexus* may have been facilitated by this disturbance. The mean cover of *C. introflexus* within **4060 Alpine and Boreal heaths** monitoring stops was 0.02%. The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within four polygons dominated by **4060 Alpine and Boreal heaths** during

vegetation mapping. However, it was not recorded as forming extensive carpets; therefore this impact was assessed as being of low intensity and neutral influence.

Erosion (K01.01)

3.50 The Slieve League cSAC Conservation Plan (NPWS, 1998) noted that heath habitats around Lergadaghtan Mountain showed signs of erosion, particularly on steep slopes. However, erosion was not found to be a significant issue within **4060 Alpine and Boreal heaths** in that area during the present survey. This impact has therefore been omitted from Table 17.

3.51 The overall impacts score for **4060 Alpine and Boreal heaths** has been calculated as -1.25. This is marginally below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving. The future prospects for this habitat were therefore assessed as Favourable.

***6230 Species-rich *Nardus* grasslands**

Area

3.52 Changes in the area of ***6230 Species-rich *Nardus* grasslands** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.53 One monitoring stop was recorded in ***6230 Species-rich *Nardus* grasslands** within Slieve League cSAC (Table 18). In the assessment of structure and functions, this monitoring stop failed one criterion. Following a review of the ecological condition of this stop, expert judgement determined that no changes should be made, resulting in an overall failure rate of 100.0%. The structure and functions of ***6230 Species-rich *Nardus* grasslands** were therefore assessed as Unfavourable - Bad.

3.54 While the vegetation composition and physical structure of this monitoring stop were good, with no failures being recorded under the relevant criteria, its vegetation structure was poor. Criterion 11 stipulates that at least 25% of the sward should be between 5 and 50 cm in height. A result of only 1% was recorded at the stop in question. The sward height was found to be inadequate due to high levels of grazing by sheep.

3.55 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Slieve League cSAC, where only 4.75 ha of ***6230 Species-rich *Nardus* grasslands** were recorded, comprising 0.12% of the site.

Future prospects

3.56 The only impact recorded within ***6230 Species-rich *Nardus* grasslands** was sheep grazing (Table 19).

Non-intensive sheep grazing (A04.02.02)

3.57 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that the dry grasslands within the site exhibited a very low sward height due to grazing by sheep and, in coastal situations, intense exposure. Accordingly, during the present survey, the ***6230 Species-rich *Nardus* grasslands** monitoring stop failed due to an inadequate sward height, which was attributed to heavy grazing by sheep. Grazing by sheep occurs throughout ***6230 Species-rich *Nardus* grasslands** within Slieve League cSAC (Table 19). Its intensity has been assessed as high and its influence as negative. The trend has been assessed as improving due to implemented through the CFP.

Table 18: Monitoring criteria and failure rates for *6230 Species-rich *Nardus* grasslands (*n* = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of high quality and general indicator species ≥ 7	Relevé	1	0	0
2a	UG1c/UG2c: Number of high quality species present ≥ 2	Relevé	1	0	0
2b	UG1e/UG2e: Number of high quality species present ≥ 1	Relevé	0	n/a	n/a
3	Species richness ≥ 25 species	Relevé	1	0	0
4	Cover of non-native species ≤ 1%	Relevé	1	0	0
5	Cover of the following negative indicator species: *Arrhenatherum elatius, Bellis perennis, Cirsium arvense, Cirsium vulgare, Dactylis glomerata, Eriophorum angustifolium, Eriophorum vaginatum, Holcus lanatus, Juncus effusus, Lolium perenne, Narthecium ossifragum, Ranunculus repens, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Trifolium repens, Urtica dioica*, individually ≤ 10%	Relevé	1	0	0
6	Cover of the above negative indicator species collectively ≤ 20%	Relevé	1	0	0
7	Cover of *Sphagnum* species ≤ 10%,	Relevé	1	0	0
8	Cover of *Polytrichum* species ≤ 25%		1	0	0
9	Cover of scrub, bracken and heath ≤ 5%	Relevé	1	0	0
Vegetation structure					
10	Forb component of forb : graminoid ratio 20-90%	Relevé	1	0	0
11	Proportion of the sward between 5-50 cm tall ≥ 25%	Relevé	1	1	100.0
12	Litter cover ≤ 20%	Relevé	1	0	0
Physical structure					
13	Cover of disturbed bare ground ≤ 10%	Relevé	1	0	0
14	Area of the habitat showing signs of serious grazing or disturbance <20m^2	Local vicinity	1	0	0

Table 19: Assessment of impacts for *6230 Species-rich *Nardus* grasslands. Under trend, Imp = Improving.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	High	Negative	100%	Inside	-4.5	Imp
	Overall score					-4.5	

3.58 The overall impacts score for ***6230 Species-rich *Nardus* grasslands** has been calculated as -4.5. This is below the nominal Favourable Reference Value of zero but the combined future trend for area and structure and functions was deemed to be improving due to implemented through the CFP. The future prospects for this habitat were therefore assessed as Favourable.

***7130/7130 Blanket bogs**

Area

3.59 Changes in the area of ***7130/7130 Blanket bogs** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 20). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process.

Table 20: Impacts causing obvious losses in area of *7130/7130 Blanket bogs, 1995-2012.
n.m. indicates not measured.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
A02.01	Agricultural intensification	0.00	0.38	0.00	0.38
C01	Mining and quarrying	0.00	0.20	0.00	0.20
C01.03	Peat extraction	0.42	0.29	0.01	0.72
C01.03.02	Mechanical removal of peat	0.00	1.26	0.02	1.28
D01.02	Roads, motorways	0.00	0.10	0.00	0.10
G01.03.02	Off-road motorized driving	0.00	0.04	0.00	0.04
J02.07	Water abstractions from groundwater	0.00	0.07	0.00	0.07
K01.01	Erosion	n.m.	n.m.	n.m.	n.m.
All impacts		0.42	2.33	0.03	2.78
% of habitat		0.04	0.23	<0.01	0.28
% loss per year		0.01	0.05	<0.01	0.02

The main measured losses in area of ***7130/7130 Blanket bogs** were due to peat extraction (combined area of 2 ha) and agricultural intensification (0.38 ha). Erosion has unquestionably resulted in loss of habitat, but due to the gradual and diffuse nature of this impact it was impractical to measure the area lost. Even when including the loss due to erosion it is estimated that the overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate. These impacts and trends are discussed later under future prospects.

Structure and functions

3.60 Nine monitoring stops were recorded in ***7130/7130 Blanket bogs** within Slieve League cSAC (Table 21). All of these monitoring stops were located within ***7130 Active blanket bog** rather than **7130 Inactive blanket bog**. In the assessment of structure and functions, three monitoring

Table 21: Monitoring criteria and failure rates for *7130/7130 Blanket bogs (*n* = 9).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 7	Relevé	9	0	0
2	Cover of bryophyte or lichen species, excluding *Sphagnum fallax* ≥ 10%	Relevé	9	0	0
3	Cover of each of the following species: *Calluna vulgaris, Eleocharis multicaulis, Eriophorum vaginatum, Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually < 75%	Relevé	9	0	0
4	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Pteridium aquilinum, Ranunculus repens* collectively < 1%	Relevé	9	0	0
5	Cover of non-native species < 1%	Relevé	9	0	0
6	Cover of non-native species < 1%	Local vicinity	9	0	0
7	Cover of scattered native trees and scrub < 10%	Local vicinity	9	0	0
Vegetation structure					
8	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	9	0	0
9	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	9	0	0
10	No signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	9	0	0
9	No signs of burning inside boundaries of sensitive areas*	Local vicinity	9	0	0
Physical structure					
12	Cover of disturbed bare ground < 10%	Relevé	9	0	0
13	Cover of disturbed bare ground < 10%	Local vicinity	9	0	0
14	Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting < 10%	Local vicinity	9	1	11.1
15	Cover of erosion gullies and eroded areas within the greater bog mosaic < 5%	Local vicinity	9	3	33.3

*Sensitive areas
(a) Slopes greater than 1 in 3 (18°), and all the sides of gullies.
(b) Ground with abundant and/or an almost continuous carpet of *Sphagnum*, other mosses, liverworts and/or lichens.
(c) Patterned areas i.e. with pools, wet hollows, haggs and erosion gullies.
(d) Areas within 5-10 m of watercourses.
(e) Areas above 400 m in altitude.
(f) Areas within 50 m of functioning drains.

stops failed one criterion or more. Following a review of the ecological condition of this stop, expert judgement determined that no changes should be made, resulting in an overall failure rate of 33.3%. The structure and functions of ***7130/7130 Blanket bogs** were therefore assessed as Unfavourable – Bad. Vegetation mapping indicated that the proportion of inactive, eroding and cutover bog within the total area of bog was 6.5%, which provides further support for the Unfavourable – Bad assessment result.

3.61 While the vegetation composition and vegetation structure of ***7130/7130 Blanket bogs** were good, with no failures being recorded under the relevant criteria, their physical structure was poor in some cases. Three monitoring stops (33.3%) failed due to excessive levels of peat erosion. One of these stops (11.1%) also failed due to excessive levels of drainage.

Future prospects

3.62 Fourteen impacts were recorded within ***7130/7130 Blanket bogs** (Table 22).

Agricultural intensification (A02.01)

3.63 There were some apparent losses of this habitat due to agricultural improvement.

Non-intensive sheep grazing (A04.02.02)

3.64 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The lower slopes of Slieve League and Leahan, located particularly close to access points, showed evidence of higher grazing intensity than the more remote, inaccessible areas. These are the areas where ***7130/7130 Blanket bogs** are most abundant within the site (Fig. 4g). While it was acknowledged that erosion may be caused by a variety of factors, sheep grazing was said to accelerate the rate of erosion and hinder natural revegetation (NPWS, 1998).

3.65 Grazing by sheep occurs in ***7130/7130 Blanket bogs** virtually throughout Slieve League cSAC (Table 22), with signs of grazing being recorded at 88.9% of monitoring stops. The proportion of dwarf shrub shoots showing signs of grazing ranged from 0 to 30%, with no monitoring stops failing due to excessive grazing. During vegetation mapping, overgrazing was not recorded within ***7130/7130 Blanket bogs**. The intensity of this impact was assessed as low overall. In some cases, ***7130/7130 Blanket bogs** can tolerate low levels of grazing. As no failures were recorded due to grazing or disturbed bare ground within ***7130/7130 Blanket bogs** at this site, the influence of this impact has been assessed as neutral. The trend is assessed as improving due to destocking levels implemented through the CFP.

Mining and quarrying (C01)

3.66 There were some apparent losses of this habitat due to activities associated with quarrying.

Hand cutting of peat (C01.03.01)

3.67 The Slieve League cSAC Conservation Plan estimated that about 5% of the site was composed of cutover blanket bog. Old cutover bog was widespread within the cSAC, suggesting that turf cutting by hand has been ongoing for many years (NPWS, 1998). Although the primary

methods of peat cutting are now mechanical, some ongoing cutting by hand for domestic purposes was observed at Malin More (Plate 4). While it is acknowledged that hand cutting is less damaging than mechanical cutting of peat, the intensity of this impact was assessed as high and its influence as negative, due to the loss of habitat where peat is extracted and the drainage of surrounding habitats. The area of ***7130/7130 Blanket bogs** affected was estimated to be less than 1%.

Mechanical removal of peat (C01.03.02)

3.68 The Slieve League cSAC Conservation Plan noted that significant peat cutting was ongoing on the western slopes of Leahan and, to a lesser extent, around Lough Auva. On Leahan, new trackways and access roads have been built to improve access to peat cutting areas. This has allowed heavy machinery to access Slieve League cSAC, cutting peat at a much faster rate than traditional methods would permit. Similarly, tractors and trailers can access the site and remove turf in large quantities. This accessibility has encouraged others to extend the tracks to their own areas of turbary, hence a network of tracks has developed and the rate of peat extraction has increased substantially.

3.69 During the present survey, ongoing mechanical peat cutting was observed in these two areas (Plates 5 and 6). In the assessment of structure and functions, the stratified-randomly distributed ***7130/7130 Blanket bogs** monitoring stops did not fall within these areas. However, during vegetation mapping, recent turf cutting was noted within 24 polygons. Much of this peat cutting was carried out using a sausage machine, which is particularly damaging to the integrity of ***7130/7130 Blanket bogs**. Disturbance, with large areas of bare peat, drainage and dumping were also noted in these areas. The intensity of this impact has been assessed as high and its influence as negative. The area of ***7130/7130 Blanket bogs** affected has been estimated as 2.3%, based on the area of **PB4 Cutover bog** recorded, excluding the area that was cut by hand. As stated in the Slieve League cSAC Conservation Plan (NPWS, 1998), mechanical peat cutting, particularly on a commercial basis, is the main threat to the integrity of ***7130/7130 Blanket bogs** within the site.

Paths, tracks, cycling tracks (D01.01)

3.70 At Golandoo and Malinmore, areas of ***7130/7130 Blanket bogs** have been excavated to create tracks, leaving areas of bare peat and rock. The Slieve League cSAC Conservation Plan (NPWS, 1998) also stated that new trackways and access roads have been built on the western side of Leahan to provide access to peat cutting areas for heavy machinery. The intensity of this impact has been assessed as high and its influence as negative (Table 22). The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Roads and motorways (D01.02)

3.71 There were some apparent losses of this habitat due to the extension of small roads in various locations within the site.

Plate 4: Hand cutting of peat above the sea cliffs at Malin More (Photo: BEC Consultants).

Plate 5: *7130 Active blanket bog, showing damage caused by the use of sausage cutting machines in extracting turf, within the Slieve League cSAC (Photo: BEC Consultants).

Plate 6: Turf stacks and associated damage from peat cutting, west of Lough Auva (Photo: BEC Consultants).

Table 22: Assessment of impacts for *7130/7130 Blanket bogs. Under trend, Dis = Disimproving, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A02.01	Agricultural intensification	High	Negative	<1%	Inside	-0.75	Ins
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Inside	0	Imp
C01	Mining and quarrying	High	Negative	<1%	Inside	-0.75	Ins
C01.03.01	Hand cutting of peat	High	Negative	<1%	Inside	-0.75	Ins
C01.03.02	Mechanical removal of peat	High	Negative	2.3%	Inside	-1.5	Ins
D01.01	Paths, tracks, cycling tracks	High	Negative	<1%	Inside	-0.75	Ins
D01.02	Roads, motorways	High	Negative	<1%	Inside	-0.75	Ins
G01.02	Walking, horseriding and non-motorized vehicles	High	Negative	<1%	Inside	-0.75	Ins
G01.03.02	Off-road motorised driving	High	Negative	<1%	Inside	-0.75	Ins
H05.01	Garbage and solid waste	Low	Negative	<1%	Inside	-0.25	Ins
I01	Invasive non-native species	Low	Neutral	0.1%	Inside	0	Ins
J02.07	Water abstractions from groundwater	High	Negative	>1.7%	Inside	-1.5	Dis
J01.01	Burning down	Medium	Negative	<1%	Inside	-0.5	Ins
K01.01	Erosion	High	Negative	1.1%	Inside	-1.5	Ins
	Overall score					-10.5	

Walking, horseriding and non-motorized vehicles (G01.02)

3.72 As stated in paragraph 3.33, Slieve League is a popular destination for hillwalkers and several walking paths exist within the cSAC (NPWS, 1998). The most popular paths extend from the southern part of the site up Slieve League. The Pilgrim Path runs from the slopes above Teelin, past Croleavy Lough to a small, ruined church. It consists of a well-constructed track, with large flat stones laid on the remaining sections. This reduces peat erosion due to trampling. Another path runs from the car park at Bunglass, along the edge of the cliffs and over One Man's Pass, to the summit of Slieve League. This path is causing localised but severe peat erosion. Signs were erected encouraging walkers to use the Pilgrim Path rather than the Bunglass route in order to reduce erosion. Relatively high numbers of walkers were observed during the present survey. The *Sliabh Liag* Walkers hillwalking club also organises regular walks within the site (Anon. 2010).

3.73 These walking paths cross the surface of ***7130/7130 Blanket bogs**. As noted during the present survey and in the Slieve League cSAC Conservation Plan (NPWS, 1998), peat erosion was particularly evident within the ***7130/7130 Blanket bogs** of the mountain summits. Walking activity tends to be focussed on these areas, and results in trampling and localised erosion and, in some areas, contributes to the development of peat haggs (Plate 2). For example, One Man's Pass acts as bottleneck, concentrating the level of walking activity along this narrow ridge. The intensity of this impact has been assessed as high overall (Table 22), due to the peat hags observed and the relatively high numbers of walkers using the site, and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Off-road motorised driving (G01.03.02)

3.74 During the present survey, numerous vehicle tracks, associated with turf cutting activity, were observed in ***7130/7130 Blanket bogs** on the western slope of Leahan (Plate 5), as described in paragraph 3.68 above, and near Lough Auva (Plate 6). These areas were highly disturbed with high coverage of bare peat. Some quad bike tracks, associated with farming activity, were observed in ***7130/7130 Blanket bogs** at Golandoo but no significant damage was noted. The intensity of this impact was assessed as high overall and its influence as negative. The area of ***7130/7130 Blanket bogs** affected has been estimated to be less than 1%.

Garbage and solid waste (H05.01)

3.76 Domestic littering and dumping of wooden pallets and plastic was noted within the peat cutting areas on the western slope of Leahan and near Lough Auva. The intensity of this impact has been assessed as low and its influence as negative. The area of ***7130/7130 Blanket bogs** affected has been estimated to be less than 1%, due to the localised nature of the impact.

Invasive non-native species (I01)

3.77 *Campylopus introflexus* is a non-native pioneer moss species of bare peat which can become abundant after disturbance such as peat cutting, burning or drainage (Atherton *et al*., 2010). Carpets of the moss have been found to have a significant depressive effect on germination of

Calluna vulgaris seeds and therefore this species can impact on re-establishment of heather (Equiha & Usher, 1993; Bernth, 1998). Klinck (2010) defined it as a mild or temporary invasive species as it does not have long-term effects on biodiversity.

3.78 *Campylopus introflexus* was not recorded within ***7130 Active blanket bogs** monitoring stops but the degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within 25 polygons dominated by ***7130/7130 Blanket bogs** during vegetation mapping. The area of DP1 *Campylopus introflexus – Polytrichum* spp. was equivalent to 0.1% of the area of ***7130/7130 Blanket bogs**. *C. introflexus* was not recorded as forming extensive carpets; therefore this impact was assessed as being of low intensity and neutral influence.

Burning down (J01.01)

3.75 Evidence of previous small-scale burning within ***7130/7130 Blanket bogs** was observed at one polygon near Lough Auva. The intensity of this impact was assessed as medium and its influence as negative. The area of ***7130/7130 Blanket bogs** affected has been estimated to be less than 1%, due to the localised nature of the impact.

Water abstractions from groundwater (J02.07)

3.79 Drainage has been recorded under this impact category. Water is being drained from ***7130/7130 Blanket bogs** and diverted away by means of ditches. The intended purpose is not water abstraction but reclamation of the land. Although the impact category does not accurately describe the impact in question it is the most appropriate option available.

3.80 Young (1973) reported that a small but fine example of undrained blanket bog with numerous pools was present on the north-western side of Lough Auva and recommended that this area and the surrounding bog should be protected from drainage. During the present survey, this area of bog was being machine cut, with associated drainage occurring. The pool system was found to have been lost from this area, although **7150 *Rhynchosporion* depressions** have persisted.

3.81 A recently dug drainage ditch within ***7130 Active blanket bog** was noted south-east of Lough Auva. A substantial recently dug drainage ditch, associated with turf cutting, was observed at Malin More (Plate 4). Drainage results in the loss of Annex I habitat where the drain is dug and also in a lowering of the water table and subsequent vegetation change in surrounding habitats. The impact of this activity was assessed as high and its influence as negative. The area of ***7130/7130 Blanket bogs** affected by drainage has been estimated to be at least 1.7%, based on the area of ***7130/7130 Blanket bogs** present within the polygons where the drainage impacts described above were recorded. However, this is likely to be an underestimate due to the diffuse impacts of drainage associated with widespread turf cutting. The trend has been assessed as disimproving due to the recent installation of new drains.

Erosion (K01.01)

3.82 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that although peat formation was still ongoing in intact ***7130 Active blanket bogs**, peat erosion is evident on the mountain

tops and slopes. Peat haggs of up to 1 m in height, surrounded by bare bedrock, are present on the summit of Slieve League.

3.83 Erosion may be caused by a variety of factors (NPWS, 1998). The level of hillwalking activity in ***7130/7130 Blanket bogs** around the summit of Slieve League is relatively high (see paragraph 3.72 above) and contributes to the erosion observed there. However, once exposed by removal of the vegetation, areas of bare peat may continue to erode due to climatic conditions. The Slieve League area receives relatively high levels of rainfall, with an annual mean of 1600-2000 mm per year for 1981-2010 (Met Éireann, 2012). At 595 m a.s.l. in a western coastal location, the summit of Slieve League is particularly exposed. Therefore unless restoration measures are undertaken in badly eroded areas, erosion is likely to continue.

3.84 Excessive levels of erosion were noted at three ***7130/7130 Blanket bogs** monitoring stops (33.3%). All of these were located in the north-east of the Slieve League cSAC, on the lower slopes of Slieve League and Leahan, near Lough Auva, Creenveen and Golandoo. These areas are subject to little or no hillwalking and are not particularly exposed. Young (1973) reported that the majority of the blanket bogs in the Owenwee Valley contained deep erosion channels, often exposing the full peat profile. The Slieve League cSAC Conservation Plan (NPWS, 1998) noted relatively high levels of sheep grazing in these areas. However, the number of sheep on this site has fallen in recent years due to implemented through the CFP. and current grazing levels lie within acceptable limits (Table 22). Furthermore, much of the eroded peat in this area appeared to be revegetating.

3.85 The intensity of this impact has been assessed as high and its influence as negative. Approximately 1.1% of the area of ***7130/7130 Blanket bogs** is estimated to be under threat from erosion; this is the proportion of the habitat occurring in polygons with at least 5% bare blanket peat. There is insufficient data to determine the trend for this impact.

3.86 The overall impacts score for ***7130/7130 Blanket bogs** has been calculated as -10.5. This is significantly below the nominal Favourable Reference Value of zero. Though impacts from grazing are likely to reduce, through CFP stock reductions, impacts from drainage were noted to be disimproving and peat extraction remains a concern. The combined future trend for area and structure and functions were therefore deemed to be disimproving. The future prospects for this habitat were therefore assessed as Unfavourable – Bad.

7140 Transition mires

Area

3.87 Changes in the area of **7140 Transition mires** were examined for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 23). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process.

Minor losses in area of **7140 Transition mires** were recorded due to drainage ditches (recorded under water abstractions from groundwater, <0.01 ha). These impacts and trends are discussed later under future prospects. The overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate.

Table 23: Impacts causing obvious losses in areas of 7140 Transition mires, 1995-2012.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
J02.07	Water abstractions from groundwater	0.00	<0.01	0.00	<0.01
All impacts		0.00	<0.01	0.00	<0.01
% of habitat		0.00	0.02	0.00	0.02
% loss per year		0.00	<0.01	0.00	<0.01

Structure and functions

3.88 One monitoring stop was recorded in **7140 Transition mires** within Slieve League cSAC (Table 24). In the assessment of structure and functions, this monitoring stop did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **7140 Transition mires** were therefore assessed as Favourable.

3.89 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Slieve League cSAC, where only 4.0 ha of **7140 Transition mires** were recorded, comprising 0.1% of the site.

Future prospects

3.90 Three impacts were recorded within **7140 Transition mires** (Table 25).

Non-intensive sheep grazing (A04.02.02)

3.91 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The lower slopes of Slieve League, where the **7140 Transition mires** monitoring stop was located, showed evidence of higher grazing intensity than the more remote, inaccessible areas.

3.92 Low levels of grazing were noted within the **7140 Transition mires** monitoring stop but did not result in significant levels of damage to the habitat. *Splachnum sphaericum* was present on sheep dung within the monitoring stop. This very habitat-specific moss species is confined to dung, usually herbivore dung, on upland heaths and bogs (Atherton *et al.*, 2010). In the case of this monitoring stop, sheep grazing contributed to the species richness of the habitat but also facilitated colonisation, at least on a temporary basis, by a species that is not typical of **7140 Transition mires**. Grazing by sheep occurs throughout **7140 Transition mires** within Slieve League cSAC (Table 25). The intensity of this impact was assessed as low and its influence as

neutral overall. The trend was assessed as improving due to destocking levels implemented through the CFP.

Table 24: Monitoring criteria and failure rates for 7140 Transition mires (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1a	PO1a: number of positive indicator species from Groups i or ii present ≥ 3	Relevé	0	n/a	n/a
1b	PFLU5: number of positive indicator species from Groups i or ii present ≥ 3		1	0	0
1c	RFEN1b: number of positive indicator species from Groups i or ii present ≥ 6		0	n/a	n/a
2	Number of species from Group i present ≥ 1	Relevé	1	0	0
3	Cover of the following species: small to medium sized *Carex* spp., *Equisetum fluviatile*, *Hydrocotyle vulgaris*, *Hypericum elodes*, *Mentha aquatica*, *Menyanthes trifoliata*, *Potentilla palustris*, *Sphagnum* spp. collectively ≥ 25%	Relevé	1	0	0
4	Cover of the following species: *Anthoxanthum odoratum*, *Epilobium hirsutum*, *Holcus lanatus* collectively < 1%	Relevé	1	0	0
5	Cover of non-native species < 1%	Relevé	1	0	0
Vegetation structure					
6	PFLU5/RFEN1b: ≥ 50% of the tips of live leaves and/or flowering shoots of vascular plants should be more than 15 cm above the ground surface	Relevé	1	0	0
Physical structure					
7	Cover of <u>disturbed</u> bare ground < 10%	Relevé	1	0	0
8	Cover of <u>disturbed</u> bare ground < 10%	Local vicinity	1	0	0
9	Area showing signs of <u>drainage</u> resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	1	0	0

<u>Off-road motorised driving (G01.03.02)</u>

3.93 Tyre tracks from a quad bike were recorded within **7140 Transition mires** in the Owenwee River basin, between Slieve League and Leahan and resulted in disturbance to the vegetation and peat substrate. The intensity of this impact is assessed as medium (Table 25) and its influence as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

<u>Water abstractions from groundwater (J02.07)</u>

3.94 There appears to have been some minor loss of habitat due to drainage.

Table 25: Assessment of impacts for 7140 Transition mires. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Inside	0	Imp
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Inside	-0.5	Ins
J02.07	Water abstractions from groundwater	High	Negative	<1%	Inside	-0.75	Ins
	Overall score					-1.25	

3.95 The overall impacts score for **7140 Transition mires** has been calculated as -1.25, which is marginally below the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be improving. The future prospects for this habitat were therefore assessed as Favourable.

7150 *Rhynchosporion* depressions

Area

3.96 Changes in the area of **7150 *Rhynchosporion* depressions** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 26). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. Recorded losses in area of **7150 *Rhynchosporion* depressions** were due to peat extraction (<0.01 ha), new roads (<0.01 ha) and water abstractions from groundwater (<0.01 ha). These impacts and trends are discussed later under future prospects. The overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate.

Structure and functions

3.97 One monitoring stop was recorded in **7150 *Rhynchosporion* depressions** within Slieve League cSAC (Table 27). In the assessment of structure and functions, this monitoring stop failed one criterion. Following a review of the ecological condition of this stop, expert judgement determined that no changes should be made, resulting in an overall failure rate of 100.0%. The structure and functions of **7150 *Rhynchosporion* depressions** were therefore assessed as Unfavourable - Bad.

3.98 While the vegetation composition and vegetation structure of **7150 *Rhynchosporion* depressions** were good, with no failures being recorded under the relevant criteria, the physical structure of **7150 *Rhynchosporion* depressions** was poor. Criterion 12 stipulates that the cover of disturbed bare ground in the local vicinity of the monitoring stop must be less than 10%. A cover score of 20% was recorded at the stop in question, exceeding the threshold by a wide margin. This disturbance was a result of trampling by sheep

Table 26: Impacts causing obvious losses in areas of 7150 *Rhynchosporion* depressions, 1995-2012.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
D01.02	Roads, motorways	0.00	<0.01	0.00	<0.01
J02.07	Water abstractions from groundwater	0.00	<0.01	0.00	<0.01
All impacts		0.00	0.01	0.00	0.01
% of habitat		0.00	0.26	0.00	0.26
% loss per year		0.00	0.05	0.00	0.05

Table 27: Monitoring criteria and failure rates for 7150 *Rhynchosporion* depressions (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 5	Relevé	1	0	0
2	Cover of *Rhynchospora* spp. ≥ 10%	Relevé	1	0	0
3	Cover of each of the following species: *Eleocharis multicaulis*, *Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually < 35%	Relevé	1	0	0
4	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Pteridium aquilinum, Ranunculus repens* collectively < 1%	Relevé	1	0	0
5	Cover of non-native species < 1%	Relevé	1	0	0
6	Cover of scattered native trees and scrub < 10%	Local vicinity	1	0	0
Vegetation structure					
7	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	1	0	0
8	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* shrubs showing signs of browsing collectively < 33%	Relevé	1	0	0
9	No signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	1	0	0
10	No signs of burning inside boundaries of sensitive areas*	Local vicinity	1	0	0
Physical structure					
11	Cover of disturbed bare ground < 10%	Relevé	1	0	0
12	Cover of disturbed bare ground < 10%	Local vicinity	1	1	100.0
13	Area showing signs of drainage resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	1	0	0
14	Cover of erosion gullies and eroded areas within the greater bog mosaic < 5%	Local vicinity	1	0	0

*Sensitive areas

(a) Ground with abundant and/or an almost continuous carpet of *Sphagnum.*

(b) Patterned areas (i.e. with pools and wet hollows).

(c) Areas within 50 m of functioning drains.

(d) Areas within 5-10 m of watercourses.

3.99 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Slieve League cSAC, where only 3.87 ha of **7150 *Rhynchosporion* depressions** were recorded, comprising 0.1% of the site.

Future prospects

3.100 Five impacts were recorded within **7150 *Rhynchosporion* depressions** (Table 28).

Non-intensive sheep grazing (A04.02.02)

3.101 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The lower slopes of Slieve League, where the **7150 *Rhynchosporion* depressions** monitoring stop was located, showed evidence of higher grazing intensity than the more remote, inaccessible areas.

3.102 Low levels of grazing occurred within the **7150 *Rhynchosporion* depressions** monitoring stop (Table 28). However, the cover of disturbed bare ground in the local vicinity was excessive and caused the monitoring stop to fail. This disturbance was due to the trampling associated with sheep grazing in this sensitive habitat. Grazing by sheep occurs throughout **7150 *Rhynchosporion* depressions** within Slieve League cSAC. The intensity of this impact has been assessed as low and its influence as negative. The trend has been assessed as improving due to implemented through the CFP.

Mechanical removal of peat (C01.03.02)

3.103 Excavation of peat appears to have resulted in losses of this habitat.

Roads, motorways (D01.02)

3.104 There have been some apparent minor losses of this habitat due to extension of tracks near the shore of Lough Auva. This impact could also be considered under the impact category for paths, tracks, cycling tracks (D01.01).

Invasive non-native species (I01)

3.105 *Campylopus introflexus* is a non-native pioneer moss species of bare peat which can become abundant after disturbance such as peat cutting, burning or drainage (Atherton *et al*., 2010). Carpets of the moss have been found to have a significant depressive effect on germination of *Calluna vulgaris* seeds and therefore this species can impact on re-establishment of heather (Equiha & Usher, 1993; Bernth, 1998). Klinck (2010) defined it as a mild or temporary invasive species as it does not have long-term effects on biodiversity.

Water abstractions from groundwater (J02.07)

3.106 Drainage has been recorded under this impact category. Water is being drained from peatland habitats and diverted away by means of ditches. The intended purpose is not water abstraction but desiccation of the peat to facilitate turf cutting. Although the impact category does not accurately describe the impact in question it is the most appropriate option available. Young (1973) reported that a small but fine example of undrained blanket bog was present on the

north-western side of Lough Auva and recommended that this area and the surrounding bog should be protected from drainage. During the present survey, **7150 *Rhynchosporion* depressions** were recorded within this area but the bog was being machine cut, with associated drainage occurring. The intensity of this impact was assessed as high and its influence as negative. The area of **7150 *Rhynchosporion* depressions** affected was estimated to be 19.9%, based on the area of this habitat recorded within the affected polygon. There were also some apparent losses of this habitat due to drainage ditches being extended into this habitat.

Table 28: Assessment of impacts for 7150 *Rhynchosporion* depressions. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Negative	100%	Inside	-1.5	Imp
C01.03.02	Mechanical removal of peat	High	Negative	<1%	Inside	-0.75	Ins
I01	Invasive non-native species	Low	Neutral	0.1%	Inside	0	Ins
J02.07	Water abstractions from groundwater	High	Negative	19.9%	Inside	-1.5	Ins
	Overall score					-3.75	

3.107 *Campylopus introflexus* was recorded within the **7150 *Rhynchosporion* depressions** monitoring stop (Table 28). With a cover score of 0.1%, it was not sufficiently abundant to cause the stop to fail. The intensity of this impact was assessed as low and its influence as neutral, as it was not recorded as forming extensive carpets.

3.108 The overall impacts score for **7150 *Rhynchosporion* depressions** has been calculated as -3.75, which is below the nominal Favourable Reference Value of zero. Although the trend for sheep grazing was deemed to be improving due to CFP stock reductions, the trends for mechanical removal of peat, invasive non-native species and water abstractions from groundwater could not be assessed due to insufficient data. The future prospects for this habitat were therefore assessed as Unfavourable - Inadequate.

7230 Alkaline fens

Area

3.109 Changes in the area of **7230 Alkaline fens** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.110 One monitoring stop was recorded in **7230 Alkaline fens** within Slieve League cSAC (Table 29). In the assessment of structure and functions, this monitoring stop did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **7230 Alkaline fens** were therefore assessed as Favourable.

3.111 The small sample size of one monitoring stop reflects the relative rarity of this habitat within the site, where only 0.68 ha of **7230 Alkaline fens** were recorded, comprising 0.02% of the site.

Table 29: Monitoring criteria and failure rates for 7230 Alkaline fens (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	At least one brown moss species present	Relevé	1	0	0
2a	RFLU1a/RFLU2: number of positive vascular indicator species present ≥ 2	Relevé	0	n/a	n/a
2b	RFLU4/RFEN1a: number of positive vascular indicator species present ≥ 3		1	0	0
3a	RFLU1a/RFLU2: vegetation cover of brown mosses and vascular indicator species ≥ 20%	Relevé	0	n/a	n/a
3b	RFLU4/RFEN1a: vegetation cover of brown mosses and vascular indicator species ≥ 75%		1	0	0
4	Total cover of the following species: *Anthoxanthum odoratum, Epilobium hirsutum, Holcus lanatus, Ranunculus repens* < 1%	Relevé	1	0	0
5	Cover of non-native species < 1%	Relevé	1	0	0
6	Cover of scattered native trees and scrub < 10%	Local vicinity	1	0	0
7	Total cover of *Juncus effusus* and *Phragmites australis* < 10%	Local vicinity	1	0	0
Vegetation structure					
8	At least 50% of the live leaves/flowering shoots are more than 5 cm above ground surface	Relevé	1	0	0
Physical structure					
9	Cover of disturbed, bare ground < 10%	Relevé	1	0	0
10	Cover of disturbed, bare ground < 10%	Local vicinity	1	0	0
11	Area showing signs of drainage resulting from ditches or heavy trampling or tracking < 10%	Local vicinity	1	0	0
12	Where tufa is present, disturbed proportion of vegetation cover < 1%	Local vicinity	0	n/a	n/a

Future prospects

3.112 The only impact recorded within **7230 Alkaline fens** was fencing (Table 30).

Fences, fencing (G05.07)

3.113 The **7230 Alkaline fens** monitoring stop was recorded at Croleavy Lough (Plate 7). The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that Croleavy Lough had recently been fenced on one side to prevent livestock from entering the wetland. As no evidence of grazing or

disturbance was recorded at the monitoring stop, this management action appears to have been effective. The intensity of this impact has been assessed as medium and its influence as positive (Table 30). The **7230 Alkaline fens** adjacent to Croleavy Lough comprise 19.8% of the area of this habitat within Slieve League cSAC.

3.114 The overall impacts score for **7230 Alkaline fens** has been calculated as 1.0, which exceeds the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to measures being implemented to prevent grazers from accessing this habitat. The future prospects for this habitat were therefore assessed as Favourable.

Table 30: Assessment of impacts for 7230 Alkaline fens. Under trend Imp = Improving.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
G05.07	Fences, fencing	Medium	Positive	19.8%	Inside	1.0	Imp
	Overall score					1.0	

Plate 7: Lough Croleavy and the valley of the Pilgrim's Path, Keeringear is on the left (Photo: Orla Daly).

8110 Siliceous scree

Area

3.115 Changes in the area of **8110 Siliceous scree** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.116 Three monitoring stops were recorded in **8110 Siliceous scree** within Slieve League cSAC (Table 31). In the assessment of structure and functions, the monitoring stops did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **8110 Siliceous scree** were therefore assessed as Favourable.

Table 31: Monitoring criteria and failure rates for 8110 Siliceous scree (n = 3).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Cover of bryophyte and non-crustose lichen species ≥ 5%	Relevé	3	0	0
2	Proportion of vegetation composed of following negative indicator species: *Cirsium arvense, C. vulgare, Rubus fruticosus* agg., large *Rumex* species (except *R. acetosa*), *Senecio jacobaea, Urtica dioica* collectively < 1%	Relevé	3	0	0
3	Proportion of vegetation composed of non-native species < 1%	Relevé	3	0	0
4	Block scree: number of positive indicator species for 8220 present ≥ 1	Local vicinity	2	0	0
5	Cover of grass species and dwarf shrubs collectively < 20%	Local vicinity	3	0	0
6	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	3	0	0
Vegetation structure					
7	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Relevé	2	0	0
Physical structure					
8	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Relevé	3	0	0
9	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Local vicinity	3	0	0

Future prospects

3.117 No impacts (Threats, Pressures and Activities code X) were recorded within **8110 Siliceous scree**. The overall impacts score for **8110 Siliceous scree** has been calculated as zero, which equals the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be no change. The future prospects for this habitat were therefore assessed as Favourable.

8120 Calcareous scree

Area

3.118 Changes in the area of **8120 Calcareous scree** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes

in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.119 One monitoring stop was recorded in **8120 Calcareous scree** within Slieve League cSAC (Table 32). In the assessment of structure and functions, this monitoring stop failed one criterion. Following a review of the ecological condition of this stop, expert judgement determined that no changes should be made, resulting in an overall failure rate of 100.0%. The structure and functions of **8120 Calcareous scree** were therefore assessed as Unfavourable - Bad.

Table 32: Monitoring criteria and failure rates for 8120 Calcareous scree (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of indicative fern or *Saxifraga* species present ≥ 1	Local vicinity	1	0	0
2	Number of positive indicator species present ≥ 2	Local vicinity	1	0	0
3	Cover of dwarf shrubs and grass species, excluding *Sesleria caerulea* collectively < 20%	Relevé	1	1	100.0
4	Proportion of vegetation composed of following negative indicator species: *Cirsium arvense, C. vulgare, Pteridium aquilinum, Rubus fruticosus* agg., large *Rumex* species (except *R. acetosa*), *Senecio jacobaea, Urtica dioica* collectively < 1%	Relevé	1	0	0
5	Proportion of vegetation composed of non-native species < 1%	Relevé	1	0	0
6	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	1	0	0
Vegetation structure					
6	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Relevé	1	0	0
Physical structure					
7	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Relevé	1	0	0
8	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Local vicinity	1	0	0

3.120 While the vegetation structure and physical structure of **8120 Calcareous scree** were good, with no failures being recorded under the relevant criteria, the vegetation composition of **8120 Calcareous scree** was poor. Criterion 3 stipulates that the cover of dwarf shrubs and grass species, excluding *Sesleria caerulea*, must be less than 20%. A cover score of 31%, composed largely of *Festuca rubra*, was recorded at the stop in question, exceeding the threshold by a wide margin and causing the stop to fail.

3.121 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Slieve League cSAC, where only 0.05 ha of **8120 Calcareous scree** were recorded, comprising 0.001% of the site.

Future prospects

3.122 Two impacts were recorded within **8120 Calcareous scree** (Table 33).

Non-intensive sheep grazing (A04.02.02)

3.123 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that grazing by sheep was the dominant agricultural activity taking place within the site. The more remote, inaccessible, high altitude areas of Slieve League, where the **8120 Calcareous scree** monitoring stop was located, showed evidence of lower grazing intensity than the lower slopes.

3.124 Low levels of grazing were noted within the **8120 Calcareous scree** monitoring stop (Table 33) but did not result in significant levels of damage to the habitat. Although grazing is probably not required for the maintenance of **8120 Calcareous scree**, the habitat is believed to tolerate very light grazing (Hughes, 2008). The intensity of this impact was assessed as low and its influence as neutral. The trend was assessed as improving due to implemented through the CFP.

Invasive non-native species (I01)

3.125 *Epilobium brunnescens* is a species of damp, stony places, especially in the mountains, which is localised but spreading in Ireland (Parnell & Curtis, 2012). During the present survey, *E. brunnescens* was recorded within the **8120 Calcareous scree** monitoring stop (Table 33), with a cover score of 0.3%. The intensity of this impact is assessed as low, since this species does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative (Table 33).

3.126 The overall impacts score for **8120 Calcareous scree** has been calculated as -0.25, which is marginally below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving. The future prospects for this habitat were therefore assessed as Favourable.

Table 33: Assessment of impacts for 8120 Calcareous scree. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Inside	0	Imp
I01	Invasive non-native species	Low	Negative	0.3%	Inside	-0.25	Ins
	Overall score					-0.25	

8210 Calcareous rocky slopes

Area

3.127 Changes in the area of **8210 Calcareous rocky slope** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.128 One monitoring stop was recorded in **8210 Calcareous rocky slopes** within Slieve League cSAC (Table 34). It was located in the north-facing corrie of Slieve League, above Lough Agh. In the assessment of structure and functions, this monitoring stop did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **8210 Calcareous rocky slopes** were therefore assessed as Favourable.

3.129 The quality of the vegetation composition of the **8210 Calcareous rocky slopes** in the corrie above Lough Agh has long been recognised. Praeger (1934) remarked that the area supports a remarkably diverse assemblage of alpine plants which, given its small extent, makes it unique in Ireland. Furthermore, Young (1973) stated that the great botanical interest of this corrie added to the scientific value of the Slieve League area.

Table 34: Monitoring criteria and failure rates for 8210 Calcareous rocky slopes (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of indicative fern or *Saxifraga* species present ≥ 1	Local vicinity	1	0	0
2	Number of positive indicator species present ≥ 3	Local vicinity	1	0	0
3	Proportion of vegetation composed of non-native species < 1%	Local vicinity	1	0	0
4	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	1	0	0
Vegetation structure					
5	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Local vicinity	1	0	0

3.130 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Slieve League cSAC, where only 1.91 ha of **8210 Calcareous rocky slopes** were recorded, comprising 0.05% of the site.

Future prospects

3.131 No impacts (Threats, Pressures and Activities code X) were recorded within **8210 Calcareous rocky slopes**.

3.132 The Slieve League cSAC Conservation Plan (NPWS, 1998) stated that the inland cliffs within the site are the subject of educational fieldtrips (G05 Other human intrusions and disturbances), mainly due to their geological interest. The number of visitors was unknown. This impact was of some concern due to its potential threat to the alpine plant community of **8210 Calcareous rocky slopes**. Young (1973) identified collection (F04.02) as a potential threat to the alpine plant community of **8210 Calcareous rocky slopes**. However, these impacts were not recorded during the present survey and are omitted from the assessment of future prospects.

3.133 The overall impacts score for **8210 Calcareous rocky slopes** has been calculated as zero, which equals the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be no change. The future prospects for this habitat were therefore assessed as Favourable.

8220 Siliceous rocky slopes

Area

3.134 Changes in the area of **8220 Siliceous rocky slope** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.135 Two monitoring stops were recorded in **8220 Siliceous rocky slopes** within Slieve League cSAC (Table 35). In the assessment of structure and functions, the monitoring stops did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **8220 Siliceous rocky slopes** were therefore assessed as Favourable.

Future prospects

3.136 The only impact recorded within **8220 Siliceous rocky slopes** was invasive, non-native species (Table 36).

Table 35: Monitoring criteria and failure rates for 8220 Siliceous rocky slopes (n = 2).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 1	Local vicinity	2	0	0
2	Proportion of vegetation composed of non-native species < 1%	Local vicinity	2	0	0
3	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	2	0	0
Vegetation structure					
4	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Local vicinity	2	0	0

Table 36: Assessment of impacts for 8220 Siliceous rocky slopes. Under trend, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
I01	Invasive non-native species	Low	Negative	0.25%	Inside	-0.25	Ins
	Overall score					-0.25	

Invasive non-native species (I01)

3.137 *Epilobium brunnescens* is a species of damp, stony places, especially in the mountains, which is localised but spreading in Ireland (Parnell & Curtis, 2012). During the present survey, *E. brunnescens* was recorded within one **8220 Siliceous rocky slopes** monitoring stop (Table 36), with a cover score of 0.5%, giving it a mean cover of 0.25% within monitoring stops in this habitat. The intensity of this impact is assessed as low, since this species does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative (Table 36).

3.138 The overall impacts score for **8220 Siliceous rocky slopes** has been calculated as -0.25, which is marginally below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be no change due to insufficient data. The future prospects for this habitat were however assessed as Favourable.

Summary of conservation assessment

3.139 The summary results for the conservation assessment of Annex I habitats in Slieve League cSAC are presented in Table 37. Of the twelve habitats assessed, four habitats were assessed as Favourable, one as Unfavourable – Inadequate and seven as Unfavourable – Bad.

3.140 Generally, habitats performed well in the area assessments with no major losses of habitat being readily apparent. There is clearly a general trend for heath and peatland habitats to perform poorly in the assessments of structure and functions, while rocky habitats perform

better. Habitats have tended to perform better under future prospects than under structure and function as it is expected that habitats will gradually recover as stock numbers have been reduced, through the CFP, from previous high levels.

Table 37: Summary of conservation status assessments for Annex I habitats in Slieve League cSAC.

Annex I code	Habitat	Area	Structure and functions	Future prospects	Overall assessment
4010	Wet heaths	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
4030	Dry heaths	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
4060	Alpine and Boreal heaths	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
*6230	Species-rich *Nardus* grassland	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
*7130/7130	Blanket bogs	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Bad	Unfavourable - Bad
7140	Transition mires	Unfavourable - Inadequate	Favourable	Favourable	Unfavourable - Inadequate
7150	*Rhynchosporion* depressions	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
7230	Alkaline fens	Favourable	Favourable	Favourable	Favourable
8110	Siliceous scree	Favourable	Favourable	Favourable	Favourable
8120	Calcareous scree	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
8210	Calcareous rocky slopes	Favourable	Favourable	Favourable	Favourable
8220	Siliceous rocky slopes	Favourable	Favourable	Favourable	Favourable

4. DISCUSSION

Natura 2000 Standard Data Form

4.1 Fourteen Annex I habitats were recorded in the cSAC that are currently not listed for the site on the Natura 2000 Standard Data Form, habitats 1140, 3110, 3130, 3160, 4030, 6150, *6230, 6430, 7140, 7150, 7230, 8110, 8120 and 8330. The beach at Trabane qualifies as **1140 Mudflats and sandflats**. Lough Agh is a fine example of **3130 Upland oligotrophic lakes** and Lough Auva was classified as **3110 Lowland oligotrophic lakes**. **3160 Dystrophic lakes** were recorded from the bogland. **4030 Dry heath** dominates large sections in the east of the site and accounts for 16.5% of the area. Small patches on the summit of Slieve League with *Carex bigelowii*, *Salix herbacea* or *Diphasiastrum alpinum* can be classified as **6150 Siliceous alpine and boreal grassland**. **7140 Transition mires** were recorded from several locations whilst there is a good example of **7230 Alkaline fens** close to Cromleavy Lough. **6430 Hydrophilous tall herb communities** occur on the cliffs in the corrie above Lough Agh. Bog close to the Owenwee River supports **7150 *Rhynchosporion* depressions**. There are a few patches of ***6230 Species-rich *Nardus* grassland**. **8110 Siliceous scree** is abundant on the seaward face of Slieve League, in the corrie at Lough Agh and below Keeringear. **8120 Calcareous scree** occurs only as small and marginal examples. There is an excellent example of **8330 Sea caves** on the coast below the summit of Slieve League that is well-known to divers.

4.2 The only Annex I habitat listed on the Natura 2000 Standard Data Form but not recorded by the survey was **1170 Reefs**. No attempt was made by the survey to map this marine habitat.

4.3 The current version of the Natura 2000 Standard Data Form for this site estimates the area of **4060 Alpine and Boreal heaths** to be 17% of the site whereas this survey has estimated it to be substantially lower at 2.5%. Conversely, the form has underestimated the area of **7130/*7130 Blanket bogs** (14% compared with the survey figure of 25.0%). Whilst the form estimates the area of **1230 Vegetated sea cliffs** to be 9%, only 2.2% of the site was classified as this habitat by the survey.

4.4 The Natura 2000 Standard Data From for this site should be reviewed and updated in light of the data presented in this report in terms of the habitats listed, areas and ratings. It is <u>obligatory</u> that all Annex I habitats within an SAC are listed on this form even if they are subsequently ranked as having a non-significant presence.

Additional recommendations

4.5 Whilst a Conservation Plan exists for Slieve League cSAC, it is now fifteen years old and an up-to-date version is required which should utilise the information provided by this report. Management objectives in the plan need to address the impacts highlighted in this report if progress is to be made towards attaining Favourable status for the Annex I habitats. The major impacts are livestock grazing, turf-cutting by machine and peat erosion.

4.6 Levels of livestock grazing are being addressed through the CFP. Whilst reduction of stock numbers appears to have resulted in some improvement to Annex I habitats, these habitats are not currently attaining Favourable status. Continued monitoring is required to establish what would be sustainable levels of livestock for this site bearing in mind that there may be a considerable delay between changes in livestock levels and a response in the vegetation. The available data do not support an increase in stocking levels.

4.7 Erosion of upland blanket peat is a major impact in ***7130/7130 Blanket bogs.** Whilst some areas of eroded peat may gradually revegetate as a result of reduction of stock numbers in areas of more severe erosion active restoration measures may be needed for this habitat to achieve Favourable status. These may include the damming of erosion gullies, stabilisation of bare peat with geotextiles or heather brash, the planting of *Eriophorum angustifolium*, and seeding of bare peat with *Sphagnum* propagules. The conservation of ***7130 Active blanket bog** should be prioritised as befitting its status.

4.8 Active turf-cutting by sausage machine and machine-cutting of turf banks is occurring at several locations within the site having a major localised impact on ***7130/7130 Blanket bogs**. Appropriate management of machine cutting of turf is required within the site.

4.9 It would be desirable for future phases of monitoring to expand on the network of monitoring stops established by this survey. Placement of additional stops should take into account the spatial distribution of existing stops.

4.10 Monitoring criteria should be developed for **6150 Siliceous alpine and boreal grassland** and **6430 Hydrophilous tall herb communities**. Relevé data collected by this survey will allow these habitats to be, in part, retrospectively assessed.

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APPENDIX 1: ANNEX I HABITATS

The following standard abbreviations are used throughout this report for Annex I habitats. With the exception of habitats 4060, 6150 and 7130, these follow the abbreviations used in NPWS (2008).

Annex I code	Full name of Annex I habitat	Standard abbreviation
1140	Mudflats and sandflats not covered by seawater at low tide	1140 Mudflats and sandflats
1170	Reefs	1170 Reefs
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	1230 Vegetated seas cliffs
3110	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)	3110 Lowland oligotrophic lakes
3130	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	3130 Upland oligotrophic lakes
3160	Natural dystrophic lakes and ponds	3160 Dystrophic lakes
4010	Northern Atlantic wet heaths with *Erica tetralix*	4010 Wet heaths
4030	European dry heaths	4030 Dry heaths
4060	Alpine and Boreal heaths	4060 Alpine and Boreal heaths
6150	Siliceous alpine and boreal grasslands	6150 Siliceous alpine and boreal grasslands
6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	*6230 Species-rich *Nardus* grasslands
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	6430 Hydrophilous tall herb communities
7130	Blanket bogs (* if active bog)	*7130 Active blanket bog or 7130 Inactive blanket bog or *7130/7130 Blanket bog
7140	Transition mires and quaking bogs	7140 Transition mires
7150	Depressions on peat substrates of the Rhynchosporion	7150 *Rhynchosporion* depressions
7230	Alkaline fens	7230 Alkaline fens
8110	Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsetalia ladani*)	8110 Siliceous scree
8120	Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)	8120 Calcareous scree
8210	Calcareous rocky slopes with chasmophytic vegetation	8210 Calcareous rocky slopes
8220	Siliceous rocky slopes with chasmophytic vegetation	8220 Siliceous rocky slopes
8330	Submerged and partially submerged sea caves	8330 Sea caves

APPENDIX 2: PHOTOGRAPHS

Plate A1: *Juniperus communis* subsp. *communis* in dry heath on Slieve League (Photo: Jenni Roche).

Plate A2: *Armeria maritima* and maritime lichens (*Ramalina* sp.) on sea cliffs of Slieve League (Photo: Orla Daly).

Plate A3: 4060 Alpine and Boreal heath vegetation, with *Calluna vulgaris*, *Empetrum nigrum*, *Racomitrium lanuginosum* and *Herbertus aduncus* subsp. *hutchinsiae* above Keeringear (Photo: Mark O'Callaghan).

Plate A4: 4010 Wet heath, with *Calluna vulgaris* and *Trichophorum germanicum*, on the slopes of Leahan (Photo: Rory Hodd).

Plate A5: *7130 Active blanket bog, dominated by *Calluna vulgaris* and *Eriophorum vaginatum*, close to Lough Auva. The summit of Slieve League is in the background (Photo: Rory Hodd).

Plate A6: Mosaic of 4030 Dry heath and 8110 Siliceous scree on the eastern side of Slieve League, below the arête of Keeringear (Photo: Orla Daly).

Plate A7: 8220 Siliceous rocky slope vegetation with *Dryopteris dilatata* and *Primula vulgaris* above Lough Agh (Photo: Rory Hodd).

Plate A8: 8110 Siliceous scree below the ridge of Keeringear (Photo: Mark O'Callaghan).

Plate A9: *6230 Species-rich *Nardus* grassland, with *Festuca rubra* and *Plantago lanceolata* prominent, in the valley of the Pilgrim's Path, Shanbally (Photo: Orla Daly).

Plate A10: Soakway vegetation, with *Potamogeton polygonifolius*, *Hypericum elodes* and *Sphagnum denticulatum*, close to Bunglass (Photo: Mark O'Callaghan).

Plate A11: Trabane beach and Leahan, near Malin Beg. The slopes behind the beach transition from coastal grassland to dense bracken and 4010 Wet heath (Photo: Jenni Roche).

Plate A12: Slieve League and Lough Auva from the slopes of Leahan (Photo: Jenni Roche).

Plate A13: 1230 Vegetated sea cliffs, as viewed from the sea, Croaghlin (Photo: Orla Daly).

APPENDIX 3: PLANT SPECIES LIST

All species recorded from relevés, waypoints and polygons during the NSUH survey are listed.

VASCULAR SPECIES

Species name	Common name
Agrostis canina	Velvet Bent
Agrostis capillaris	Common Bent
Agrostis stolonifera	Creeping Bent
Alchemilla glabra	a Lady's-mantle
Ammophila arenaria	Marram
Anagallis tenella	Bog Pimpernel
Angelica sylvestris	Wild Angelica
Anthoxanthum odoratum	Sweet Vernal-grass
Arctostaphylos uva-ursi	Bearberry
Bellis perennis	Daisy
Blechnum spicant	Hard-fern
Calluna vulgaris	Heather
Campanula rotundifolia	Harebell
Carex bigelowii	Stiff Sedge
Carex binervis	Green-ribbed Sedge
Carex echinata	Star Sedge
Carex flacca	Glaucous Sedge
Carex limosa	Bog-sedge
Carex nigra	Common Sedge
Carex panicea	Carnation Sedge
Carex pulicaris	Flea Sedge
Carex rostrata	Bottle Sedge
Carex viridula	Yellow-sedge
Carex viridula subsp. *brachyrrhyncha*	a Yellow-sedge
Carex viridula subsp. *oedocarpa*	a Yellow-sedge
Cerastium fontanum	Common Mouse-ear
Cirsium palustre	Marsh Thistle
Cladium mariscus	Great Fen-sedge
Crataegus monogyna	Hawthorn
Danthonia decumbens	Heath-grass
Deschampsia cespitosa	Tufted Hair-grass
Deschampsia flexuosa	Wavy Hair-grass
Drosera anglica	Great Sundew
Drosera intermedia	Oblong-leaved Sundew
Drosera rotundifolia	Round-leaved Sundew
Dryopteris dilatata	Broad Buckler-fern
Dryopteris filix-mas	Male-fern
Eleocharis multicaulis	Many-stalked Spike-rush
Eleogiton fluitans	Floating Club-rush

VASCULAR SPECIES

Species name	Common name
Empetrum nigrum	Crowberry
Epilobium brunnescens	New Zealand Willowherb
Equisetum fluviatile	Water Horsetail
Erica cinerea	Bell Heather
Erica tetralix	Cross-leaved Heath
Eriophorum angustifolium	Common Cottongrass
Eriophorum vaginatum	Hare's-tail Cottongrass
Euphrasia officinalis agg.	Eyebright
Festuca ovina	Sheep's-fescue
Festuca rubra	Red Fescue
Festuca vivipara	Viviparous Sheep's-fescue
Fuchsia magellanica	Fuchsia
Galium saxatile	Heath Bedstraw
Hedera helix	Ivy
Hieracium agg.	Hawkweed
Holcus lanatus	Yorkshire-fog
Huperzia selago	Fir Clubmoss
Hydrocotyle vulgaris	Marsh Pennywort
Hymenophyllum wilsonii	Wilson's Filmy-Fern
Hypericum elodes	Marsh St John's-wort
Hypericum pulchrum	Slender St John's-wort
Jasione montana	Jasione montana
Juncus acutiflorus	Sharp-flowered Rush
Juncus bulbosus	Bulbous Rush
Juncus squarrosus	Heath Rush
Juniperus communis	Common Juniper
Juniperus communis subsp. *communis*	a Common Juniper
Juniperus communis subsp. *nana*	a Common Juniper
Leontodon autumnalis	Autumn Hawkbit
Listera cordata	Lesser Twayblade
Lotus corniculatus	Common Bird's-foot-trefoil
Luzula sp.	a Wood-rush
Menyanthes trifoliata	Bogbean
Molinia caerulea	Purple Moor-grass
Myrica gale	Bog-myrtle
Nardus stricta	Mat-grass
Narthecium ossifragum	Bog Asphodel
Oxalis acetosella	Wood-sorrel
Pedicularis palustris	Marsh Lousewort
Pedicularis sylvatica	Lousewort
Phragmites sp.	a Reed
Picea sp.	a Spruce
Pinguicula vulgaris	Common Butterwort

VASCULAR SPECIES

Species name	Common name
Pinus sylvestris	Scots Pine
Plantago coronopus	Buck's-horn Plantain
Plantago lanceolata	Ribwort Plantain
Plantago maritima	Sea Plantain
Polygala serpyllifolia	Heath Milkwort
Polypodium vulgare	Polypody
Potamogeton polygonifolius	Bog Pondweed
Potentilla erecta	Tormentil
Primula vulgaris	Primrose
Prunus spinosa	Blackthorn
Ranunculus bulbosus	Bulbous Buttercup
Ranunculus flammula	Lesser Spearwort
Rhynchospora alba	White Beak-sedge
Rubus fruticosus agg.	Brambles
Salix herbacea	Dwarf Willow
Salix repens	Creeping Willow
Saxifraga aizoides	Yellow Saxifrage
Saxifraga oppositifolia	Purple Saxifrage
Saxifraga stellaris	Starry Saxifrage
Schoenus nigricans	Black Bog-rush
Sedum anglicum	English Stonecrop
Sedum rosea	Roseroot
Selaginella selaginoides	Lesser Clubmoss
Solidago virgaurea	Goldenrod
Sorbus aucuparia	Rowan
Succisa pratensis	Devil's-bit Scabious
Taraxacum officinale agg.	Dandelion
Thymus polytrichus	Wild Thyme
Trichophorum germanicum	Deergrass
Trifolium repens	White Clover
Ulex sp.	a Gorse
Utricularia intermedia	a Bladderwort
Vaccinium myrtillus	Bilberry
Vaccinium vitis-idaea	Cowberry
Viola palustris	Marsh Violet
Viola riviniana	Common Dog-violet

BRYOPHYTES

Species name	Common name
Adelanthus lindenbergianus	Lindenberg's Featherwort
Amphidium mougeotii	Mougeot's Yoke-moss
Anastrepta orcadensis	Orkney Notchwort
Aneura pinguis	Greasewort
Anthelia juratzkana	Scarce Silverwort
Asplenium viride	Green Spleenwort
Aulacomnium palustre	Bog Groove-moss
Barbilophozia attenuata	Trunk Pawwort
Barbilophozia floerkei	Common Pawwort
Bazzania tricrenata	Lesser Whipwort
Blindia acuta	Sharp-leaved Blindia
Brachythecium rutabulum	Rough-stalked Feather-moss
Breutelia chrysocoma	Golden-head Moss
Bryum pseudotriquetrum	Marsh Bryum
Calliergonella cuspidata	Pointed Spear-moss
Calypogeia arguta	Notched Pouchwort
Calypogeia fissa	Common Pouchwort
Calypogeia muelleriana	Mueller's Pouchwort
Campylium stellatum	Yellow Starry Feather-moss
Campylopus atrovirens	Bristly Swan-neck Moss
Campylopus flexuosus	Rusty Swan-neck Moss
Campylopus introflexus	Heath Star Moss
Cephalozia bicuspidata	Two-horned Pincerwort
Cephalozia catenulata	Chain Pincerwort
Cephalozia lunulifolia	Moon-leaved Pincerwort
Cephalozia macrostachya var. *macrostachya*	a Bog Pincerwort
Chiloscyphus polyanthos	St Winifrid's Moss
Conocephalum sp.	a Scented Liverwort
Cratoneuron filicinum	Fern-leaved Hook-moss
Crepis paludosa	Marsh Hawk's-beard
Ctenidium molluscum	Chalk Comb-moss
Dicranella heteromalla	Silky Forklet-moss
Dicranum majus	Greater Fork-moss
Dicranum scoparium	Broom Fork-moss
Diplophyllum albicans	White Earwort
Ditrichum gracile	Slender Ditrichum
Entosthodon attenuatus	Thin Cord-moss
Fissidens adianthoides	Maidenhair Pocket-moss
Fissidens dubius	Rock Pocket-moss
Fossombronia angulosa	Greater Frillwort
Frullania tamarisci	Tamarisk Scalewort
Frullania teneriffae	Sea Scalewort
Glyphomitrium daviesii	Black-tufted Moss
Grimmia pulvinata	Grey-cushioned Grimmia

BRYOPHYTES

Species name	Common name
Gymnocolea inflata	Inflated Notchwort
Gymnomitrion crenulatum	Western Frostwort
Hedwigia stellata	Starry Hoar-moss
Herbertus aduncus	Juniper Prongwort
Heterocladium heteropterum	Wry-leaved Tamarisk-moss
Hookeria lucens	Shining Hookeria
Hylocomium splendens	Glittering Wood-moss
Hypnum cupressiforme var. *lacunosum*	Great Plait-moss
Hypnum jutlandicum	Heath Plait-moss
Isothecium myosuroides	Slender Mouse-tail Moss
Isothecium myosuroides var. *brachythecioides*	a Slender Mouse-tail Moss
Jungermannia atrovirens	Dark-green Flapwort
Kindbergia praelonga	Common Feather-moss
Kurzia pauciflora	Bristly Fingerwort
Kurzia trichoclados	Heath Fingerwort
Leiocolea fitzgeraldiae	Fitzgerald's Notchwort
Lejeunea patens	Pearl Pouncewort
Lepidozia pearsonii	Pearson's Fingerwort
Lepidozia reptans	Creeping Fingerwort
Leucobryum glaucum	Large White-moss
Lophocolea bidentata	Bifid Crestwort
Lophozia incisa	Jagged Notchwort
Lophozia ventricosa	Tumid Notchwort
Marsupella emarginata	Notched Rustwort
Mnium hornum	Swan's-neck Thyme-moss
Mylia taylorii	Taylor's Flapwort
Nardia geoscyphus	Earth-cup Flapwort
Nowellia curvifolia	Wood-rust
Odontoschisma denudatum	Matchstick Flapwort
Odontoschisma sphagni	Bog-m Flapwort
Orthothecium intricatum	Fine-leaved Leskea
Orthothecium rufescens	Red Leskea
Palustriella falcata	Claw-leaved Hook-moss
Pellia endiviifolia	Endive Pellia
Pellia epiphylla	Overleaf Pellia
Philonotis fontana	Fountain Apple-moss
Plagiochila spinulosa	Spotty Featherwort
Plagiothecium succulentum	Juicy Silk-moss
Plagiothecium undulatum	Waved Silk-moss
Pleurozia purpurea	Purple Spoonwort
Pleurozium schreberi	Red-stemmed Feather-moss
Pogonatum urnigerum	Urn Haircap
Pohlia wahlenbergii	Pale Glaucous Thread-moss

BRYOPHYTES

Species name	Common name
Polytrichum alpinum	Alpine Haircap
Polytrichum commune	Common Haircap
Polytrichum formosum	Bank Haircap
Preissia quadrata	Narrow Mushroom-headed Liverwort
Pseudoscleropodium purum	Neat Feather-moss
Pseudotaxiphyllum elegans	Elegant Silk-moss
Ptychomitrium polyphyllum	Long-shanked Pincushion
Racomitrium aciculare	Yellow Fringe-moss
Racomitrium fasciculare	Green Mountain Fringe-moss
Racomitrium heterostichum	Bristly Fringe-moss
Racomitrium lanuginosum	Woolly Fringe-moss
Racomitrium sudeticum	Slender Fringe-moss
Rhytidiadelphus loreus	Little Shaggy-moss
Rhytidiadelphus squarrosus	Springy Turf-moss
Rhytidiadelphus triquetrus	Big Shaggy-moss
Riccardia chamedryfolia	Jagged Germanderwort
Riccardia multifida	Delicate Germanderwort
Riccardia palmata	Palmate Germanderwort
Saccogyna viticulosa	Straggling Pouchwort
Sarmentypnum exannulatum	Ringless Hook-moss
Sarmentypnum sarmentosum	Twiggy Spear-moss
Scapania aspera	Rough Earwort
Scapania gracilis	Western Earwort
Scapania undulata	Water Earwort
Schistidium sp.	a Grimmia
Scorpidium revolvens	Rusty Hook-moss
Sphagnum austinii	Austin's Bog-moss
Sphagnum capillifolium	Red Bog-moss
Sphagnum capillifolium subsp. *rubellum*	a Red Bog-moss
Sphagnum compactum	Compact Bog-moss
Sphagnum cuspidatum	Feathery Bog-moss
Sphagnum denticulatum	Cow-horn Bog-moss
Sphagnum fallax	Flat-topped Bog-moss
Sphagnum inundatum	Lesser Cow-horn Bog-moss
Sphagnum magellanicum	Magellanic Bog-moss
Sphagnum palustre	Blunt-leaved Bog-moss
Sphagnum papillosum	Papillose Bog-moss
Sphagnum subnitens	Lustrous Bog-moss
Sphagnum tenellum	Soft Bog-moss
Splachnum sphaericum	Round-fruited Collar-moss
Straminergon stramineum	Straw Spear-moss
Thuidium tamariscinum	Common Tamarisk-moss
Tortella tortuosa	Frizzled Crisp-moss

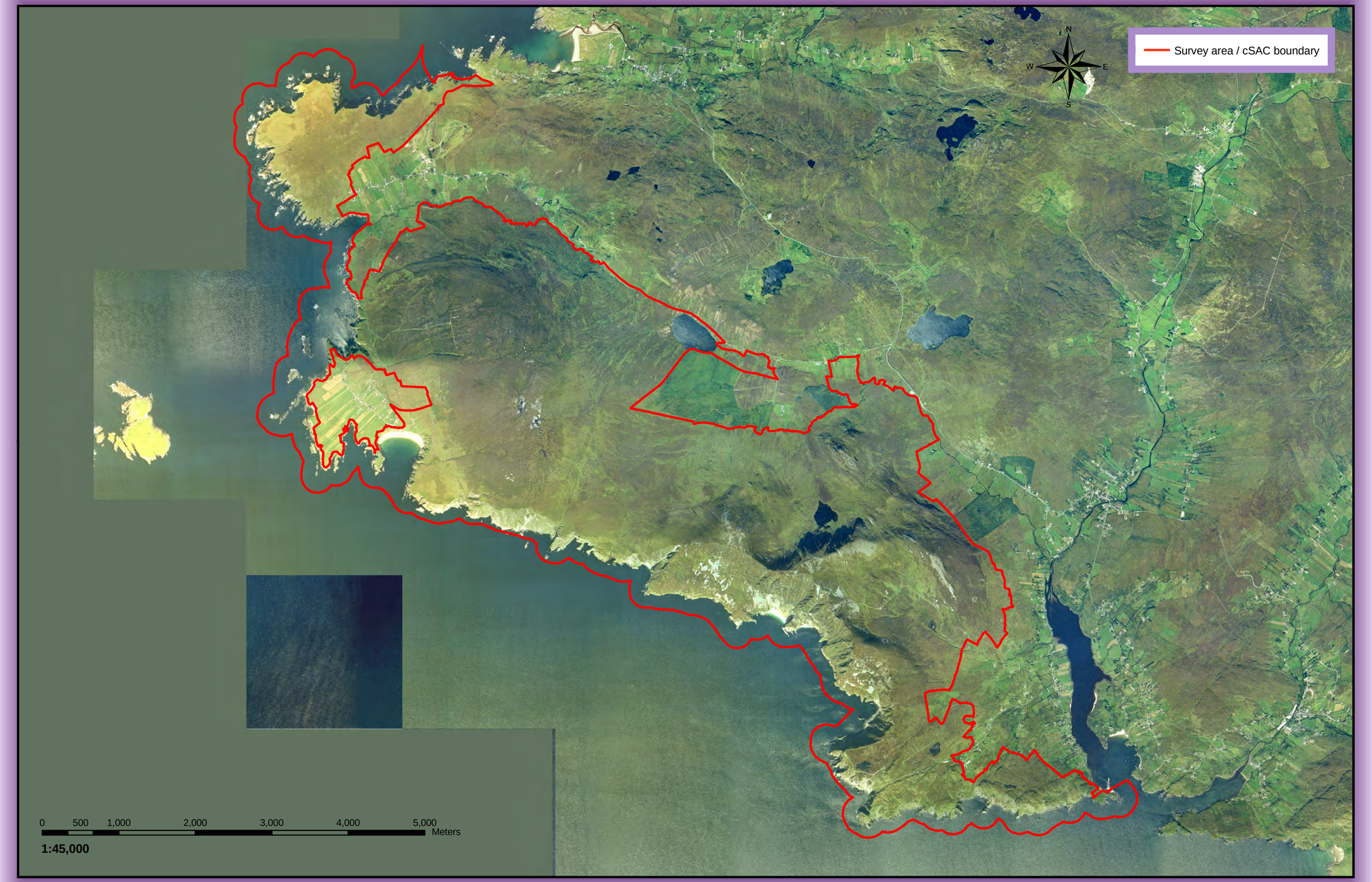
BRYOPHYTES

Species name	Common name
Trichostomum brachydontium	Variable Crisp-moss
Tritomaria quinquedentata	Lyon's Notchwort
Ulota hutchinsiae	Hutchins' Pincushion
Ulota phyllantha	Frizzled Pincushion

LICHENS

Species name	Species name
Bunodophoron melanocarpum	*Cladonia squamosa*
Cladonia arbuscula	*Cladonia strepsilis*
Cladonia arbuscula subsp. *squarrosa*	*Cladonia subcervicornis*
Cladonia bellidiflora	*Cladonia uncialis*
Cladonia cervicornis	*Cladonia uncialis* subsp. *biuncialis*
Cladonia ciliata	*Parmelia omphalodes*
Cladonia ciliata var. *tenuis*	*Peltigera canina*
Cladonia coccifera	*Peltigera hymenina*
Cladonia crispata var. *cetrariiformis*	*Pycnothelia papillaria*
Cladonia furcata	*Stereocaulon dactylophyllum*
Cladonia portentosa	*Stereocaulon evolutum*

Figure 1. Survey area / boundary of Slieve League cSAC (000189), Co. Donegal



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NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 2. Primary Fossitt habitats within Slieve League cSAC (000189), Co. Donegal

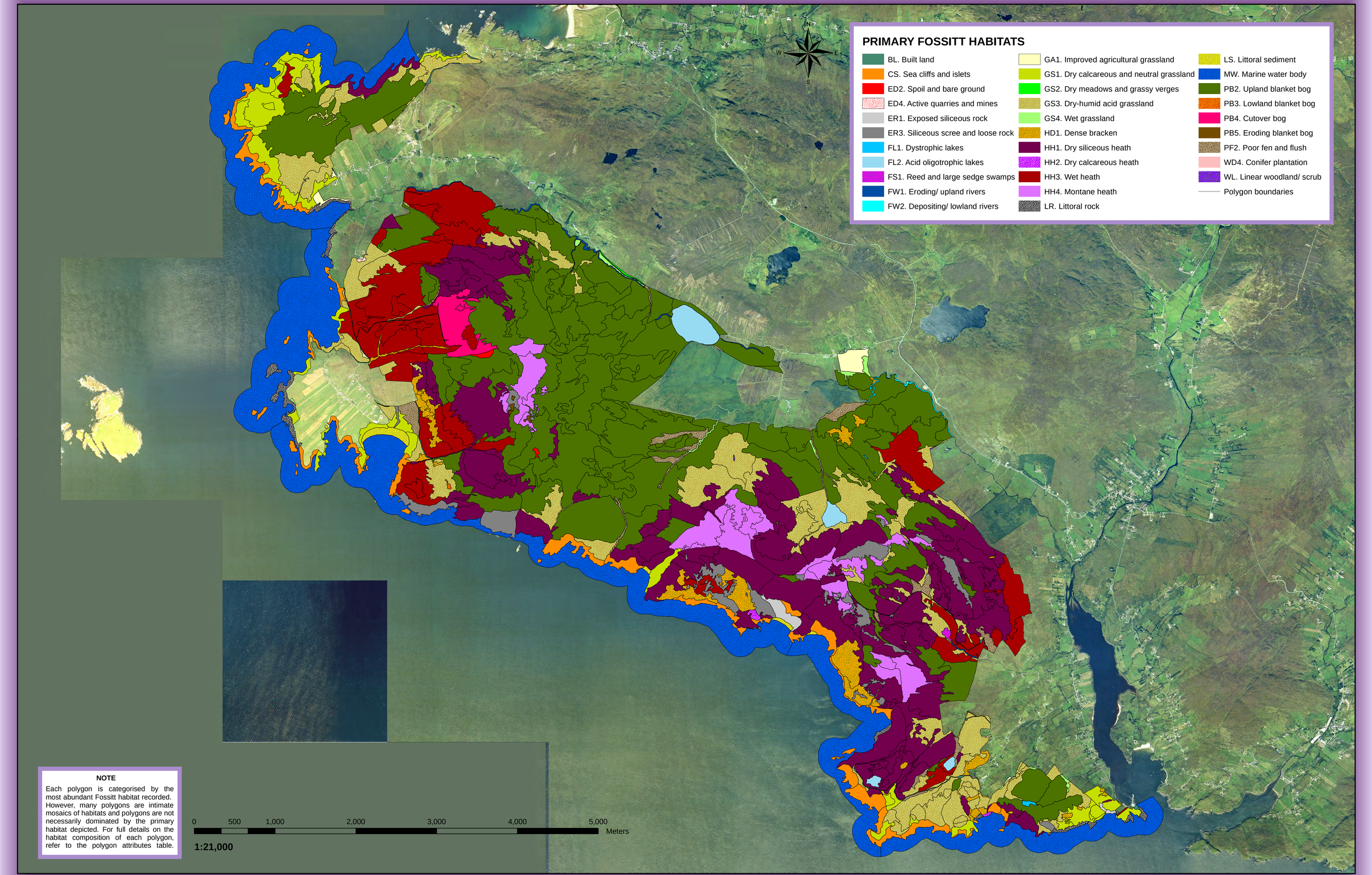

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Figure 3. Primary Annex I habitats within Slieve League cSAC (000189), Co. Donegal

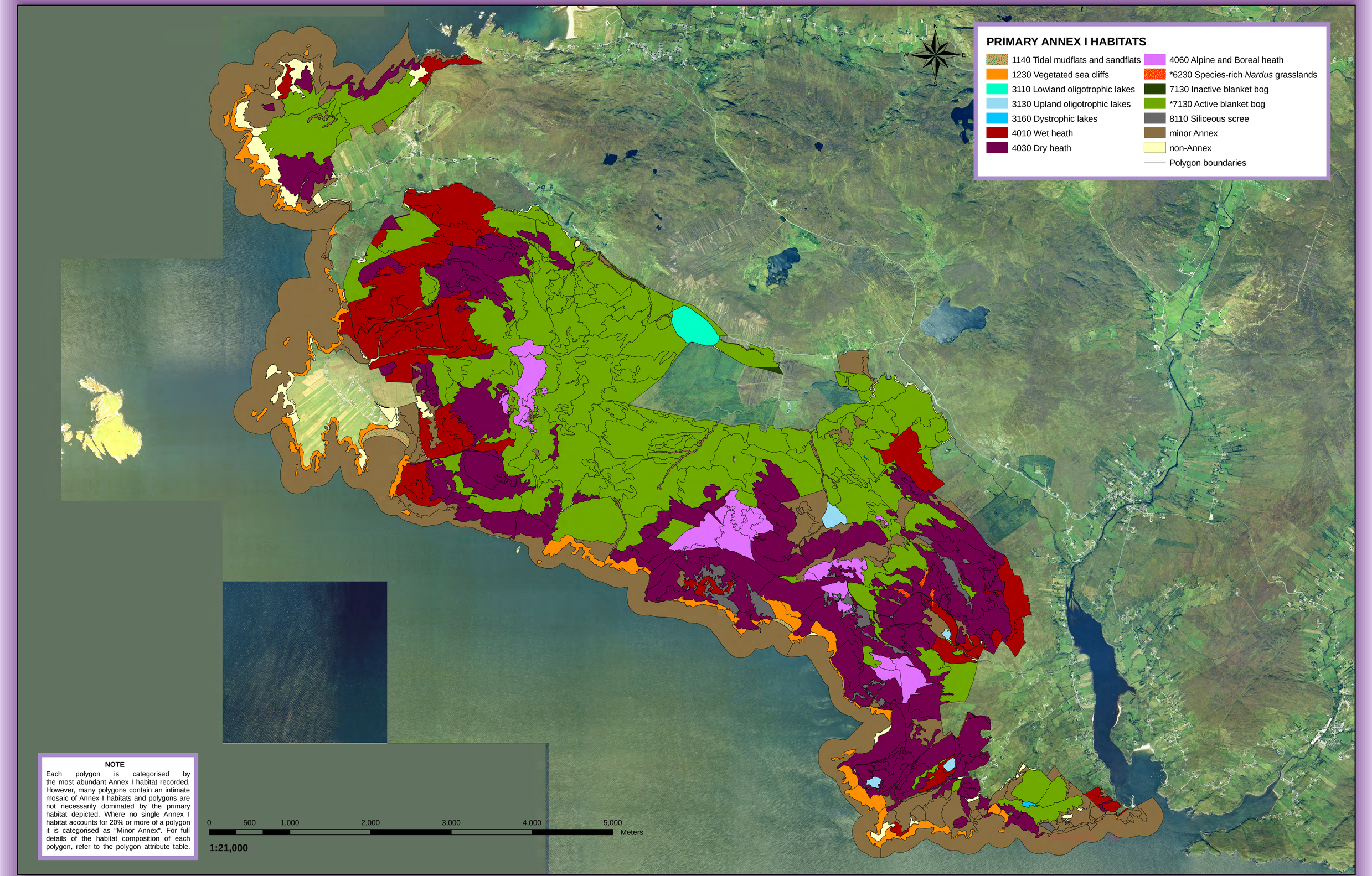

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Figure 4a. Cover of 4010 WET HEATH within Slieve League cSAC (000189), Co. Donegal

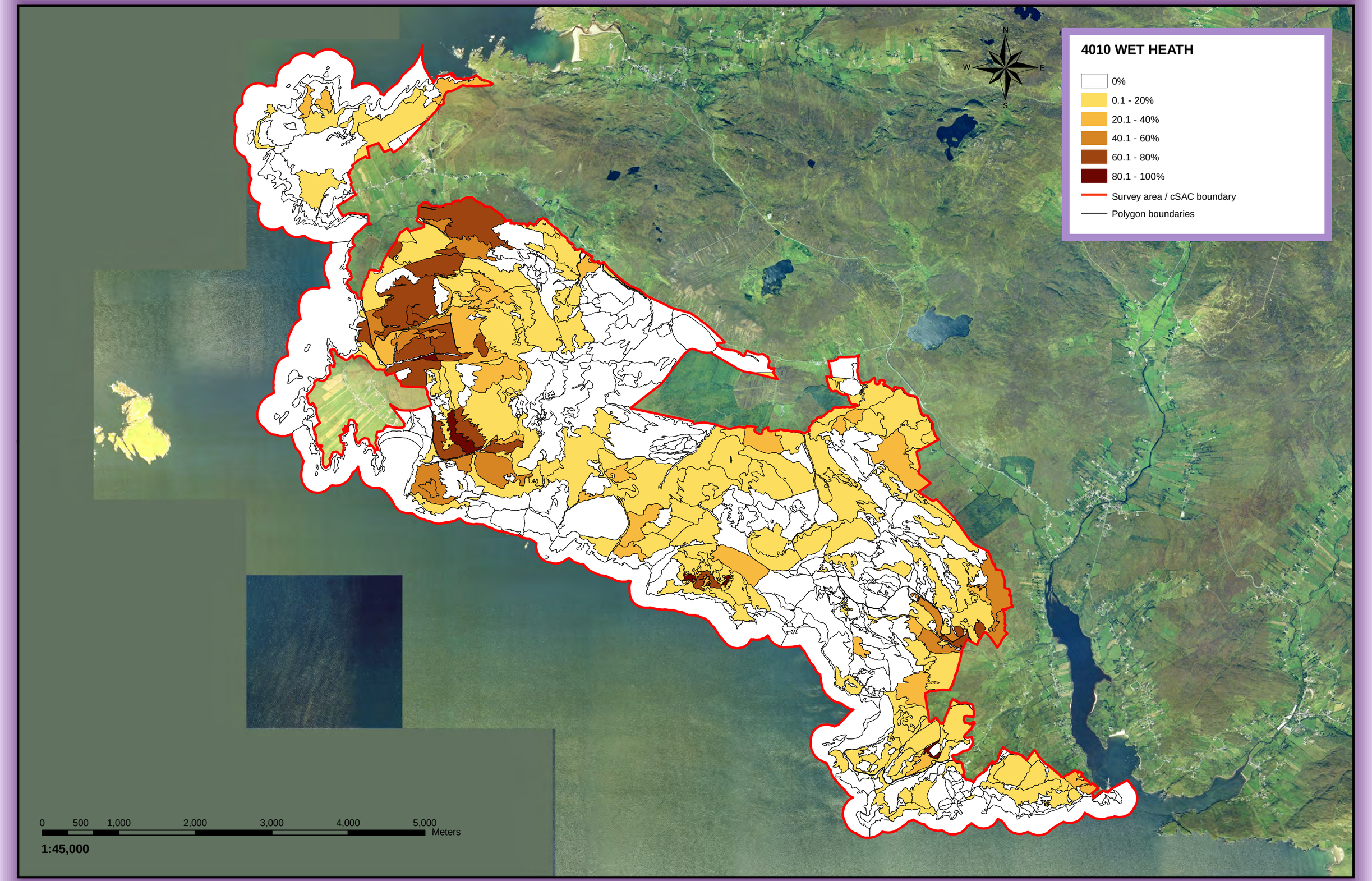

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Figure 4b. Cover of 4030 DRY HEATH within Slieve League cSAC (000189), Co. Donegal

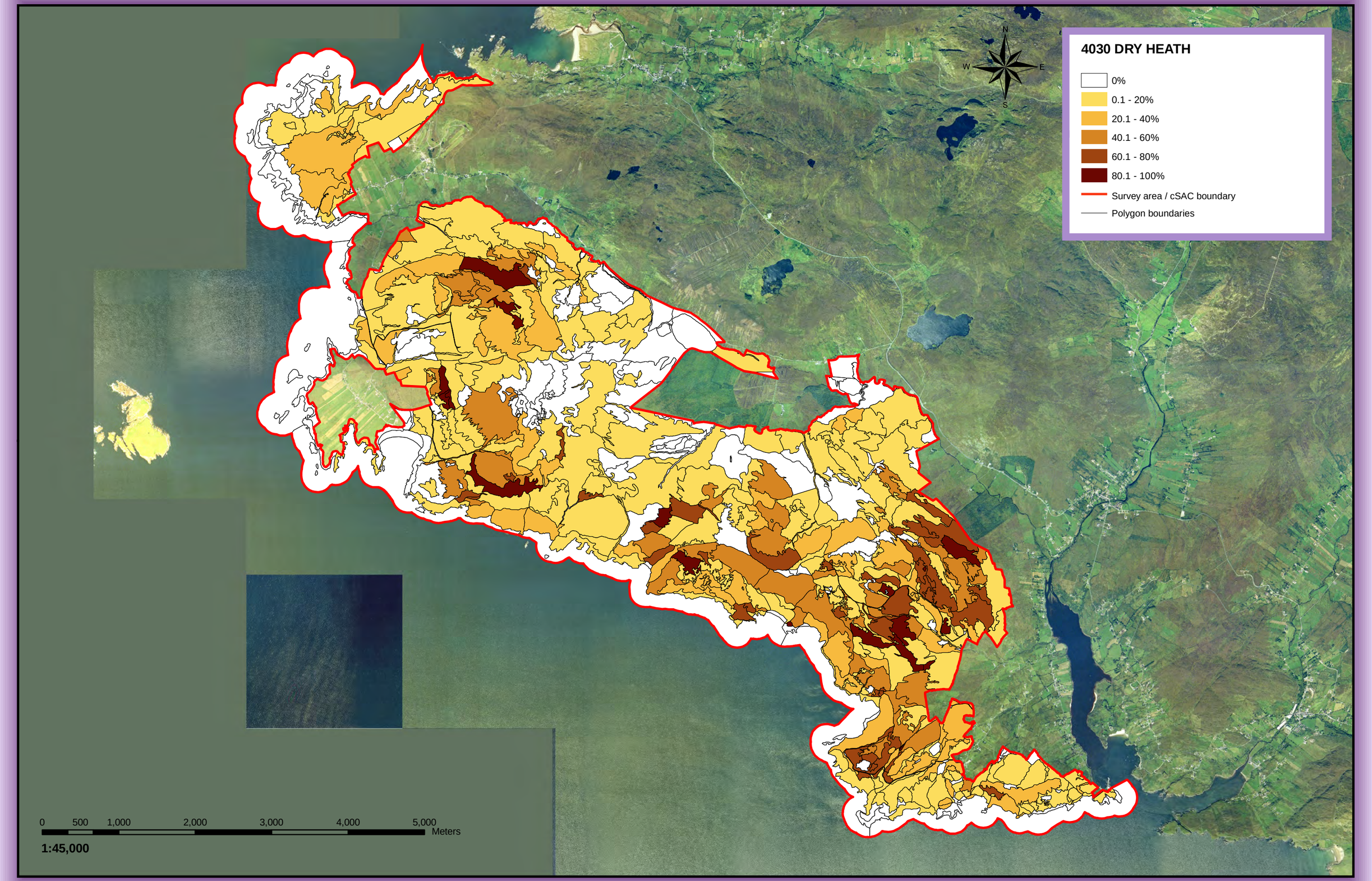

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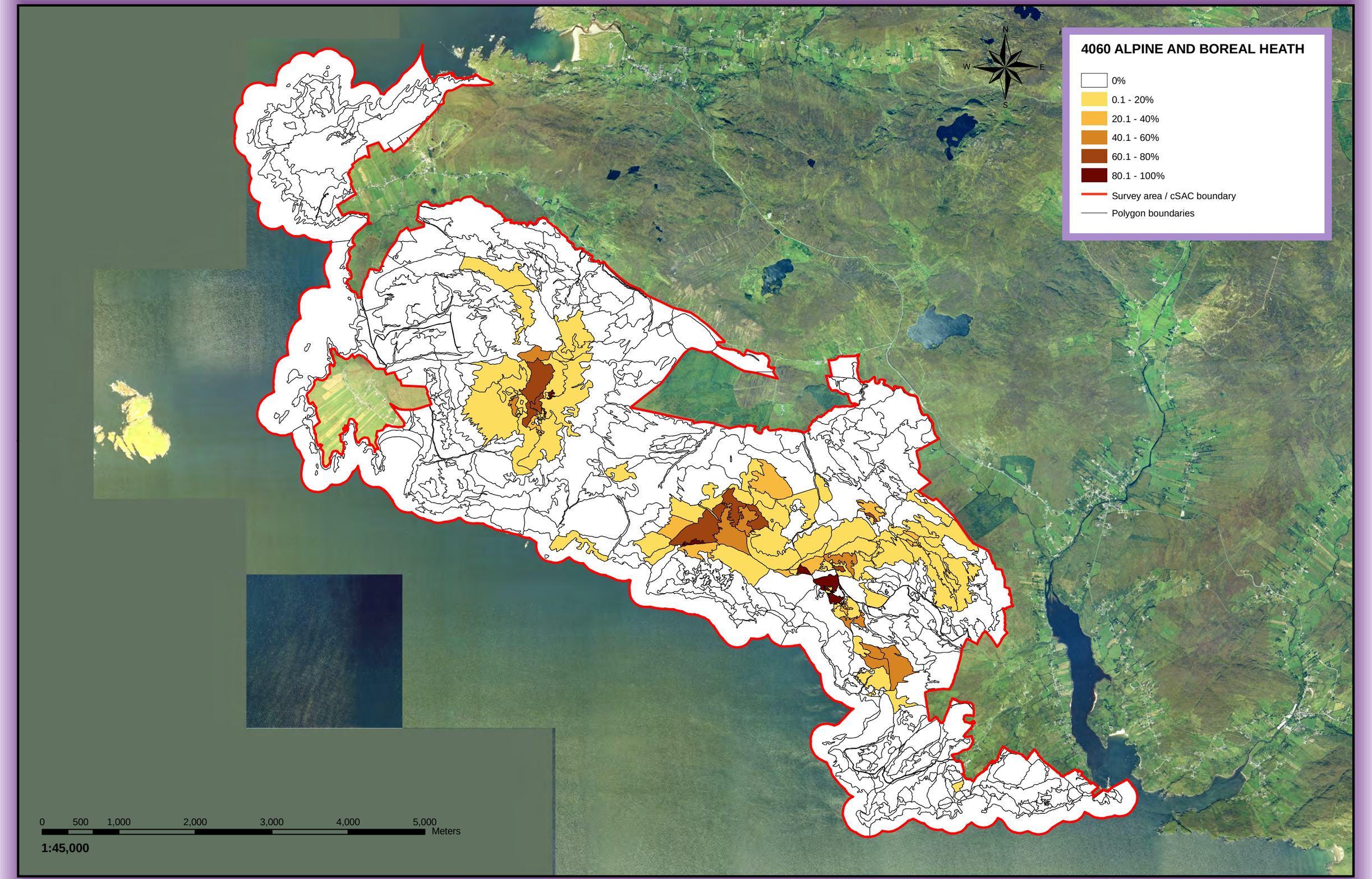
Figure 4c. Cover of 4060 ALPINE AND BOREAL HEATH within Slieve League cSAC (000189), Co. Donegal



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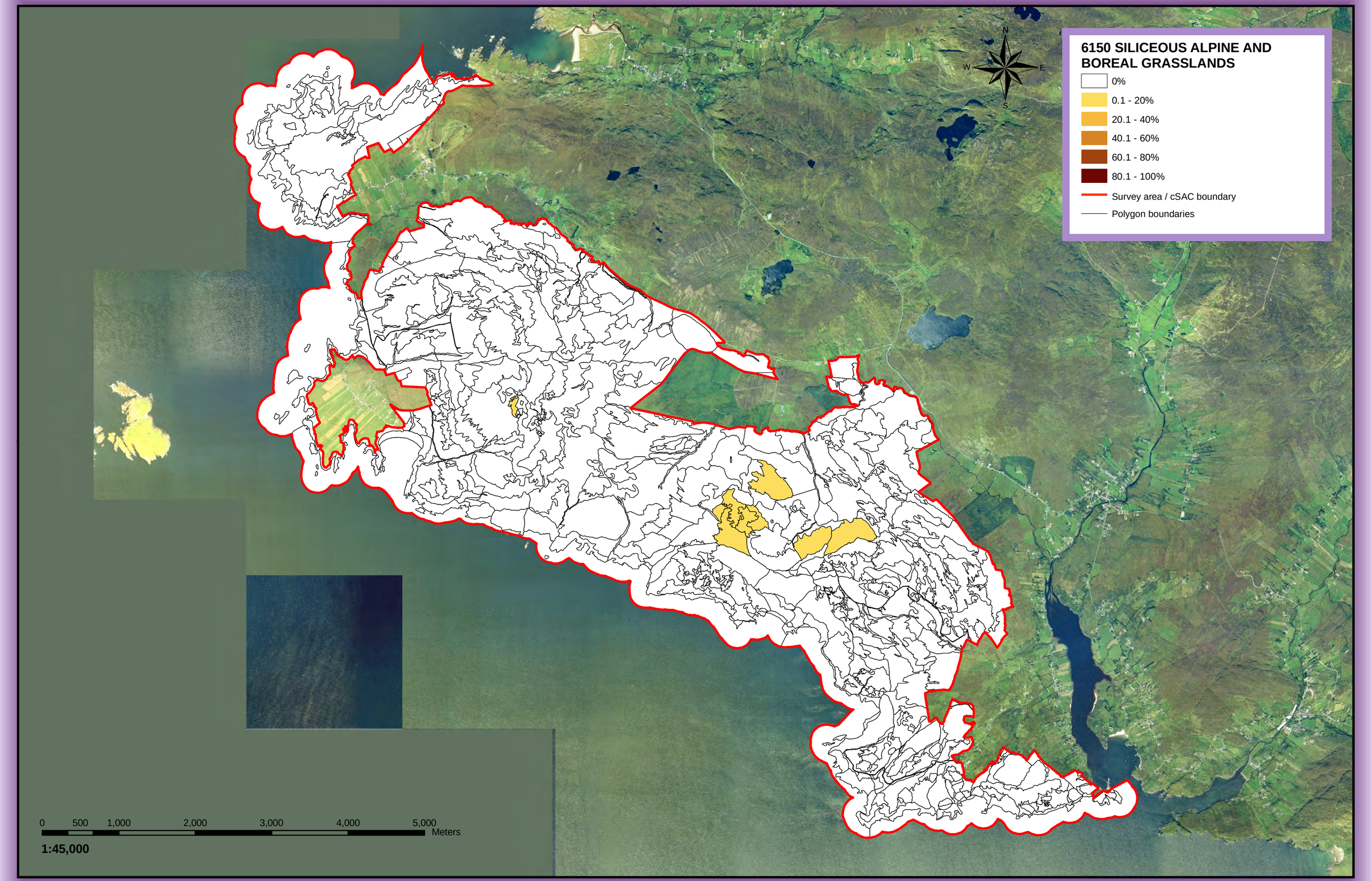
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4d. Cover of 6150 SILICEOUS ALPINE AND BOREAL GRASSLANDS within Slieve League cSAC (000189), Co. Donegal



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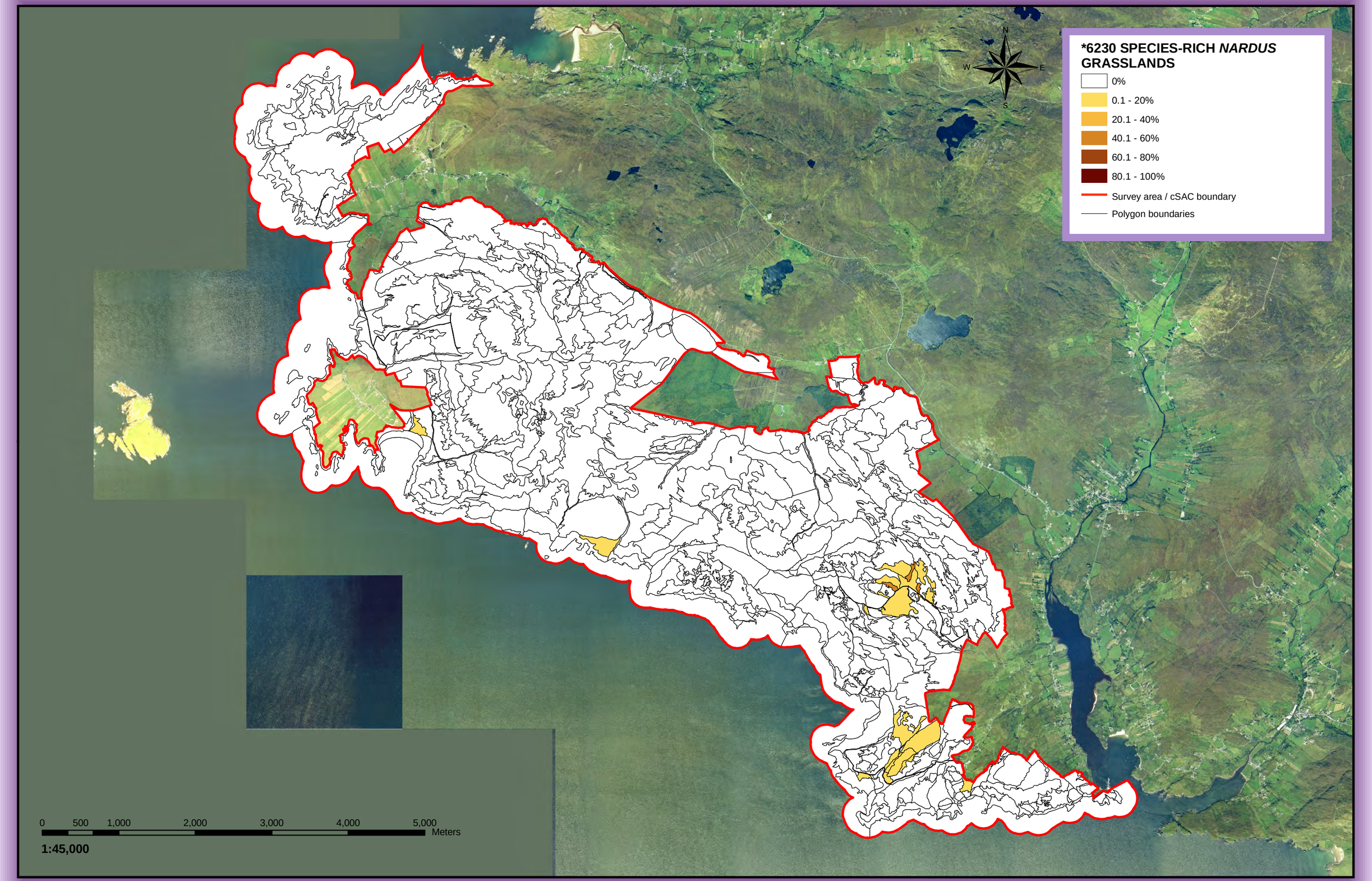
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4e. Cover of *6230 SPECIES-RICH *NARDUS* GRASSLANDS within Slieve League cSAC (000189), Co. Donegal



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NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4f. Cover of 6430 HYDROPHILOUS TALL HERB COMMUNITIES within Slieve League cSAC (000189), Co. Donegal

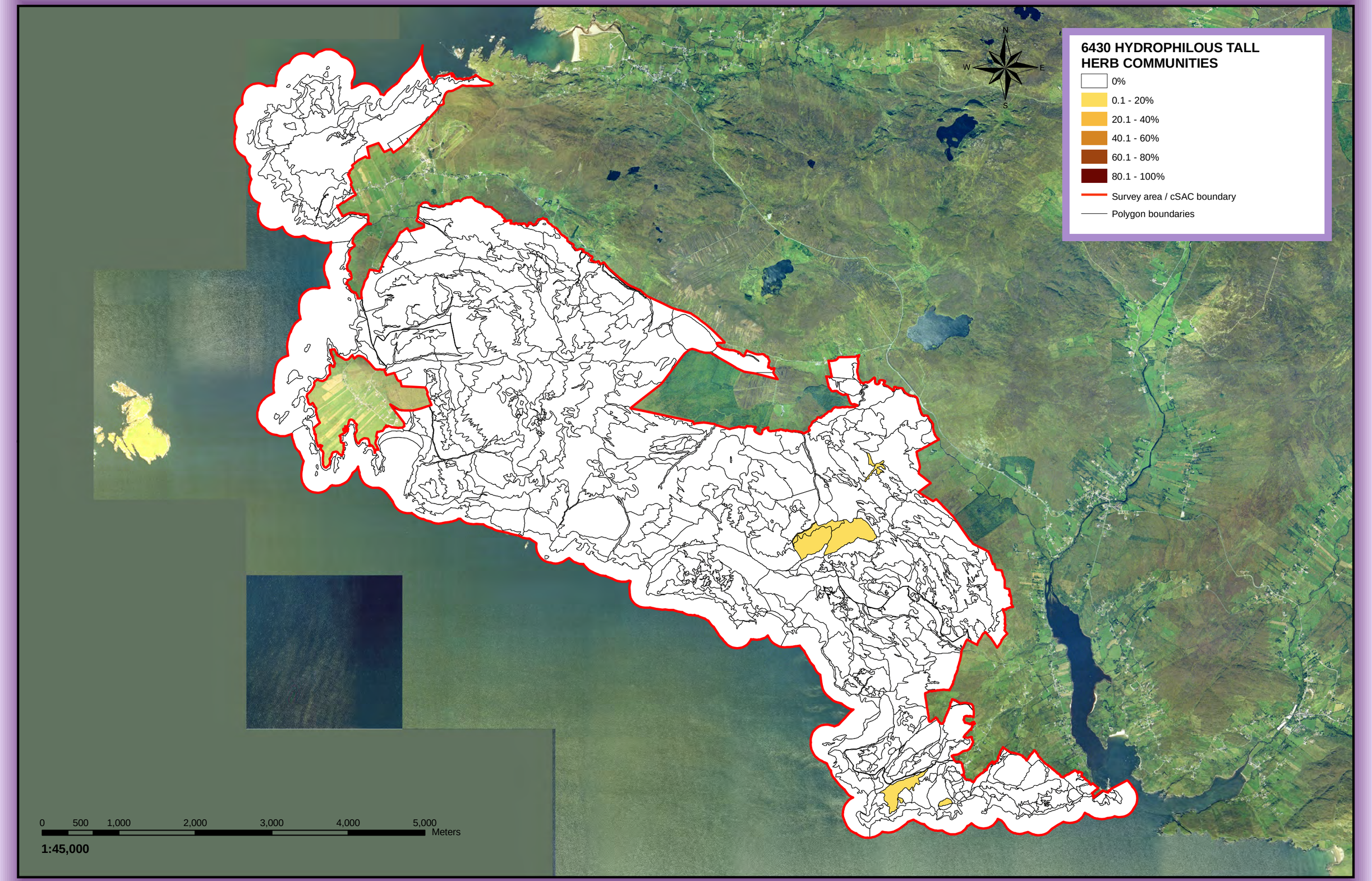

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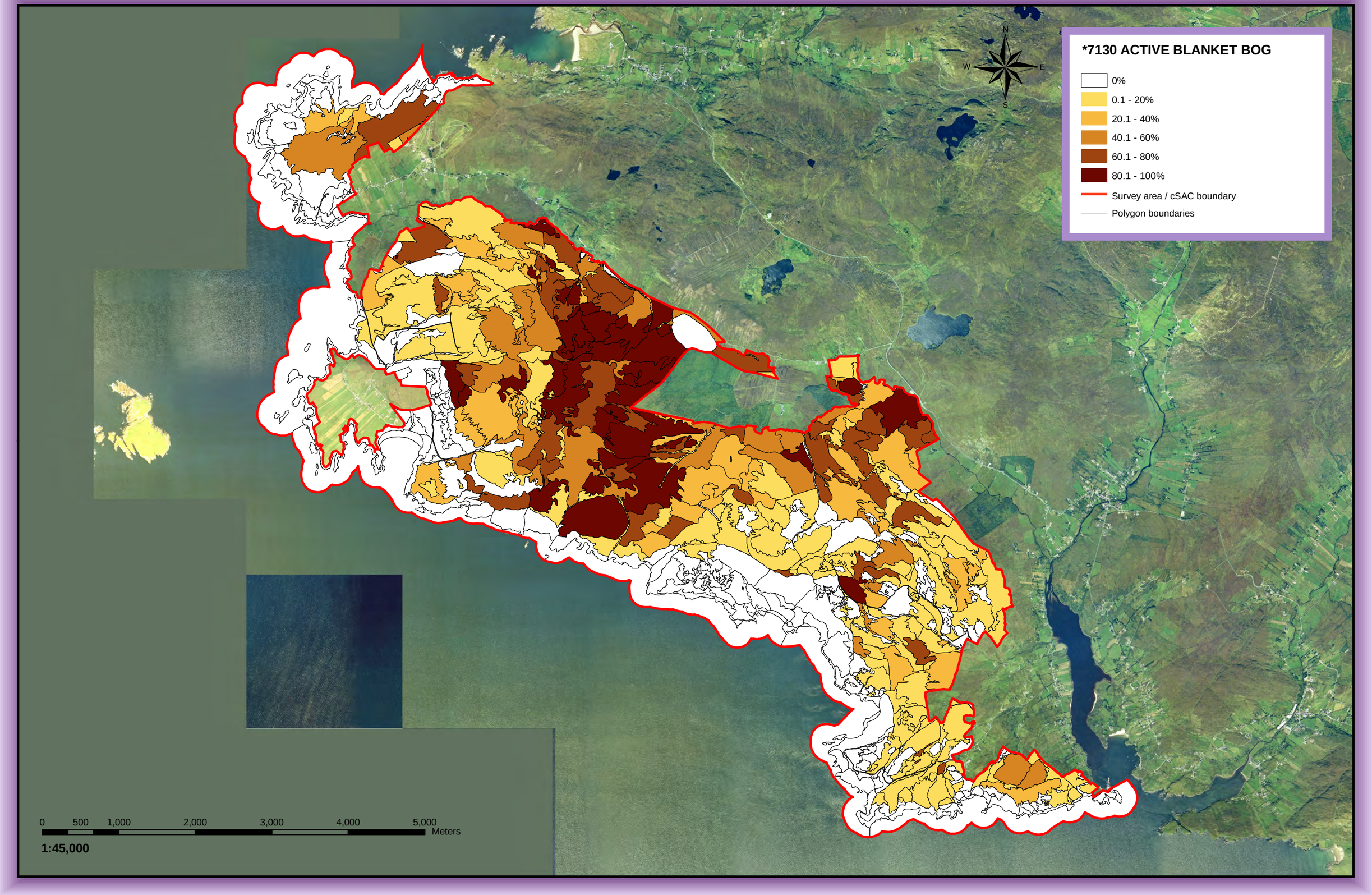
Figure 4g. Cover of *7130 ACTIVE BLANKET BOG within Slieve League cSAC (000189), Co. Donegal



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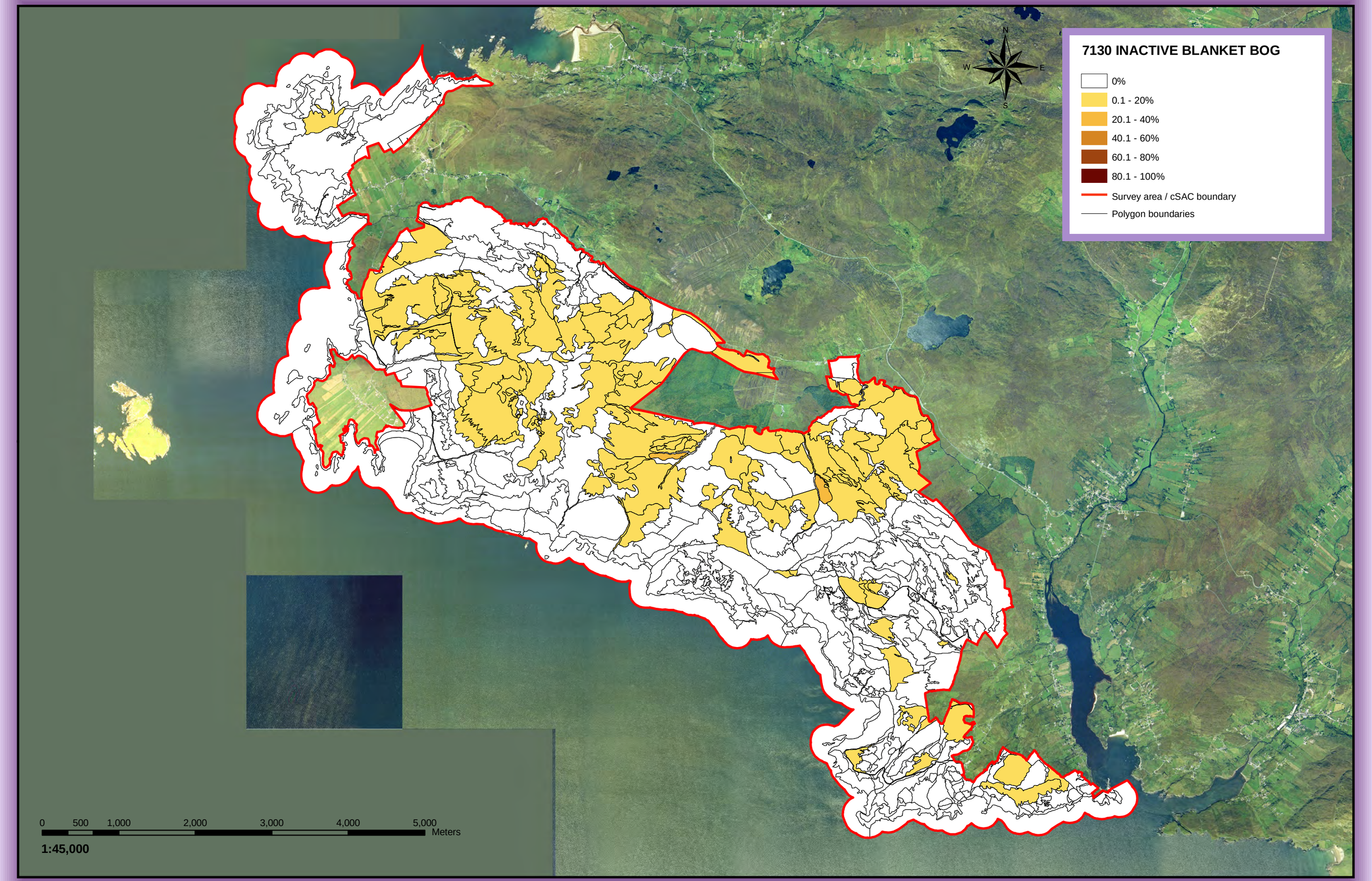
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4h. Cover of 7130 INACTIVE BLANKET BOG within Slieve League cSAC (000189), Co. Donegal



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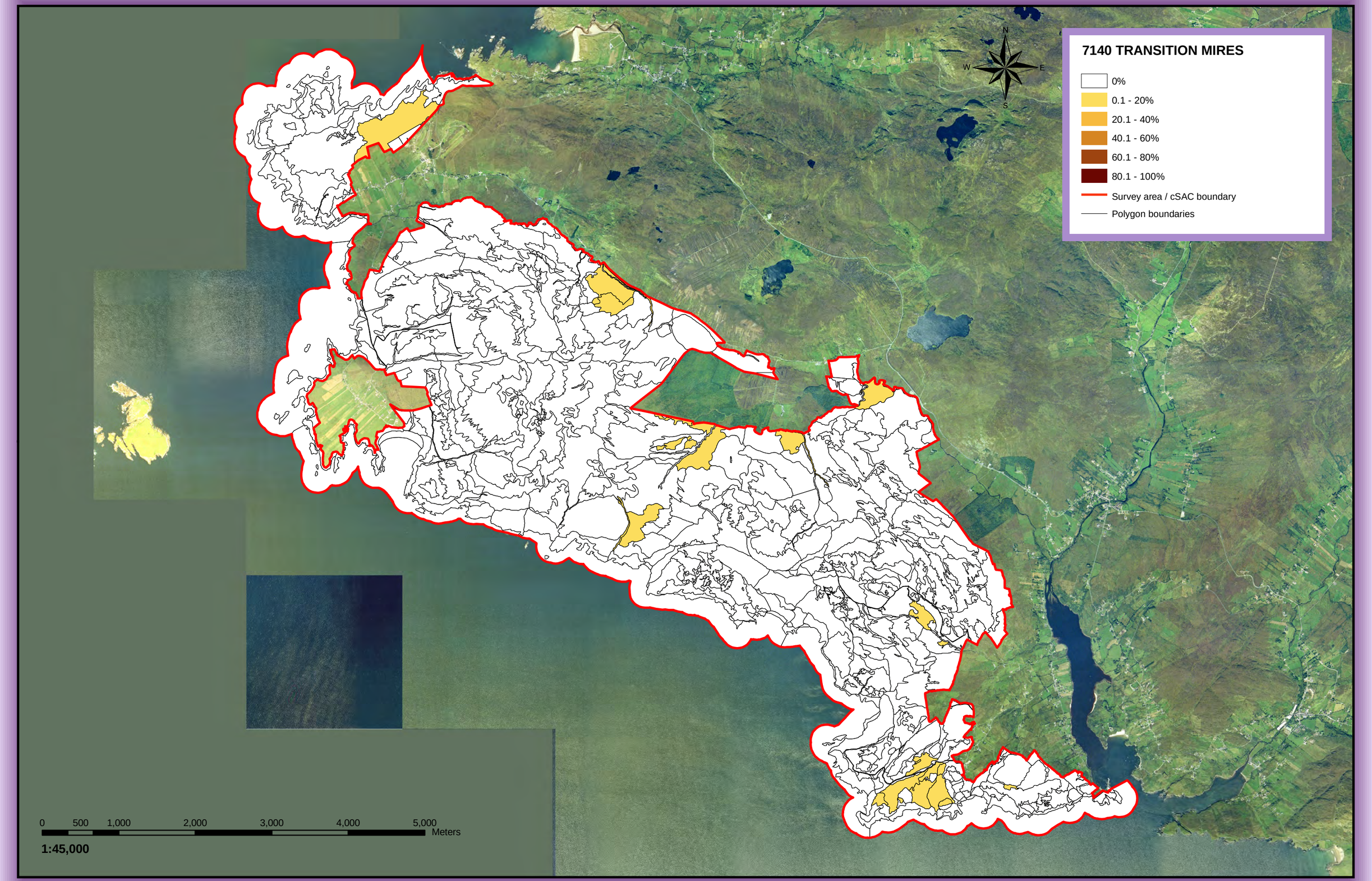
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4i. Cover of 7140 TRANSITION MIRES within Slieve League cSAC (000189), Co. Donegal



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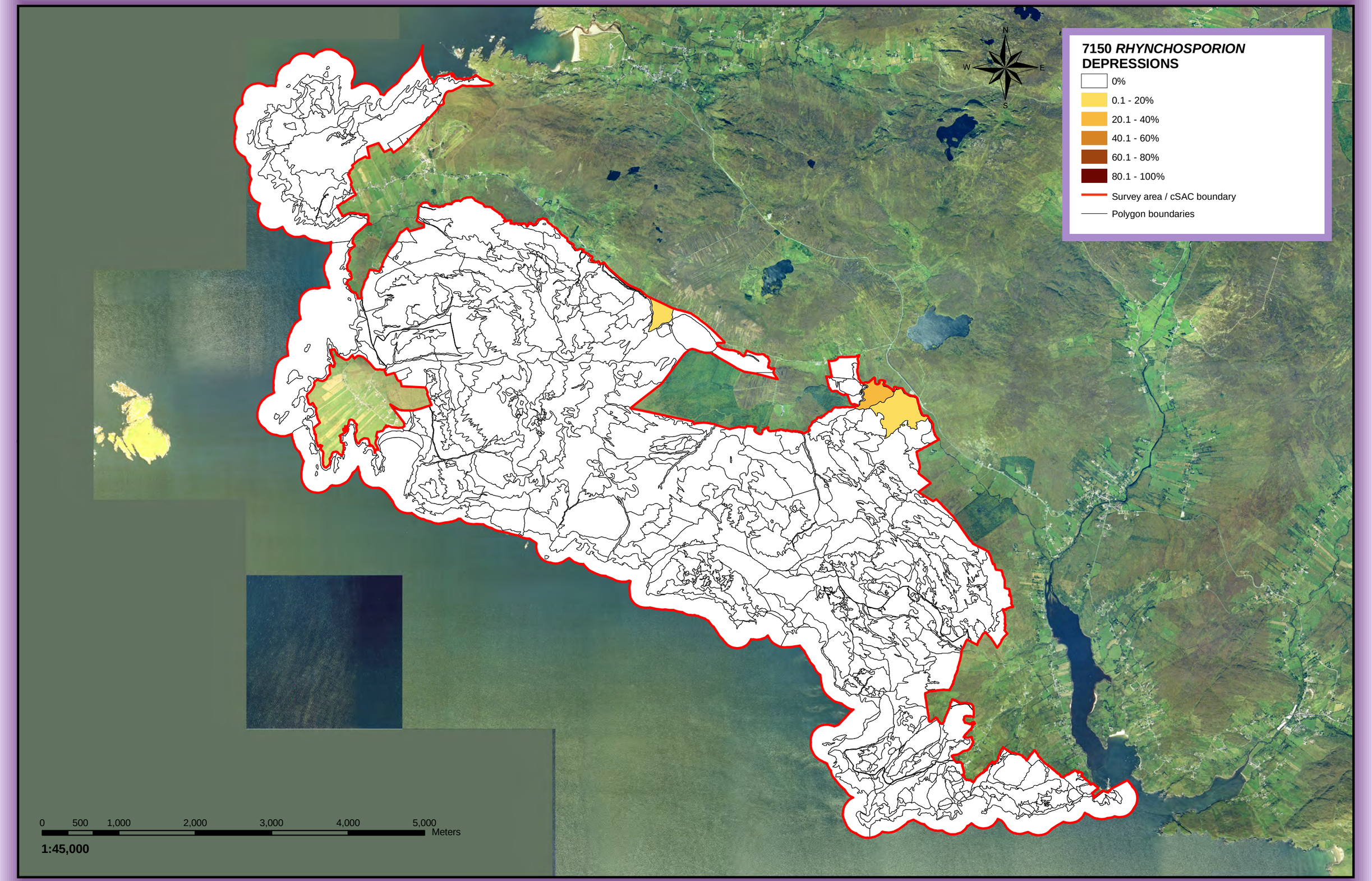
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4j. Cover of 7150 *RHYNCHOSPORION* DEPRESSIONS within Slieve League cSAC (000189), Co. Donegal



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NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4k. Cover of 7230 ALKALINE FENS within Slieve League cSAC (000189), Co. Donegal

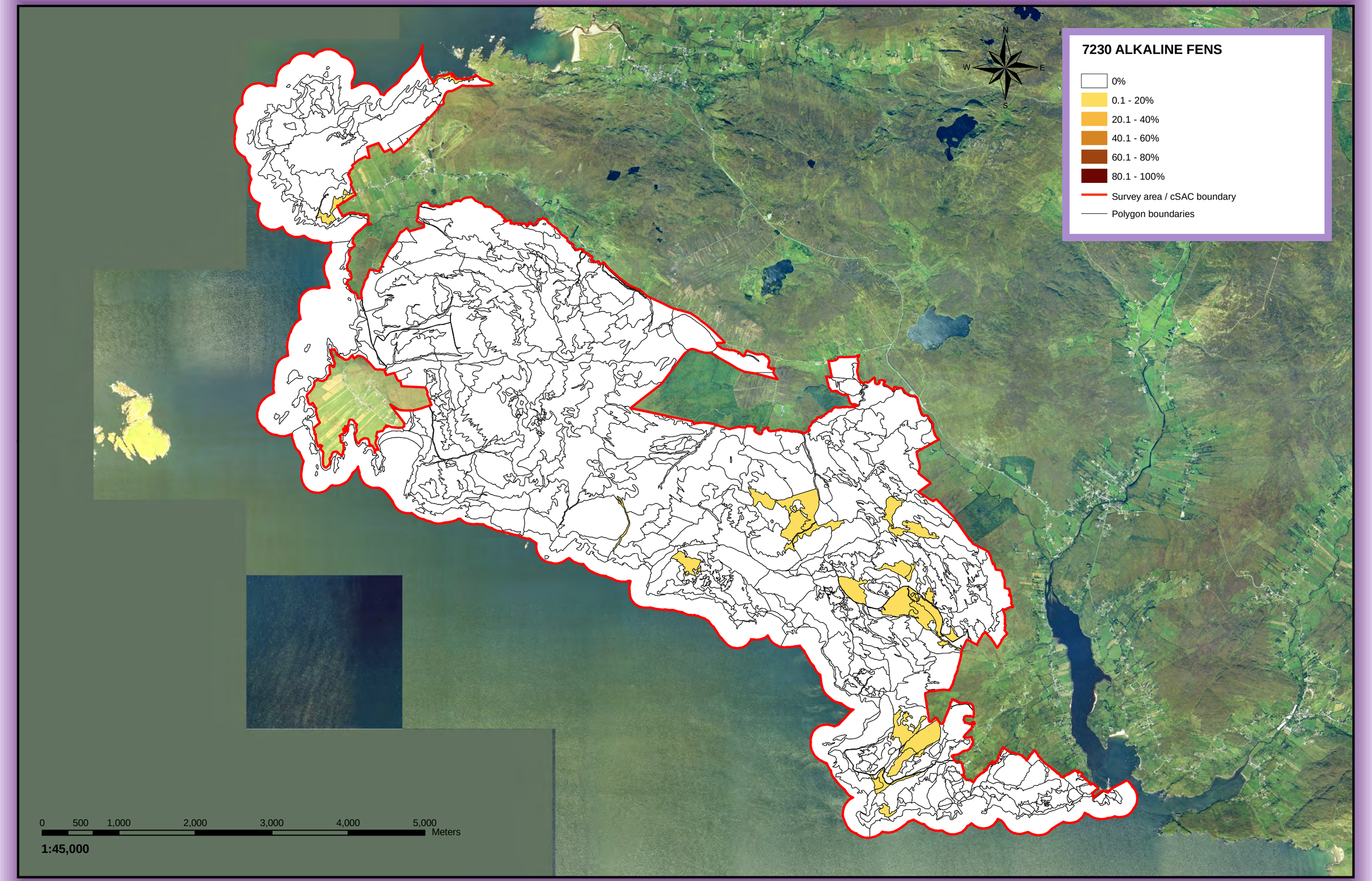

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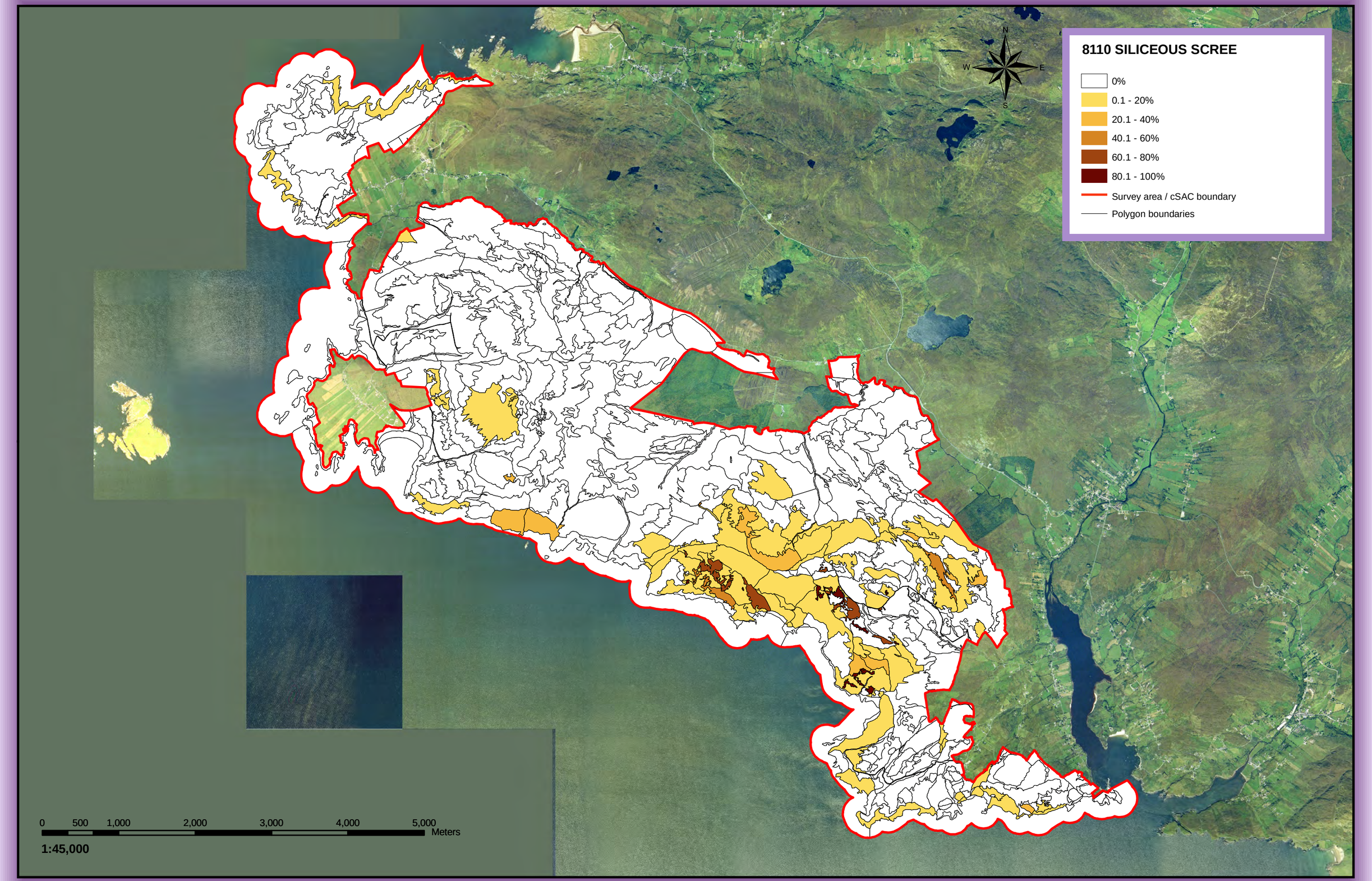
Figure 4l. Cover of 8110 SILICEOUS SCREE within Slieve League cSAC (000189), Co. Donegal



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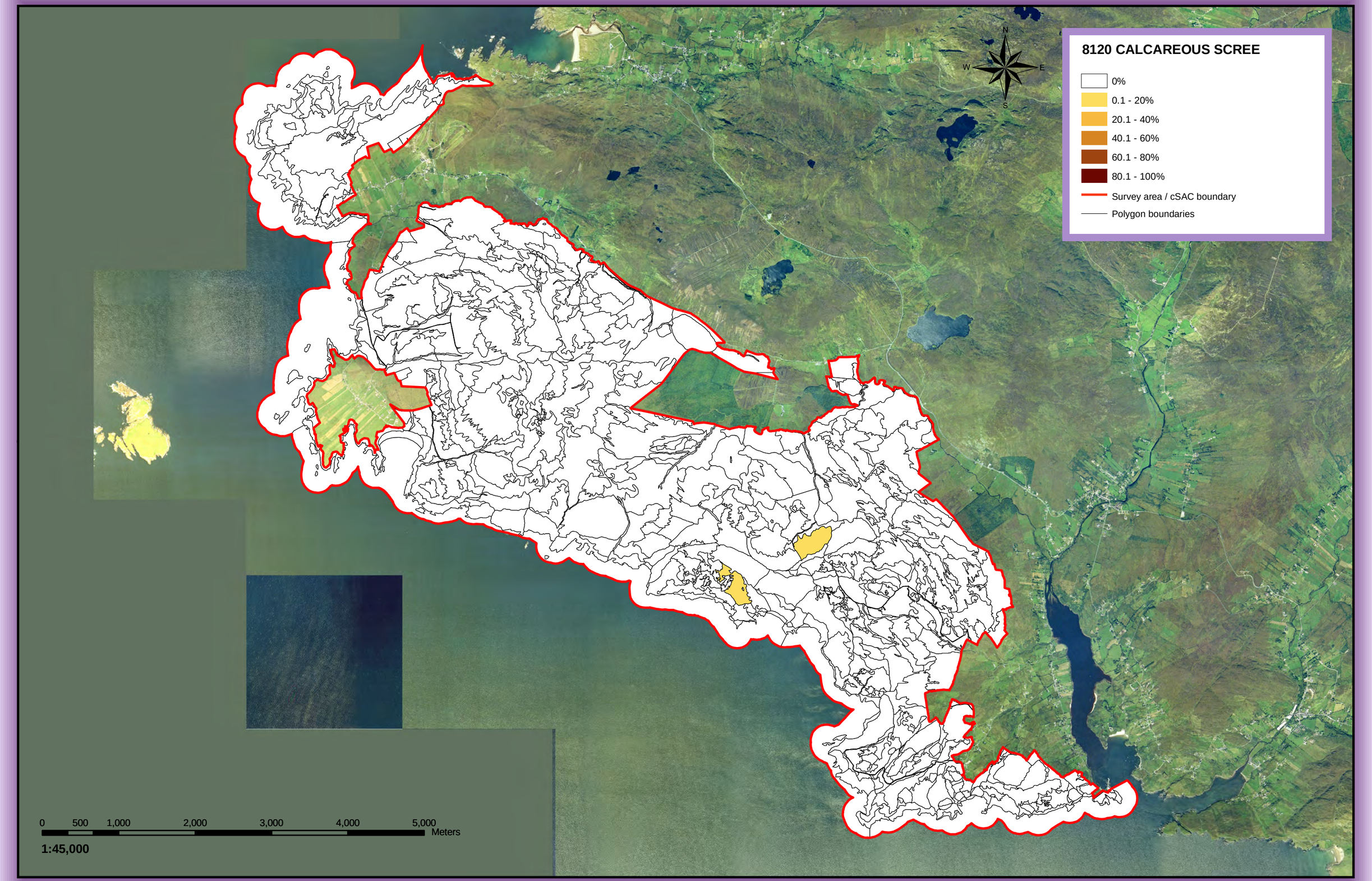
NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4m. Cover of 8120 CALCAREOUS SCREE within Slieve League cSAC (000189), Co. Donegal



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NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 4n. Cover of 8210 CALCAREOUS ROCKY SLOPES within Slieve League cSAC (000189), Co. Donegal

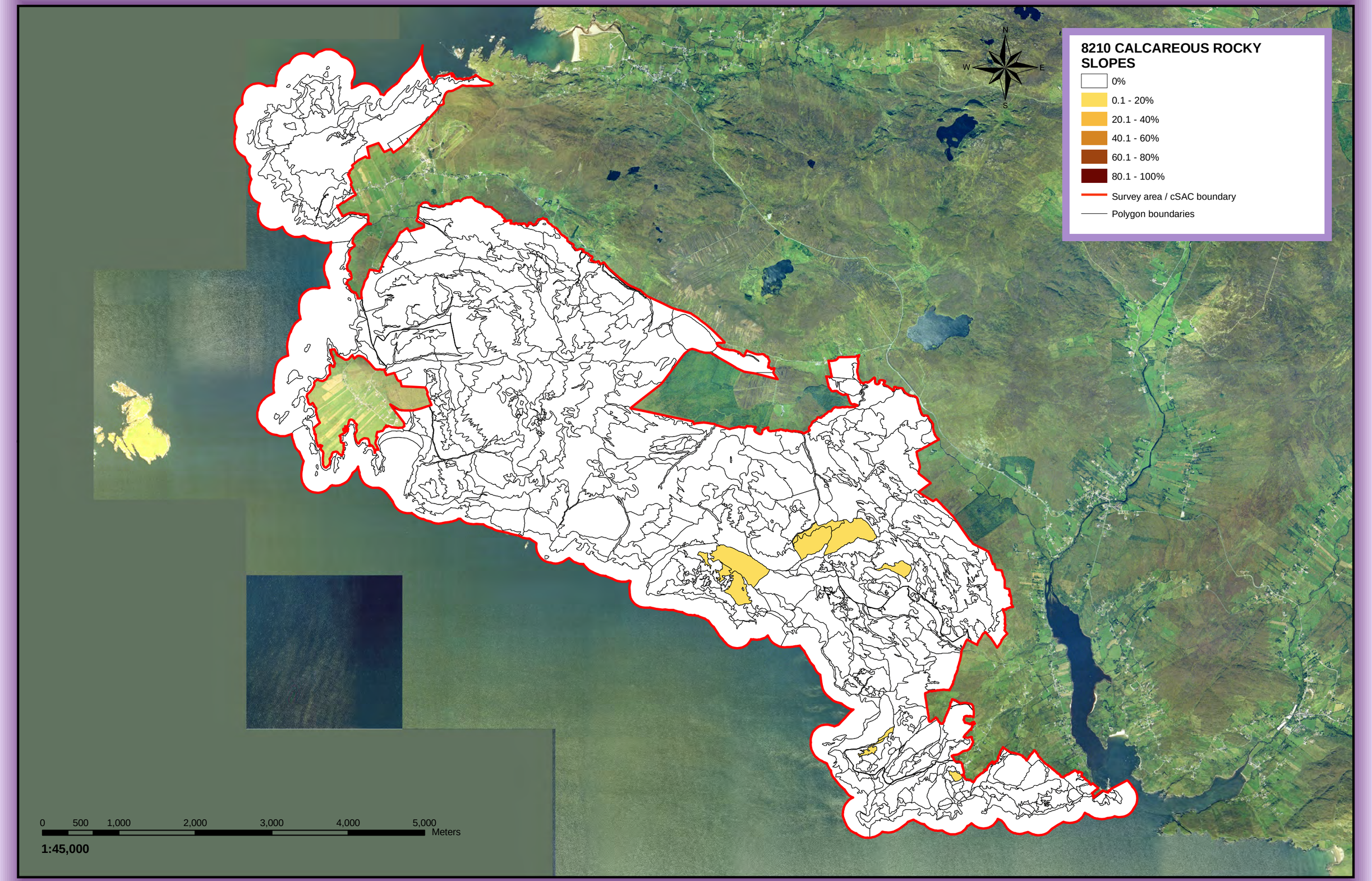

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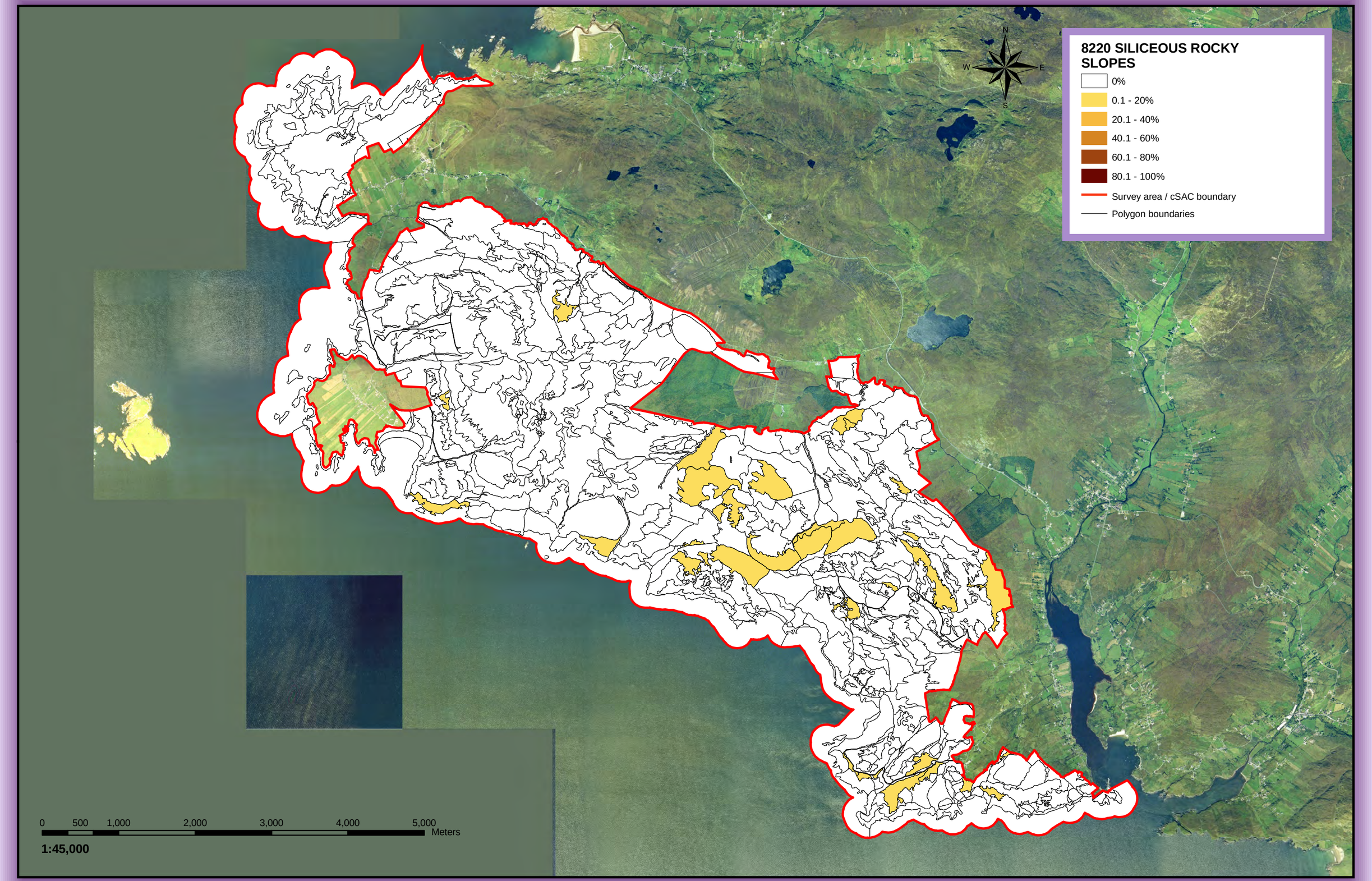
Figure 4o. Cover of 8220 SILICEOUS ROCKY SLOPES within Slieve League cSAC (000189), Co. Donegal



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NSUH (Phase 3, 2012-2013) Site Report No. 14: Slieve League cSAC (000189), Co. Donegal. Map size A3.

Figure 5a. Location of rare and notable vascular plant records within Slieve League cSAC (000189), Co. Donegal

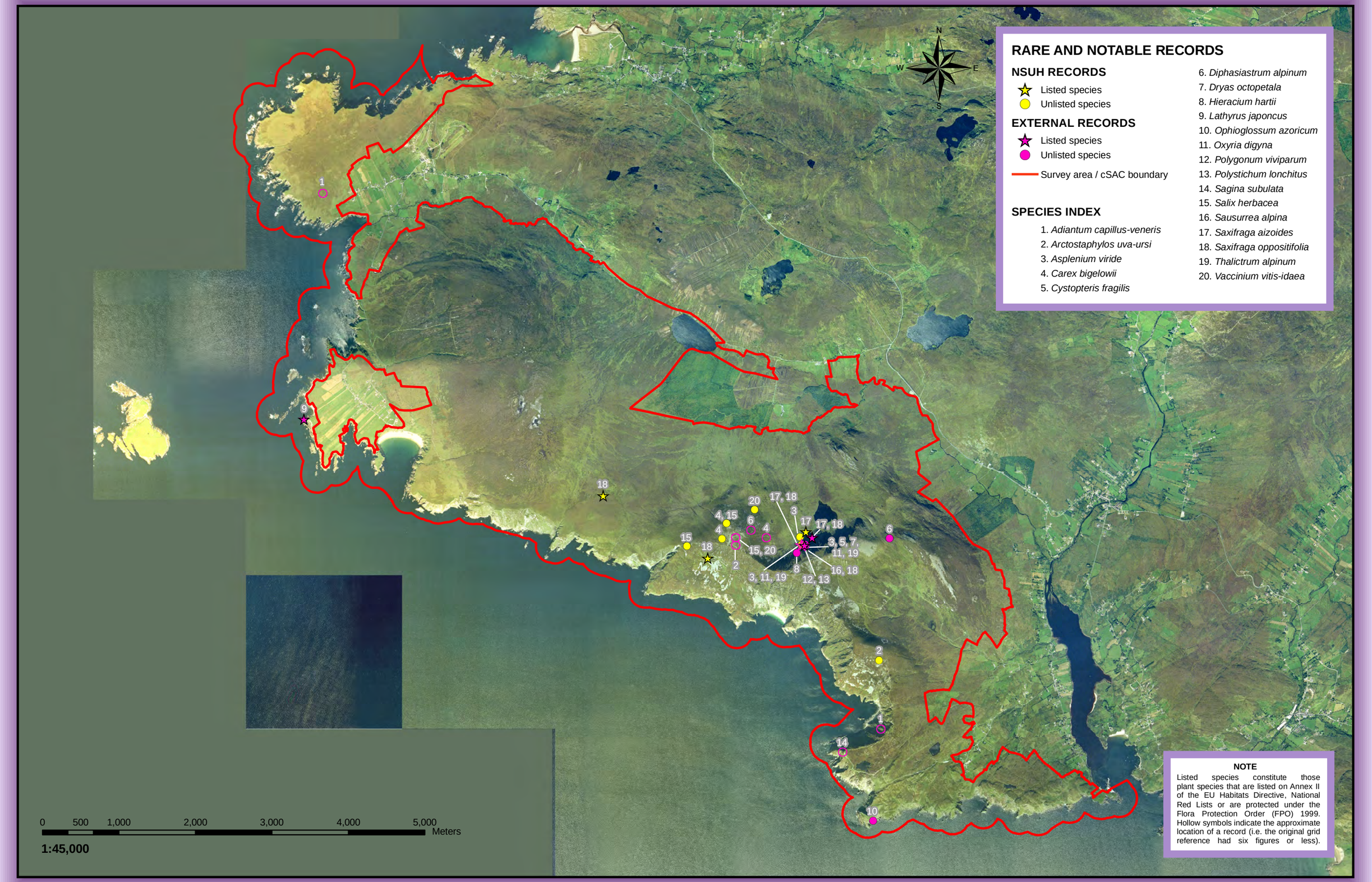

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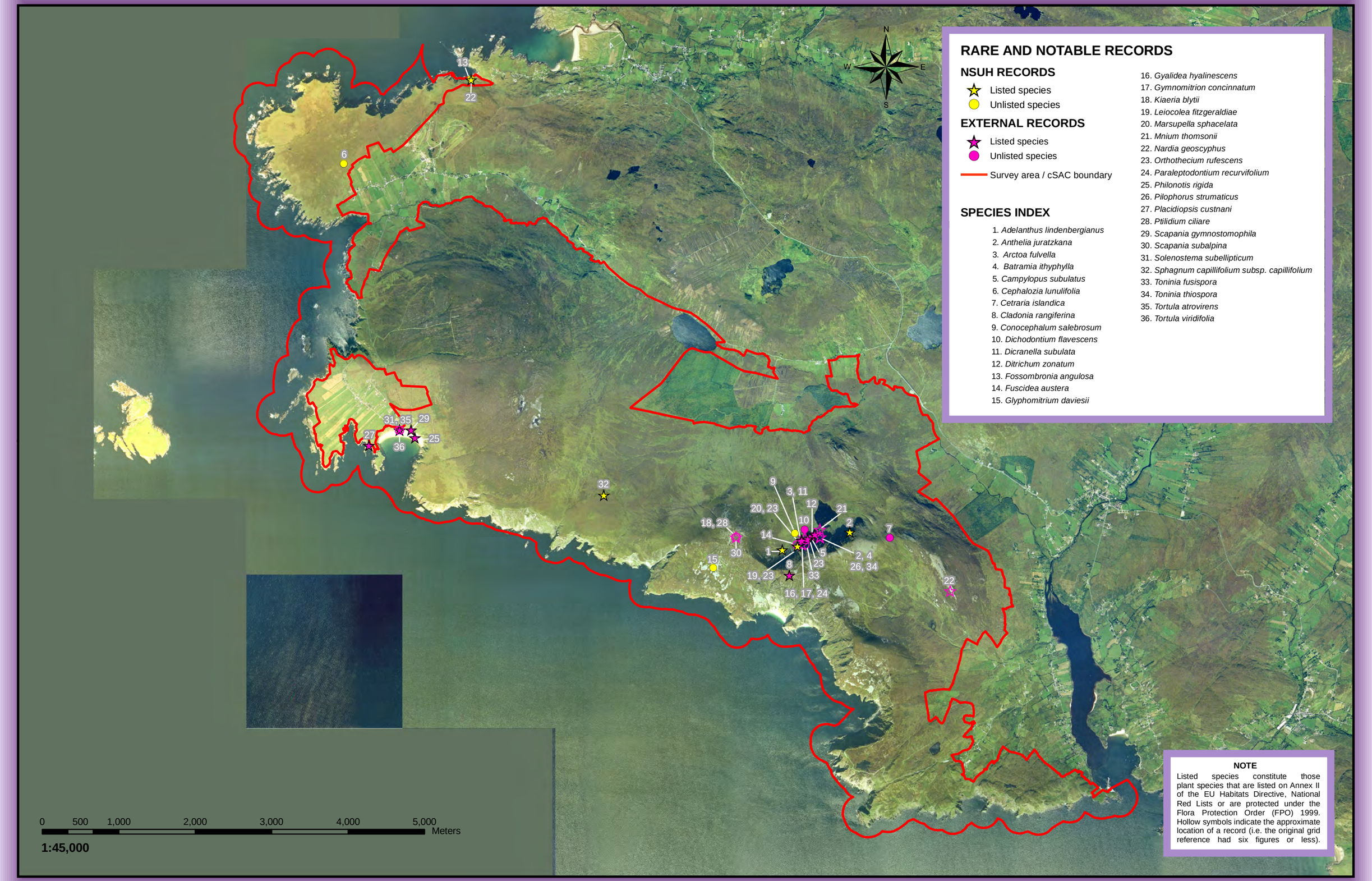
Figure 5b. Location of rare and notable bryophyte and lichen records within Slieve League cSAC (000189), Co. Donegal



RARE AND NOTABLE RECORDS

NSUH RECORDS

- Listed species
- Unlisted species

EXTERNAL RECORDS

- Listed species
- Unlisted species
- Survey area / cSAC boundary

SPECIES INDEX

1. *Adelanthus lindenbergianus*
2. *Anthelia juratzkana*
3. *Arctoa fulvella*
4. *Batramia ithyphylla*
5. *Campylopus subulatus*
6. *Cephalozia lunulifolia*
7. *Cetraria islandica*
8. *Cladonia rangiferina*
9. *Conocephalum salebrosum*
10. *Dichodontium flavescens*
11. *Dicranella subulata*
12. *Ditrichum zonatum*
13. *Fossombronia angulosa*
14. *Fuscidea austera*
15. *Glyphomitrium daviesii*
16. *Gyalidea hyalinescens*
17. *Gymnomitrion concinnatum*
18. *Kiaeria blytii*
19. *Leiocolea fitzgeraldiae*
20. *Marsupella sphacelata*
21. *Mnium thomsonii*
22. *Nardia geoscyphus*
23. *Orthothecium rufescens*
24. *Paraleptodontium recurvifolium*
25. *Philonotis rigida*
26. *Pilophorus strumaticus*
27. *Placidiopsis custnani*
28. *Ptilidium ciliare*
29. *Scapania gymnostomophila*
30. *Scapania subalpina*
31. *Solenostema subellipticum*
32. *Sphagnum capillifolium subsp. capillifolium*
33. *Toninia fusispora*
34. *Toninia thiospora*
35. *Tortula atrovirens*
36. *Tortula viridifolia*

NOTE

Listed species constitute those plant species that are listed on Annex II of the EU Habitats Directive, National Red Lists or are protected under the Flora Protection Order (FPO) 1999. Hollow symbols indicate the approximate location of a record (i.e. the original grid reference had six figures or less).

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Figure 6. Location and results of conservation assessment monitoring stops and other relevés within Slieve League cSAC (000189), Co. Donegal

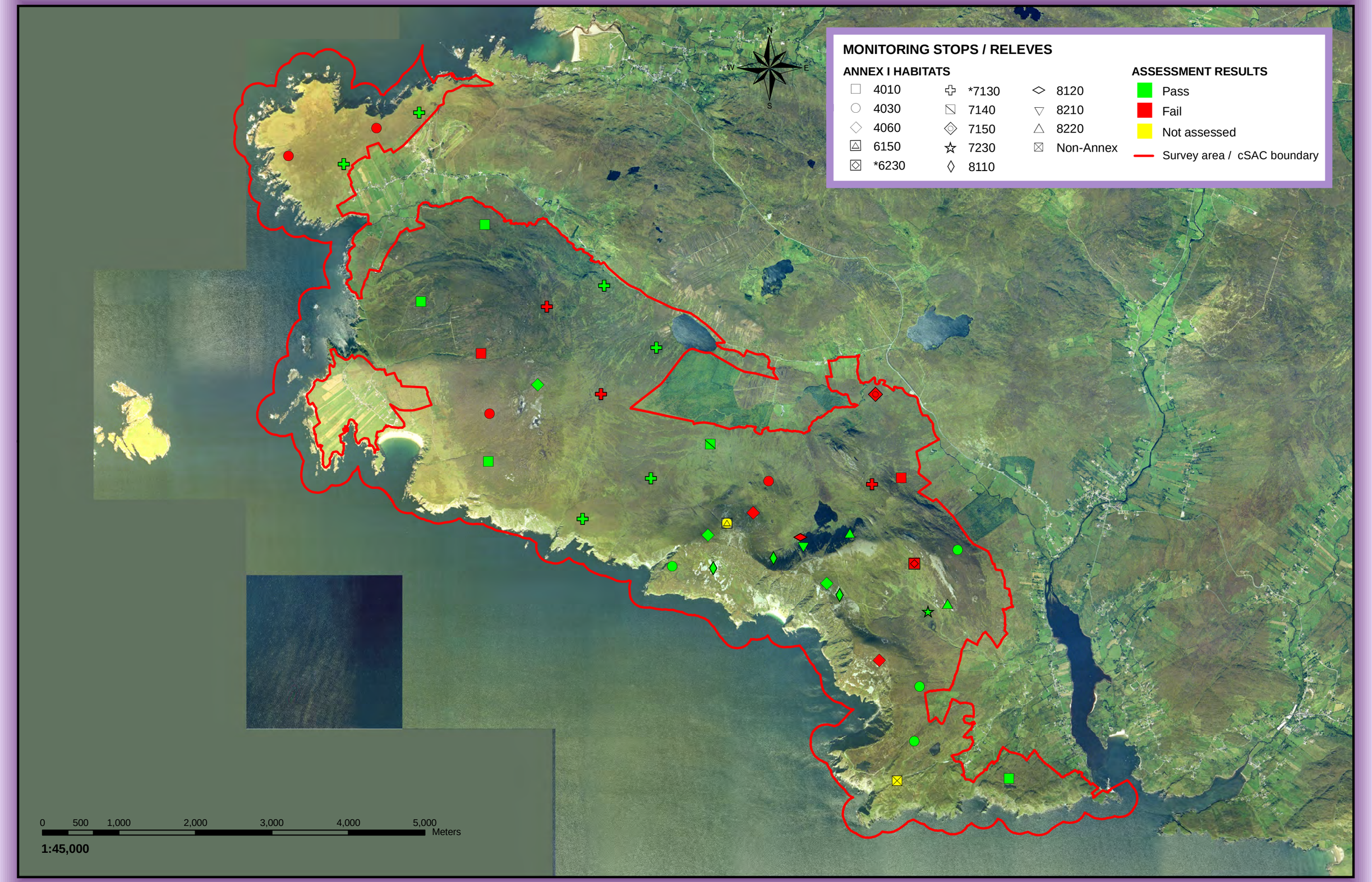

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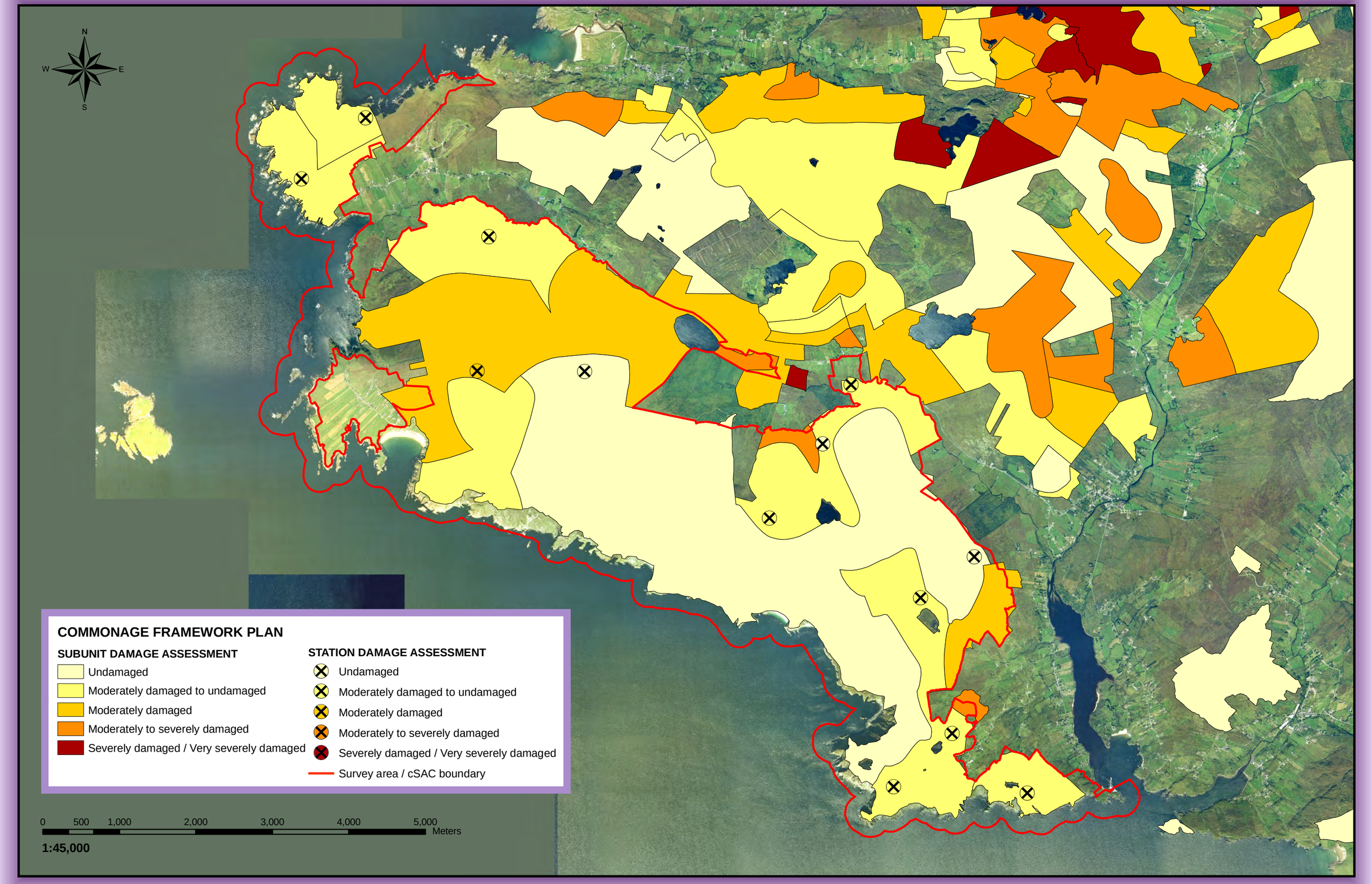
Figure 7. Commonage Framework Plan damage assessment (1999) within and surrounding Slieve League cSAC (000189), Co. Donegal



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