National Survey of Upland Habitats

(Phase 1, 2010-2011)

Site Report No. 6:

Croaghaun / Slievemore cSAC (001955), Co. Mayo

(Revision)

Jenni R. Roche, Philip M. Perrin, Simon J. Barron and Orla H. Daly

January 2014

Commissioned by National Parks and Wildlife Service

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Cover photo: Slievemore viewed from Croaghaun, taken by Jenni Roche

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EXECUTIVE SUMMARY

- Croaghaun / Slievemore cSAC (001955), Co. Mayo was surveyed between August and September 2010 as part of Phase 1 of the National Survey of Upland Habitats (NSUH). This report supersedes the original report, produced in 2011 by the same authors, by updating the format and habitat assessment procedures to those finalised during Phase 3 of the NSUH (2012-2013).
- The area of the site is 33.0 km^2. Using GIS and aerial photograph interpretation, the site was divided into 650 polygons, each representing areas 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, 43 Fossitt habitats and 69 provisional upland vegetation communities were recorded. Annex I habitats comprise 72.2% of the site. The Annex I upland habitats present which are primary focus habitats for the NSUH are 4010 Wet heath (40.4%), 4030 Dry heath (8.6%), 4060 Alpine and Boreal heath (7.7%), *7130 Active blanket bog (6.1%), 8110 Siliceous scree (2.0%), 8220 Siliceous rocky slopes (1.1%), 7130 Inactive blanket bog (0.2%), 7230 Alkaline fens (0.01%), 7150 *Rhynchosporion* depressions (0.01%), 7140 Transition mires (0.002%) and *6230 Species-rich *Nardus* grasslands (0.0003%).
- Rare and notable species recorded during the survey include: *Salix herbacea, Carex bigelowii, Arctostaphylos uva-ursi* and *Mastigophora woodsii.*
- Areas of particular botanical interest include the summit of Croaghaun, where arctic-alpine plants are found, and the area below the scarp on the northern side of Slievemore, which is rich in bryophytes including rare species of the North Atlantic hepatic mat community.
- The conservation status of the upland Annex I habitats that form the primary focus of the NSUH was assessed. A total of 38 monitoring stops were recorded in these habitats. The conservation status of 8110 Siliceous scree and 8220 Siliceous rocky slopes was assessed as Favourable while that of the remaining primary focus habitats was assessed as Unfavourable – Bad.
- The main impacts/activities affecting the site are livestock grazing and, to a lesser extent peat extraction and erosion of blanket peat.
- It is recommended that:

  Whilst stock reductions implemented *c.* 2002 under the 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 cutting of turf is required within the site.

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

* Priority Annex I habitat

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FILES ACCOMPANYING REPORT

ESRI format polygon shapefile with habitat data

ESRI format point shapefile with waypoint data

ESRI format point shapefile with monitoring stop/relevé data

ESRI format point shapefile with rare species data

Microsoft Excel format image databank

Microsoft Excel polygon attributes spreadsheet

Microsoft Access condition assessment database

Turboveg relevé database

Site, relevé and waypoint photographs

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 the 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 Croaghaun / Slievemore cSAC (001955) for the NSUH (Phase 1, 2010-2011). It revises the original report, produced in 2011 by the same authors, by updating the format and assessment procedures to those finalised during Phase 3 of the NSUH.

1.4 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.

1.5 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.

1.6 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.

1.7 NSUH fieldwork was conducted in Croaghaun / Slievemore cSAC between late August and late September 2010. The boundary of the cSAC as used in this survey was that provided by NPWS in July 2010. Some of the steep lower sections of the coastal cliffs around Achill were not surveyed by the original Ordnance Survey workers who produced the six-inch maps in the late 19th and early 20th century. The marine-terrestrial boundary was therefore not correctly delineated. As the cSAC boundary is digitised from these six-inch maps, it omits substantial areas of terrestrial habitat contiguous with the cSAC around the coast. These areas are currently within the adjacent marine cSAC Achill Head (002268). The survey area was extended by

1.96 km² to include these contiguous terrestrial areas and additional polygons were digitised to cover these areas using the 2005 aerial photos.

Background site information

1.8 The Croaghaun / Slievemore cSAC (Fig. 1) is a relatively small site being 32.95 km² in extent and is located on the northwest side of Achill Island, Co. Mayo (O.S. Discovery Series maps 22 and 30). With the inclusion of the additional area discussed above, the total survey area amounts to 34.91 km². Percentage of site area given in this report refer to the expanded site area. The site consists chiefly of two mountains: Croaghaun (alt. 688 m) and Slievemore (alt. 671 m), which are linked by a low saddle. The underlying geology of both mountains is predominantly composed of psammites and schists, with bands of quartzite. Croaghaun is located on the westernmost tip of the island. It features well developed corries and substantial areas of high coastal cliffs, particularly on the very steep northwest face. Moyteoge Head, Achill Head and Saddle Head all extend from the Croaghaun massif. Slievemore is located on the northern side of the island. A ridge runs up to the summit on the eastern side of Slievemore, with a sheer scarp below on the northern side. A wide gully occurs along a series of geological faults at Ooghnadirka, on the north-western side of Slievemore.

1.9 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 habitats listed on the Natura 2000 Standard Data Form for Croaghaun / Slievemore cSAC. Data retrieved from http://natura2000.eea.europa.eu 20th January 2011. Rep. = Representativity, Cons. = Conservation status, Surf. = Relative Surface, Glob. = Global Assessment.

Annex I code	Habitat	Area (%)	Rep.	Surf.	Cons.	Glob.
1230	Vegetated sea cliffs	10	D	-	-	-
3110	Lowland oligotrophic lakes	2	D	-	-	-
3130	Upland oligotrophic lakes	1	D	-	-	-
4010	Wet heath	18	D	-	-	-
4030	Dry heath	10	D	-	-	-
4060	Alpine and Boreal heath	9	A	B	A	A
7130	Blanket bog (* active only)	12	D	-	-	

2. FIELD SURVEY

Description of habitats

Slievemore

2.1 Under Fossitt's (2000) habitat classification scheme, the summit of Slievemore is dominated by mosaics of **HH1 Dry heath**, scree (**ER3 Siliceous scree and loose rock**) and **HH4 Montane heath**, with some small areas of **ER1 Exposed siliceous rock**. The dry heath is characterised by hummocks of *Sphagnum capillifolium* beneath *Calluna vulgaris*. The highest point of Slievemore supports a montane vegetation of *Nardus stricta* and *Racomitrium lanuginosum*. This becomes a *Calluna*-rich montane heath a little lower down. Moving further downslope there is a clear transition to areas covered in **HH3 Wet heath**. This is chiefly composed of *Molinia caerulea* and *Calluna vulgaris* with *Trichophorum germanicum* locally abundant. On the western side of Slievemore are areas of **GS3 Dry-humid acid grassland** with abundant *Agrostis capillaris*.

Eastern side of Croaghaun

2.2 This area forms a large swathe of **HH3 Wet heath** running from the saddle between Slievemore and Croaghaun to the upper slopes of Croaghaun itself. *Molinia caerulea* and *Calluna vulgaris* again dominate with *Schoenus nigricans* forming a wet heath variant in places. Several **FL2 Acid oligotrophic lakes** also occur on the eastern side of the mountain. Above Lough Acorrymore, in Keel West townland is an area of **PB2 Upland blanket bog** dominated by *C. vulgaris* and *Eriophorum angustifolium*, whilst at the foot of the mountain on either side of the Owenvally stream is an area of *Schoenus nigricans* bog (**PB3 Lowland blanket bog**). On the upper slopes substantial areas of **HH4 Montane heath** occur, largely dominated by *C. vulgaris*, but on the shoulder of the mountain above Keem Bay, are areas with *Juniperus communis* ssp. *nana*. Areas of scree (**ER3 Siliceous scree and loose rock**) also occur on these slopes.

Western side of Croaghaun

2.3 On the slopes northwest of Keem Bay is another section where *Molinia*-rich **HH3 Wet heath** dominates. Along the cliff top path that runs from Keem to Achill Head the land becomes grassier and rockier with **GS3 Dry-humid acid grassland** the primary habitat. This is largely of the *Agrostis capillaris* variant but *Nardus stricta* dominates in places. On the very high and steep western slopes of Tonacroaghaun, **HH1 Dry siliceous heath** occurs above **CS1 Rocky sea cliffs**. On the low-lying land at Saddle Head is a mixture of **HH1 Dry siliceous heath**, **HH3 Wet heath** and **GS3 Dry-humid acid grassland**.

Coastal habitats

2.4 A wide range of coastal habitats were recorded at this site. **CS1 Rocky sea cliffs** was by far the most abundant, but also recorded were **CS2 Sea stacks and islets** (off Achill Head and Rusheen Cove and at Doonty), **LS2 Sand shores** (at Keem Bay and at Pollawaddy), **CD6 Machair** (at Pollawaddy), **MW2 Sea inlets and bays** and various types of rocky shore**.**

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

Habitat statistics

2.6 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 1-10).

Table 2: Extent of Fossitt habitats within the Croaghaun / Slievemore survey area.

Fossitt code	Habitat	Total of survey area (ha)	% of survey area
BL1	Stone walls and other stonework	0.5	0.01
BL2	Earth banks	0.004	0.0001
BL3	Buildings and artificial surfaces	6.1	0.18
CC1	Sea walls, piers and jetties	0.04	0.001
CD2	Marram dunes	0.8	0.02
CD6	Machair	5.2	0.15
CS1	Rocky sea cliffs	163.1	4.67
CS2	Sea stacks and islets	9.0	0.26
CS3	Sedimentary sea cliffs	0.8	0.02
ED1	Exposed sand, gravel or till	8.4	0.24
ED2	Spoil and bare ground	9.8	0.28
ED3	Recolonising bare ground	0.27	0.01
ER1	Exposed siliceous rock	168.2	4.82
ER3	Siliceous scree and loose rock	214.9	6.16
FL1	Dystrophic lakes	4.0	0.11
FL2	Acid oligotrophic lakes	34.1	0.98
FP2	Non-calcareous springs	0.17	0.01
FW1	Eroding/upland rivers	9.2	0.26
FW4	Drainage ditches	0.2	0.01
GA1	Improved agricultural grassland	3.1	0.09
GA2	Amenity grassland (improved)	0.01	0.0003
GS3	Dry-humid acid grassland	372.5	10.67
GS4	Wet grassland	16.5	0.47
HD1	Dense bracken	49.9	1.43
HH1	Dry siliceous heath	301.8	8.65
HH3	Wet heath	1411.8	40.44
HH4	Montane heath	308.6	8.84

Table 2 continued

Fossitt code	Habitat	Total of survey area (ha)	% of survey area
LR1	Exposed rocky shores	13.9	0.40
LR2	Moderately exposed rocky shores	6.7	0.19
LR3	Sheltered rocky shores	5.7	0.16
LS1	Shingle and gravel shores	1.2	0.04
LS2	Sand shores	14.0	0.40
MW1	Open marine water	0.9	0.03
MW2	Sea inlets and bays	17.3	0.50
MW3	Straits and sounds	0.1	0.002
PB2	Upland blanket bog	136.0	3.90
PB3	Lowland blanket bog	83.0	2.38
PB5	Eroding blanket bog	32.3	0.93
PF1	Rich fen and flush	4.1	0.12
PF2	Poor fen and flush	72.0	2.06
PF3	Transition mire and quaking bog	0.1	0.002
WS1	Scrub	4.7	0.14
WS3	Ornamental/non-native shrub	0.1	0.002
	Total area	3491.1	

Table 3: Extent of Annex I habitats within the Croaghaun/Slievemore survey area. Asterisk denotes priority habitat.

Annex I code	Habitat	Total of survey area (ha)	% of survey area
1140	Tidal mudflats and sandflats	9.9	0.28
1160	Large shallow inlets and bays	0.5	0.01
1230	Vegetated sea cliffs	163.1	4.67
2120	Marram dunes (white dunes)	0.8	0.02
*21A0	Machair	5.2	0.15
3110	Lowland oligotrophic lakes	15.1	0.43
3130	Upland oligotrophic lakes	19.1	0.55
3160	Dystrophic lakes	3.5	0.10
3260	Floating river vegetation	0.1	0.002
4010	Wet heath	1411.8	40.44
4030	Dry heath	301.7	8.64
4060	Alpine and Boreal heath	268.2	7.68
*6230	Species-rich *Nardus* grasslands	0.01	0.0003
*7130	Active blanket bog	212.5	6.09
7130	Inactive blanket bog	6.3	0.18
7140	Transition mires	0.1	0.002
7150	*Rhynchosporion* depressions	0.2	0.01
7230	Alkaline fens	0.2	0.01
8110	Siliceous scree	69.8	2.00
8220	Siliceous rocky slopes	38.0	1.09
-	non-Annex I habitats	965.2	27.65
	Total area	3491.1	
	Total area of Annex I habitats	2525.8	72.35

Table 4: Extent of provisional vegetation communities (Perrin *et al.*, 2014) within the Croaghaun/Slievemore survey area.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
PO1	*Menyanthes trifoliata – Carex limosa* pool community			
PO1a	infilling pool sub-community	0.1	0.002	27.9
PO1b	aquatic pool sub-community	0.2	0.004	72.2
SW1	*Potamogeton polygonifolius* soakway	1.1	0.03	100.0
SPG1	*Philonotis fontana - Saxifraga stellaris* spring			
SPG1a	typical sub-community	0.01	0.0004	8.1
SPG1b	species-poor *Sphagnum denticulatum* sub-community	0.2	0.01	92.0
PFLU1	*Carex nigra/echinata – Sphagnum denticulatum* flush	10.9	0.31	13.4
PFLU2	*Juncus effusus - Sphagnum cuspidatum/palustre* flush	49.9	1.43	61.3
PFLU3	*Juncus acutiflorus/effusus - Calliergonella cuspidata* flush	13.4	0.38	16.4
PFLU4	*Molinia caerulea - Sphagnum palustre* flush			
PFLU4a	typical sub-community	7.3	0.21	8.9
RFLU1	*Carex viridula oedocarpa - Pinguicula vulgaris - Juncus bulbosus* flush			
RFLU1a	brown moss sub-community	0.1	0.003	2.7
RFLU1b	species-poor sub-community	3.5	0.10	85.3
RFLU2	*Eleocharis quinqueflora – Carex viridula* flush	0.03	0.001	0.7
RFLU3	*Carex panicea – Carex viridula* subsp. *oedocarpa* flush	0.4	0.01	9.7
RFLU4	*Schoenus nigricans – Scorpidium scorpioides* flush	0.1	0.002	1.6
UG1	*Agrostis capillaris - Festuca ovina* upland grassland			
UG1a	typical sub-community	299.5	8.58	80.2
UG1b	*Sphagnum* spp. sub-community	12.3	0.35	3.3
UG1d	*Juncus squarrosus* sub-community	3.5	0.10	0.9
UG2	*Nardus stricta - Galium saxatile* upland grassland			
UG2a	typical sub-community	37.6	1.08	10.1
UG2b	*Sphagnum* spp. sub-community	14.8	0.42	4.0
UG2c	species-rich sub-community	0.01	0.0003	0.003
UG2d	*Juncus squarrosus* sub-community	4.8	0.14	1.3
UG4	*Molinia caerulea – Anthoxanthum odoratum* wet grassland	1.0	0.03	0.3
BK1	*Pteridium aquilinum* community	49.9	1.43	100.0
DH1	*Ulex gallii – Erica cinerea* dry heath	0.1	0.002	0.02
DH3	*Calluna vulgaris - Erica cinerea* dry heath	226.2	6.48	75.0
DH4	*Calluna vulgaris - Sphagnum capillifolium* dry/damp heath	73.3	2.10	24.3
DH6	*Calluna vulgaris – Vaccinium myrtillus* dry heath	2.1	0.06	0.7
WH1	*Schoenus nigricans – Erica tetralix* wet heath			
WH1a	continuous cover sub-community	138.4	3.97	9.8
WH1b	open sub-community	33.7	0.96	2.4
WH2	*Trichophorum germanicum – Cladonia* spp. – *Racomitrium lanuginosum* wet heath	14.2	0.41	1.0
WH3	*Calluna vulgaris - Molinia caerulea - Sphagnum capillifolium* wet/damp heath	973.6	27.89	69.0
WH4	*Trichophorum germanicum- Eriophorum angustifolium* wet heath			
WH4a	typical sub-community	43.6	1.25	3.1
WH4b	*Calluna vulgaris* sub-community	107.7	3.08	7.6
WH4c	*Juncus squarrosus* sub-community	0.9	0.03	0.1
WH5	*Trichophorum germanicum - Nardus stricta - Racomitrium lanuginosum* montane wet heath	70.6	2.02	5.0
WH6	*Schoenus nigricans – Molinia caerulea – Myrica gale* wet heath	29.2	0.84	2.1

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
MH1	*Calluna vulgaris - Racomitrium lanuginosum* montane heath			
MH1a	typical sub-community	197.3	5.7	64.0
MH1b	*Juncus squarrosus* sub-community	26.9	0.77	8.7
MH2	*Vaccinium myrtillus – Racomitrium lanuginosum – Herbertus aduncus* montane heath	11.3	0.32	3.7
MH3	*Vaccinium myrtillus – Rhytidiadelphus loreus – Anthoxanthum odoratum* montane heath	1.9	0.05	0.6
MH4	*Calluna vulgaris – Juniperus communis* subsp. *nana* montane heath	30.8	0.88	10.0
MH5	*Nardus stricta - Carex binervis - Racomitrium lanuginosum* montane grass-heath	40.2	1.15	13.0
MH8	*Festuca vivipara – Thymus polytrichus – Galium saxatile* montane	0.2	0.01	0.1
BB1	*Schoenus nigricans – Eriophorum angustifolium* bog			
BB1a	continuous cover sub-community	58.5	1.68	27.7
BB1b	open sub-community	17.4	0.50	8.2
BB2	*Schoenus nigricans – Sphagnum* spp. bog	2.9	0.08	1.4
BB3	*Eriophorum vaginatum – Sphagnum papillosum* bog	1.0	0.03	0.5
BB4	*Trichophorum germanicum – Eriophorum angustifolium* bog	13.9	0.40	6.6
BB5	*Calluna vulgaris - Eriophorum* spp. bog			
BB5a	typical sub-community	104.1	2.98	49.3
BB5b	*Juncus squarrosus* sub-community	12.0	0.34	5.7
BB6	*Eriophorum angustifolium – Juncus squarrosus* bog			
BB6a	typical sub-community	1.0	0.03	0.5
BB6b	arctic-alpine sub-community	0.4	0.01	0.2
HW1	*Sphagnum denticulatum/cuspidatum* hollow			
HW1i	upland variant	0.9	0.03	9.4
HW1ii	lowland variant	0.5	0.01	5.1
HW2	*Eriophorum angustifolium - Sphagnum fallax* hollow			
HW2i	upland variant	2.8	0.08	28.8
HW2ii	lowland variant	3.5	0.10	36.2
HW3	*Rhynchospora alba* hollow	0.2	0.01	2.0
HW4	*Eleocharis multicaulis* hollow			
HW4i	bog variant	0.04	0.001	0.4
HW4ii	flush variant	1.8	0.05	18.1
DP1	*Campylopus introflexus - Polytrichum* spp. degraded peat community	0.3	0.01	5.8
DP2	*Nardus stricta – Eriophorum angustifolium* degraded peat community	4.5	0.13	94.2
TH1	*Luzula sylvatica - Vaccinium myrtillus* tall herb vegetation			
TH1i	rock face variant	0.1	0.003	44.9
TH1ii	dry heath variant	0.1	0.004	55.1
SC1	Siliceous scree community	8.6	0.25	100.0
RS1	*Saxifraga spathularis - Asplenium adiantum-nigrum* rock cleft community	1.0	0.03	100.0
HM1	*Calluna vulgaris – Scapania gracilis* hepatic mat			
HM1iv	wet heath variant	0.03	0.001	15.4
HM2	*Calluna vulgaris – Herbertus aduncus* hepatic mat			
HM2iii	dry heath variant	0.1	0.003	48.6
HM2iv	wet heath variant	0.04	0.001	17.2
HM2v	montane heath variant	0.04	0.001	18.9

Table 4: continued

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
	Total area of vegetation communities	2767.8	79.3	
	Not covered	250.3	7.17	
	Non-vegetation cover types	473.0	13.6	
	Total site area	3491.1		

2.7 The most abundant habitat within a polygon is termed the primary habitat. The primary Fossitt habitat types for Croaghaun / Slievemore 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.

2.8 A total of 43 Fossitt (2000) habitats were recorded within the Croaghaun / Slievemore cSAC and details of their coverage are presented in Table 2. **Wet heath (HH3)** was the most extensive, covering 40.4% of the site, followed by **Dry-humid acid grassland (GS3)**, **Montane heath (HH4)**, **Dry heath (HH1)** and **Siliceous scree and loose rock (ER3)**.

2.9 A total of 20 Annex I habitats were recorded within the Croaghaun / Slievemore cSAC, covering 72.4% of the site (Table 3). The dominant Annex I habitat was **Wet heath (4010)**, which covered 40.4% of the site. The next most extensive Annex I habitat was **Dry heath (4030)**, followed by **Alpine and Boreal heath (4060)**, **Active blanket bog (*7130)** and **Vegetated sea cliffs (1230)**. 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.

2.10 A total of 69 provisional upland vegetation communities and sub-communities (Perrin *et al*., 2014) were recorded within Croaghaun / Slievemore cSAC. Details of their coverage are presented in Table 4.

2.11 Gradated maps displaying the cover of Annex I habitats currently assessed under the NSUH are shown in Figs. 4a-k. 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

2.12 Rare and notable plant records for the site are listed in Table 5 and their locations, where accurately known, are presented in Fig. 5. The list is compiled from records made during the present survey and 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 the provisional list of Lockhart *et al*. (2012) was used. 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.

Table 5: Records of rare and notable plants species for Croaghaun / Slievemore Complex cSAC.

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Vascular plants						
Arctostaphylos uva-ursi	-	-	-	2010	•	3
Carex bigelowii	-	-	-	2010	•	3
Daboecia cantabrica	-	-	-	-	•	-
Erica erigena	-	-	-	1987	-	2,3,4
Euphrasia frigida	-	-	-	-	-	3
Listera cordata	-	-	-	-	-	3
Oxyria digyna	-	-	-	-	-	3
Salix herbacea	-	-	-	2010	•	3
Bryophytes						
Acrobolbus wilsonii	VU	-	-	-	-	2
Adelanthus lindenbergianus	VU	-	-	2003	-	1,2,3
Andreaea rothii	-	-	-	-	-	2,3
Anthelia juratzkana	NT	-	-	1987, 2003	-	1,3,6
*Atrichum tenellum**	NT	-	-	2003	-	1
Bazzania pearsonii	VU	-	-	-	-	2,3
Bryum riparium	EN	-	-	1987, 2003	-	1,2,6
Dicranodontium uncinatum	VU	-	-	2003	-	1,2,3
Douinia ovata	NT	-	-	1987	-	6
Campylopus setifolius	-	-	-	-	-	2
Campylopus shawii	NT	-	-	1987	-	6
Colura calyptrifolia	-	-	-	-	-	2
Cyclodictyon laetevirens	NT	-	-	1987	-	2,3,6
Geocalyx graveolens	EN	-	-	1987	-	2,3,6
Solenostoma subellipticum	NT	-	-	-	-	2
Leptodontium flexifolium	NT	-	-	1987	-	6
Haplomitrium hookeri	-	-	-	-	-	2
Hypnum callichroum	NT	-	-	1987	-	6
Marsupella sprucei	VU	-	-	-	-	2,3
Marsupella sphacelata	VU	-	-	-	-	3
Mastigophora woodsii	NT	-	-	2010	•	2,3
Metzgeria leptoneura	NT	-	-	1987	-	6
Nardia geoscyphus	NT	-	-	1987, 2003	-	1,6
Plagiothecium cavifolium	VU	-	-	1987	-	2,3,6
Plagiomnium cuspidatum	NT	-	-	-	-	2
Pohlia camptotrachela	-	-	-	-	-	2
Pohlia elongata var. *elongata*	NT	-	-	-	-	2
Pohlia lutescens	-	-	-	1987	-	2,6
Pohlia flexuosa	-	-	-	1987	-	2,6
Radula carringtonii	NT	-	-	-	-	2,3
Platyhypnidium lusitanicum	NT	-	-	-	-	3
Tortula marginata	NT	-	-	1987,2003	-	1,2,6
Tritomaria exsecta	VU	-	-	-	-	2
Scapania lingulata	DD	-	-	-	-	2
Scapania nimbosa	EN	-	-	-	-	2,3
Scapania ornithopodioides	VU	-	-	1987	-	6
Sphagnum warnstorfii	VU	-	-	-	-	2,3

Table 5. continued

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Lichens						
Parmotrema arnoldii	•	-	-	1961	-	5
Massalongia carnosa	•	-	-	2007	-	5
Stereocaulon condensatum	•	-	-	1948	-	5
Lobaria virens	•	-	-	2007	-	5

Previous records: 1, NPWS Recorder database and associated data; 2, Natura 2000 assessment form; 3, cSAC site synopsis; 4, Foss *et al.* (1987); 5, LichenIreland database; 6, Synnott (1987)

Red Data List: RE, Regionally Extinct; EN, Endangered; VU, Vulnerable; NT, Near Threatened

2.13 The rare arctic-alpines *Salix herbacea* and *Carex bigelowii* were refound near the summit of Croaghaun, having been previously recorded there by Praeger (1904). *Arctostaphylos uva-ursi* was recorded on the slopes of both Croaghaun and Slievemore. *Daboecia cantabrica* was recorded above Lough Nakeeroge; according to Preston *et al.* (2002), this is a new record for Achill Island and the most northerly station in Ireland for this species. North Atlantic hepatic mat communities were recorded below the scarp on the northern side of Slievemore, an area where the bryophyte flora is relatively well known (Synnott 1987). *Mastigophora woodsii* was refound there during this survey.

2.14 Previous records of rare species from the site include *Erica erigena* (Foss *et al.,* 1987), *Oxyria digyna* and *Euphrasia frigida*. The first discovery in Europe of *Adelanthus lindenbergianus* was made here (Lett 1904, Long 2010). Many rare species were recorded by the British Bryological Society field trip in August 1987. These species include: *Bazzania pearsonii, Scapania ornithopodioides, Dicranodontium denudatum* and *Dicranodontium uncinatum* (Synnott 1987).

2.15 The NSUH survey did not actively seek to relocate previous rare plant records; therefore no inference should be made from the absence of a record in the current survey.

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

Fauna

2.17 Faunal records from during this survey include Chough (*Pyrrhocorax pyrrhocorax*), an Annex I species on the Birds Directive. A pair was observed feeding in **HH4 Montane heath** below the summit of Croaghaun. Red Grouse (*Lagopus lagopus*) droppings were also recorded. A colony of at least 11 Grey Seals (*Halichoerus grypus*) was observed at Ooghnabe. Other records include Irish Hare (*Lepus timidus* subsp. *hibernicus*), Common Frog (*Rana temporaria*), Common Lizard (*Zootoca vivipara*), Raven (*Corvus corax*), Fox (*Vulpes vulpes*) and a herd of 12 feral goats was also observed on Croaghaun.

2.18 Previous faunal records include Peregrine (*Falco peregrinus*), Merlin (*Falco columbarius*), Twite (*Carduelis flavirostris*) and the costal species Fulmar (*Fulmarus glacialis*), Shag (*Phalacrocorax aristotelis*) and Kittiwake (*Rissa tridactyla*).

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 38 monitoring stops were recorded within Croaghaun / Slievemore cSAC for this purpose (Fig. 6 and Table 6); seven additional relevés were recorded comprising five relevés from Annex I habitats (**4010 Wet heath**, **4030 Dry heath** and **8220 Siliceous rocky slopes**) and 2 relevés from non-Annex habitats. The future prospects parameter examines 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 heath	13
4030	Dry heath	4
4060	Alpine and boreal heath	6
*6230	Species-rich *Nardus* grassland	1
*7130	Blanket bog (*active)	8
7140	Transition mires	1
7230	Alkaline fen	1
8110	Siliceous scree	2
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 into subunits based on 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 the NSUH sites were blanket bog, wet heath, dry heath and upland grassland. The damage 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 CFP methodology can be found in Anon. (1998) and use of this data by the NSUH has been reviewed by Perrin (2012).

3.3 The Croaghaun / Slievemore survey area contains significant areas of commonage comprising 29.7 km^2 or 90.1%. A baseline CFP survey of the majority of these areas occurred in 1998 with

stock reductions resulting from these assessments occurring *c.*2002. Small additional areas were baseline surveyed in 2004. Results from this survey are shown in Fig. 7. Only one agricultural unit (MA7-H) has been resurveyed in 2008-2009. This was an area of wet heath at Tawnaghlaur, southeast of Lough Acorrymore. The condition of this unit was found to have improved as the destocking assessment was reduced from 100% to 50%.

3.4 The CFP baseline surveys recorded 123 subunits within or partially within Croaghaun / Slievemore cSAC (Table 7). These indicate commonage within the site was badly damaged at this time with only 13.5% of the area of subunits being assessed as undamaged (U) and 20.1% of the area of subunits being assessed as moderately to severely damaged (MS) or worse.

Table 7: Frequency of CFP subunit damage levels in Croaghaun / Slievemore cSAC baseline surveys.

Damage level	**Frequency (*n* = 123)**	**Area %**
U	24 (19.5%)	13.5
MU	40 (32.5%)	46.4
MM	27 (22.0%)	20.0
MS	14 (11.4%)	10.4
S/S*	16 (13.0%)	9.7
Not assessed	2 (1.6%)	<0.01

3.5 The CFP baseline survey recorded only 39 stations within Croaghaun / Slievemore cSAC (Table 8). These also indicate commonage within the site was badly damaged at this time with only 15.4% of stations being undamaged (U) and 18% of stations being moderately to severely damaged (MS) or worse.

Table 8: Frequency of CFP station damage level in Croaghaun / Slievemore cSAC, baseline surveys. Percentages indicate proportion of stations within each column.

Damage level	**Wet heath/Dry heath/ Blanket bog (*n* = 38)**	**Upland grassland/ Other habitats (*n* = 1)**	**All habitats (*n* = 39)**
U	6 (15.8%)	0 (0.0%)	6 (15.4%)
MU	11 (28.9%)	1 (100.0%)	12 (30.8%)
MM	2 (5.3%)	0 (0.0%)	2 (5.1%)
MS	3 (7.9%)	0 (0.0%)	3 (7.7%)
S/S*	4 (10.5%)	0 (0.0%)	4 (10.3%)

3.6 Summary data for some of the key indicators recorded at CFP stations are compared with NSUH data in Table 9. There appears to have been a significant decrease in bare peat cover, and increases in sward height and *Calluna* height since the baseline survey. There are some indications of an increase in *Calluna* cover.

3.7 With no substantial CFP resurvey since the baseline survey it is difficult to draw many conclusions on trends. There are however indications from the key indicator analysis that may tentatively be seen as a positive trend. Also, the fact that stock reductions occurred in over 86.5% 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 Croaghaun / Slievemore cSAC, baseline survey (1998, 2004) with related data from the NSUH survey (2010).

	Wet heath/Dry heath/ Blanket bog		**Upland grassland/ Other habitats**
	CFP (*n* =37-38)	**NSUH (*n* = 31)**	**CFP (*n* = 1)**
Bare peat cover (%)	5.9	0.6	0.0
Sward height (cm)	13.6	22.1	1.0
Calluna height (cm)	10.9	15.4†	-
Calluna cover (%)			
D (>50%)	20 (52.6%)	17 (54.8%)	-
A (26-50%)	6 (15.8%)	10 (32.3%)	-
F (5-25%)	5 (13.2%)	4 (12.9%)	-
O (<5%)	6 (15.8%)	0 (0.0%)	-
Absent	1 (2.6%)	0 (0.0%)	-

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

4010 Wet heath

Area

3.8 Changes in the area of **4010 Wet heath** were recorded for the period 1995 to 2010 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. Only losses in habitat were found, there were no gains in habitat area (Table 10). 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 heath** were due to the development of tracks, turf cutting by hand, succession and dispersed habitation. 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 10: Impacts causing obvious losses in areas of 4010 Wet heath, 1995-2010.

Impact code	Impact	Area loss (ha) 1995-2000	Area loss (ha) 2000-2005	Area loss (ha) 2005-2010	Area loss (ha) 1995-2010
C01.03.01	Hand cutting of peat	0.07	0.03	0.00	0.10
D01.01	Paths, tracks, cycling tracks	0.00	0.36	0.00	0.36
E01.03	Dispersed habitation	0.04	0.00	0.00	0.04
K02.01	Species composition change (succession)	0.00	0.05	0.00	0.05
All impacts (ha)		0.12	0.44	0.00	0.55
% of habitat		0.01	0.03	0.00	0.04
% loss per year		0.002	0.01	0.00	0.003

Structure and functions

3.9 A total of 13 monitoring stops were recorded in **4010 Wet heath** within Croaghaun / Slievemore cSAC (Table 11). In the assessment of structure and functions, five monitoring stops failed one criterion or more. Following a review of the ecological condition of those stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 38.5%. The structure and functions of **4010 Wet heath** were therefore assessed as Unfavourable – Bad.

3.10 The vegetation composition of **4010 Wet heath** was poor in some cases, with failures being recorded under four criteria. Three **4010 Wet heath** monitoring stops failed due to inadequate cover of *Cladonia* spp., *Sphagnum* spp., *Racomitrium lanuginosum* and pleurocarpous mosses. One of these monitoring stops (7.7%) also failed due to excessive cover of the negative indicator species *Agrostis capillaris*. One monitoring stop (7.7%) failed due to inadequate cover of positive indicator species and one other monitoring stop (7.7%) failed due to excessive cover of *Pteridium aquilinum*.

3.11 The vegetation structure of **4010 Wet heath** was good, with no failures being recorded under the relevant criteria. However, the physical structure of **4010 Wet heath** was poor in some cases, with three monitoring stops (25.0%) failing due to excessive drainage. One of these monitoring stops (7.7%) also failed due to excessive cover of disturbed bare ground in the local vicinity of the monitoring stop.

Future Prospects

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

Table 11: Monitoring criteria and failure rates for 4010 Wet heath (*n* = 13).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	*Erica tetralix* present	20m radius	13	0	0
2	Cover of positive indicator species ≥ 50%	Relevé	13	0	0
3	Total cover of *Cladonia* species, *Sphagnum* species, *Racomitrium lanuginosum* and pleurocarpous mosses ≥ 10%	Relevé	13	3	23.1
4	Cover of ericoid species and *Empetrum nigrum* ≥ 15%	Relevé	13	0	0
5	Cover of dwarf shrub species < 75%	Relevé	13	0	0
6	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Ranunculus repens* collectively < 1%	Relevé	13	1	7.7
7	Cover of non-native species < 1%	Relevé	13	0	0
8	Cover of non-native species < 1%	Local vicinity	13	1	7.7
9	Cover of scattered native trees and scrub < 20%	Local vicinity	13	0	0
10	Cover of *Pteridium aquilinum* < 10%	Local vicinity	13	1	7.7
11	Cover of *Juncus effusus* < 10%	Local vicinity	13	0	0
Vegetation structure					
12	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	12	0	0
13	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	13	0	0
14	No signs of burning into the moss, liverwort or lichen layer, or exposure of peat surface due to burning	Local vicinity	13	0	0
15	No signs of burning inside boundaries of sensitive areas*	Local vicinity	13	0	0
Physical structure					
16	Cover of disturbed bare ground < 10%	Relevé	13	0	0
17	Cover of disturbed bare ground < 10%	Local vicinity	13	1	7.7
18	Area showing signs of drainage resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	12	3	25.0

*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.

Non-intensive sheep grazing (A04.02.02)

3.13 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing

levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.14 During the assessment of structure and functions, grazing intensity within **4010 Wet heath** was found to vary across the site. The proportion of dwarf shrub shoots showing signs of grazing ranged from 0-30%. No monitoring stops failed due to excessive grazing. However, the cover of disturbed bare ground, which may be related to trampling by sheep, varied from 0-20%, with one monitoring stop (7.7%) failing due to excessive cover of disturbed bare ground in the local vicinity. During vegetation mapping, damage due to trampling by sheep was noted within **4010 Wet heath** north-east of Lough Acorrymore and on the north-eastern slope of Slievemore. The intensity of this impact was assessed as medium overall and its influence as negative. The trend was assessed as improving due to stock reductions.

Table 12: Assessment of future prospects for 4010 Wet heath. 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	100%	Inside	-3.0	Imp
C01.03.01	Hand cutting of peat	High	Negative	<1%	Inside	-0.75	Ins
D01.01	Paths, tracks, cycling tracks	High	Negative	0.03%	Inside	-0.75	Ins
E01.03	Dispersed habitation	High	Negative	0.003%	Inside	-0.75	Ins
G01.02	Walking, horseriding and non-motorised vehicles	Low	Neutral	<1%	Inside	0	Ins
G01.03.02	Off-road motorised driving	Low	Negative	<1%	Inside	-0.25	Ins
G05	Other human intrusions and disturbances	Medium	Negative	<1%	Inside	-0.5	Ins
I01	Invasive non-native species	Medium	Negative	<1%	Inside	-0.5	Ins
I02	Problematic native species	High	Negative	<1%	Inside	-0.75	Ins
J02.07	Water abstractions from groundwater	High	Negative	<1%	Inside	-0.75	Ins
K01.01	Erosion	High	Negative	3.5%	Inside	-1.5	Ins
K02.01	Species composition change (succession)	High	Negative	0.003%	Inside	-0.75	Ins
	Overall score					**-10.25**	

Peat extraction (C01.03)

3.15 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that turf cutting was ongoing on the southern margins of the site. This impact was identified as one of the main management issues within the site, having caused damage to heath habitats.

3.16 During vegetation mapping, turf cutting was found to be concentrated in the area north-west of Dooagh village. Most of the turf banks within the boundaries of the cSAC did not appear to have been cut recently.

Hand cutting of peat (C01.03.01)

3.17 Abandoned, revegetated cutovers were observed in areas of **4010 Wet heath** and turf cutting by hand is ongoing within this habitat in the area north-west of Dooagh village. The intensity of this impact has been assessed as high 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.

Paths, tracks, cycling tracks (D01.01)

3.18 Analysis of aerial photographs during the assessment of area showed that, during the period 2000-2005, approximately 0.36 ha of **4010 Wet heath** was lost to the development of a large track on the south-eastern side of Slievemore. During vegetation mapping, it was observed that a further 0.05 ha of **4010 Wet heath** had been lost due to the development of a track above Slievemore Holiday Village on the south-eastern side of Slievemore. The intensity of this impact has been assessed as high and its influence as negative.

Dispersed habitation (E01.03)

3.19 There have been some minor losses of this habitat due to the extension of concrete paving around a house on the southern side of Slievemore. The intensity of this impact has been assessed as high and its influence as negative.

Walking, horse riding and non-motorised vehicles (G01.02)

3.20 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that walking is one of the main recreational activities within the site. While most walkers favour coastal walks, small numbers of hillwalkers climb Slievemore and Croaghaun. Walkers cross some areas of **4010 Wet heath** en route to the summits, but no resultant damage was noted during the present survey. The intensity of this impact was assessed as low and its impact as neutral. 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)

3.21 During vegetation mapping, quad bike tracks were observed within **4010 Wet heath** at two locations near Keel West. The intensity of this impact was assessed as low and its impact as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Other human intrusions and disturbances (G05)

3.22 An archaeological survey, which was being conducted above the deserted village at Slievemore, resulted in some disturbance to **4010 Wet heath**. 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.

Invasive non-native species (I01)

3.23 *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.

3.24 *Campylopus introflexus* was recorded at two **4010 Wet heath** monitoring stops. One of these failed due to excessive cover of *C. introflexus* in the local vicinity, with a cover score of 5%. The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within 14 polygons dominated by **4010 Wet heath** during vegetation mapping, but its cover score did not exceed 0.1%.

Plate 1: *Rhododendron ponticum* invading wet heath (Photo: BEC Consultants).

3.25 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that small areas in the eastern part of the site had been colonised by the highly invasive non-native shrub *Rhododendron ponticum*. During the present survey, *R. ponticum* was found to be invading areas of **4010 Wet heath** on the southern side of Slievemore (Plate 1). The intensity of this impact was assessed as medium overall and its influence as negative. The area of the habitat affected has

been estimated to be less than 1%, due to the generally low abundance of *C. introflexus* and the localised distribution of *R. ponticum*.

Problematic native species (I02)

3.26 During the assessment of structure and functions, one **4010 Wet heath** monitoring stop (7.7%) failed due to excessive cover of *Pteridium aquilinum* in the local vicinity. Bracken encroachment may result in the Annex I habitat being replaced with non-Annex **HD1 Dense bracken**. However, this impact was not detected during the analysis of area so is only thought to be occurring at a small scale.

Water abstractions from groundwater (J02.07)

3.27 Drainage has been recorded under this impact category. Water is being drained from **4010 Wet heath** and diverted away by means of ditches. The intended purpose is not water abstraction but desiccation of the peat to facilitate development. 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).

3.28 During vegetation mapping, recently dug drains were observed in **4010 Wet heath** above Fohermore and above Slievemore Holiday Village on the south-eastern side of Slievemore. As well as the loss of habitat where the drain has been constructed, this impact is also likely to result in the drainage and degradation of the surrounding area. The intensity of this impact has been assessed as high 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.

Erosion (K01.01)

3.29 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that erosion was widespread within the site, particularly on gentler slopes that are accessible to sheep. Erosion of **4010 Wet heath** was noted during vegetation mapping. This impact may be linked to disturbance due to trampling by sheep. Due to CFP stock reductions *c.* 2002 the number of sheep on this site has fallen. However, once exposed by removal of the vegetation, areas of bare peat may continue to erode due to climatic conditions regardless of manipulation of grazing levels; the mean annual rainfall for this area was within the range of 1600-2000 mm per year for 1981-2010 (Met Éireann, 2013). Therefore unless restoration measures are undertaken in badly eroded areas, erosion is likely to continue. The intensity of this impact is assessed as high and its influence as negative. It was assessed that there is insufficient data to determine the trend for this impact. Approximately 3.5% of the area of **4010 Wet heath** is estimated to be under threat from erosion; this is the proportion of the habitat occurring in polygons with at least 5% bare peat.

Species composition change (succession) (K02.01)

3.30 Analysis of aerial photographs during the assessment of area showed that, during the period 2000-2005, approximately 0.05 ha of **4010 Wet heath** was lost to scrub encroachment, above Slievemore Holiday Village on the south-eastern side of Slievemore. The Annex I habitat was replaced with non-Annex **WS1 Scrub** dominated by *Ulex europaeus*. At the time of this survey,

scrub removal was being carried out to facilitate the development of a large track. The intensity of this impact has been assessed as high and its influence as negative.

3.31 The overall impacts score for **4010 Wet heath** has been calculated as -10.25. This is well below the nominal Favourable Reference Value of zero. Whilst there are signs of improvement due to stock reductions (see paragraph 3.7), it is not thought this will result in a significant change in the conservation status of the habitat overall within the next twelve years due to continued significant negative impacts such as erosion and peat extraction. The combined future trend for area and structure and functions was therefore assessed as no change. The future prospects for this habitat were therefore assessed as Unfavourable – Bad.

4030 Dry heath

Area

3.32 Changes in the area of **4030 Dry heath** were recorded for the period 1995 to 2010 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 13). 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 gain in area of **4030 Dry heath** was due to succession while the losses were due to dispersed habitation and the development of tracks. These impacts and trends are discussed later under future prospects. The overall change in habitat area was a gain of less than 1% per year, resulting in a status of Favourable.

Table 13: Impacts causing obvious changes in areas of 4030 Dry heath, 1995-2010.

Impact code	Impact	Area change (ha) 1995-2000	Area change (ha) 2000-2005	Area change (ha) 2005-2010	Area change (ha) 1995-2010
D01.01	Paths, tracks, cycling tracks	0.00	-0.002	0.00	-0.002
E01.03	Dispersed habitation	-0.004	0.00	0.00	-0.004
K02.01	Species composition change (succession)	0.00	+0.359	0.00	+0.359
All impacts		-0.004	+0.357	0.00	+0.353
% of habitat		-0.001	+0.118	0.00	+0.117
% loss per year		-0.0003	+0.024	0.00	+0.008

Structure and functions

3.33 Four monitoring stops were recorded in **4030 Dry heath** within Croaghaun / Slievemore cSAC (Table 14). In the assessment of structure and functions, three monitoring 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 75.0%. The structure and functions of **4030 Dry heath** were therefore assessed as Unfavourable – Bad.

3.34 The vegetation composition of **4030 Dry heath** was poor in some cases, with one monitoring stop (25.0%) failing due to excessive cover of the invasive non-native moss *Campylopus introflexus* and another (25.0%) failing due to excessive cover of *Pteridium aquilinum*.

3.35 The vegetation structure of **4030 Dry heath** was poor in one case, with one monitoring stop (25.0%) failing due to excessive levels of grazing. The physical structure of **4030 Dry heath** was poor in one case, with one monitoring stop (25.0%) failing due to excessive cover of disturbed bare ground in the local vicinity.

Future prospects

3.36 Seven impacts were recorded within **4030 Dry heath** (Table 15).

Non-intensive sheep grazing (A04.02.02)

3.37 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.38 During the assessment of structure and functions, grazing was found to occur throughout **4030 Dry heath** within Croaghaun / Slievemore cSAC, with one monitoring stop (25.0%) failing due to excessive grazing. The proportion of dwarf shrub shoots showing signs of grazing ranged from 15-65%. Another monitoring stop failed as the cover of disturbed bare ground in the local vicinity was excessive at 40%. This may be related to trampling by sheep. The intensity of this impact was assessed as medium overall and its influence as negative. The trend was assessed as improving due to stock reductions.

Paths, tracks, cycling tracks (D01.01)

3.39 There have been some minor losses of this habitat due to the development of a large track on the south-eastern side of Slievemore. The intensity of this impact has been assessed as high and its influence as negative.

Dispersed habitation (E01.03)

3.40 There have been some minor losses of this habitat due to the extension of concrete paving around a house on the southern side of Slievemore. The intensity of this impact has been assessed as high and its influence as negative.

Table 14: Monitoring criteria and failure rates for 4030 Dry heath (n = 4).

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	4	0	0
2	Number of positive indicator species present ≥ 2	Relevé	4	0	0
3a*	DH5 (Calcareous heath): cover of positive indicator species 50-75%	Relevé	0	n/a	n/a
3b*	Siliceous heath: cover of positive indicator species ≥ 50%		4	0	0
4	Proportion of dwarf shrub cover composed of *Myrica gale, Salix repens, Ulex gallii* collectively < 50%	Relevé	4	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	4	0	0
6	Cover of non-native species < 1%	Relevé	4	1	25.0
7	Cover of non-native species < 1%	Local vicinity	4	0	0
8	Cover of scattered native trees and scrub < 20%	Local vicinity	4	0	0
9	Cover of *Pteridium aquilinum* < 10%	Local vicinity	4	1	25.0
10	Cover of *Juncus effusus* < 10%	Local vicinity	4	0	0
Vegetation structure					
11	Senescent proportion of *Calluna vulgaris* cover < 50%	Relevé	4	0	0
12	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	4	1	25.0
13	No signs of burning inside boundaries of sensitive areas*	Local vicinity	4	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	4	0	0
Physical structure					
15	Cover of disturbed bare ground < 10%	Relevé	4	0	0
16	Cover of disturbed bare ground < 10%	Local vicinity	4	1	25.0

*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 future prospects for 4030 Dry heath. 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	100%	Inside	-3.0	Imp
D01.01	Paths, tracks, cycling tracks	High	Negative	0.001%	Inside	-0.75	Ins
E01.03	Dispersed habitation	High	Negative	0.001%	Inside	-0.75	Ins
G01.02	Walking, horseriding and non-motorised vehicles	High	Negative	<1%	Inside	-0.75	Ins
I01	Invasive non-native species	High	Negative	<1%	Inside	-0.75	Ins
I02	Problematic native species	High	Negative	<1%	Inside	-0.75	Ins
K02.01	Species composition change (succession)	High	Positive	0.12%	Inside	+0.75	Imp
	Overall score					**-6.0**	

Walking, horse riding and non-motorised vehicles (G01.02)

3.41 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that walking is one of the main recreational activities within the site. While most walkers favour coastal walks, small numbers of hillwalkers climb Slievemore and Croaghaun. Walking paths were observed in **4030 Dry heath**, resulting in erosion in some cases, particularly on the eastern ridge of Slievemore. The intensity of this impact was assessed as high and its impact as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Invasive non-native species (I01)

3.42 *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.

3.43 One **4030 Dry heath** monitoring stop (25.0%) failed due to excessive cover of *C. introflexus*, with a cover score of 1%. The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within one polygon dominated by **4030 Dry heath** during vegetation mapping, but its cover was low at 0.3%. *C. introflexus* was not recorded as forming extensive carpets.

3.44 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that small areas in the eastern part of the site had been colonised by the highly invasive non-native shrub *Rhododendron ponticum*. During the present survey, *R. ponticum* was found to be invading areas of **4030 Dry heath** on the southern slopes and in the corrie of Slievemore (Plate 2). The intensity of this impact was assessed as medium overall and its influence as negative. The area of the

habitat affected has been estimated to be less than 1%, due to the generally low abundance of *C. introflexus* and the localised distribution of *R. ponticum*.

Plate 2: *Rhododendron ponticum* establishing in dry heath (Photo: BEC Consultants).

Problematic native species (I02)

3.45 During the assessment of structure and functions, one **4030 Dry heath** monitoring stop (25.0%) failed due to excessive cover of *Pteridium aquilinum* in the local vicinity. Bracken encroachment may result in the Annex I habitat being replaced with non-Annex **HD1 Dense bracken**. However, this impact was not detected during the analysis of area so is only thought to be occurring at a small scale. The intensity of this impact was assessed as high and its influence as negative. The area of the habitat affected by bracken encroachment has been estimated to be less than 1%.

Species composition change (succession) (K02.01)

3.46 Analysis of aerial photographs during the assessment of area showed that, during the period 2000-2005, approximately 0.36 ha of **4030 Dry heath** was gained as a result of succession, below the cliffs at Ooghnagertleen Bunown. Indeed, the Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that as the majority of the cliff area was inaccessible to sheep, it was not threatened by overgrazing and had good conservation potential. The intensity of this impact has been assessed as high and its impact as positive. The area of **4030 Dry heath** affected during the reference period for this assessment has been estimated to be 0.12%. The trend has been assessed as improving.

3.47 The overall impacts score for **4030 Dry heath** has been calculated as -6.0. 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 CFP stock reductions and succession and some impacts have not been recorded in recent years. However, due to continuing negative impacts such as walking, invasive non-native species and bracken encroachment, the future prospects for this habitat were assessed as Unfavourable – Inadequate.

4060 Alpine and Boreal heath

Area

3.48 Changes in the area of **4060 Alpine and Boreal heath** were recorded for the period 1995 to 2010 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

3.49 Six monitoring stops were recorded in **4060 Alpine and Boreal heath** within Croaghaun / Slievemore cSAC (Table 16). In the assessment of structure and functions, three monitoring stops failed one criterion each. 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 50.0%. The structure and functions of **4060 Alpine and Boreal heath** were therefore assessed as Unfavourable – Bad.

3.50 The vegetation composition of **4060 Alpine and Boreal heath** was good, with no failures being recorded under the relevant criteria. Indeed, the Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the **4060 Alpine and Boreal heath** within the site are an excellent example of this habitat.

3.51 However, the vegetation structure of **4060 Alpine and Boreal heath** was poor in some cases, with one monitoring stop (25.0%) failing due to excessive levels of grazing and another (20.0%) due to excessive browsing. The physical structure of **4060 Alpine and Boreal heath** was poor in one case, with one monitoring stop (16.7%) failing due to excessive cover of disturbed bare ground in the local vicinity.

Future prospects

3.52 Three impacts were recorded within **4060 Alpine and Boreal heath** (Table 17).

<u>Non-intensive grazing (A04.02)</u>

3.53 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of

the site and had caused damage to vegetation and accelerated erosion in some areas. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged. Grazing by sheep and goats are discussed separately below.

Table 16. Monitoring criteria and failure rates for 4060 Alpine and Boreal heath (n = 6).

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	6	0	0
2	Cover of positive indicator species ≥ 66%	Relevé	6	0	0
3	Cover of dwarf shrubs ≥ 10%	Relevé	6	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	6	0	0
5	Cover of non-native species < 1%	Relevé	6	0	0
Vegetation structure					
6	Live leaves of *Carex bigelowii, Deschampsia flexuosa, Festuca ovina, F. vivipara* showing signs of grazing collectively < 10%	Relevé	4	1	25.0
7	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	5	1	20.0
8	No signs of burning inside feature	Local vicinity	6	0	0
Physical structure					
9	Cover of disturbed bare ground < 10%	Relevé	6	0	0
10	Cover of disturbed bare ground < 10%	Local vicinity	6	1	16.7

Non-intensive sheep grazing (A04.02.02)

3.54 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that, while there are areas of erosion, the **4060 Alpine and Boreal heath** within the site were undisturbed and did not suffer badly from overgrazing. In contrast, during the assessment of structure and functions, grazing was found to occur throughout **4060 Alpine and Boreal heath** within Croaghaun / Slievemore cSAC, with two monitoring stops, both located on the northern slopes of Slievemore, failing due to excessive grazing or browsing. The proportion of dwarf shrub shoots showing signs of grazing ranged from 5-40%. Another monitoring stop failed as the cover of disturbed bare ground in the local vicinity was excessive at 15%. This may be related to trampling by sheep. The intensity of this impact was assessed as medium overall and its influence as negative. The trend was assessed as improving due to stock reductions.

Non-intensive goat grazing (A04.02.04)

3.55 A herd of approximately 11 feral goats was observed within **4060 Alpine and Boreal heath** at Keel West. As the nearest **4060 Alpine and Boreal heath** monitoring stop did not exhibit excessive levels of grazing, the intensity of this impact was assessed as low and its influence as neutral. The area of the habitat affected has been estimated to be approximately 15%.

Table 17: Assessment of future prospects for 4060 Alpine and Boreal heath. 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	100%	Inside	-3.0	Imp
A04.02.04	Non-intensive goat grazing	Low	Neutral	15%	Inside	0	Ins
G01.02	Walking, horseriding and non-motorised vehicles	High	Negative	<1%	Inside	-0.75	Ins
	Overall score					**-3.75**	

Walking, horse riding and non-motorised vehicles (G01.02)

3.56 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that walking is one of the main recreational activities within the site. While most walkers favour coastal walks, small numbers of hillwalkers climb Slievemore and Croaghaun. Walking paths were observed in **4060 Alpine and Boreal heath**, resulting in erosion in some cases, particularly on the eastern ridge of Slievemore. The intensity of this impact was assessed as high and its impact as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

3.57 The overall impacts score for **4060 Alpine and Boreal heath** has been calculated as -3.75. 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 stock reductions. However, some impacts remain due to hill walking. The future prospects for this habitat were therefore assessed as Unfavourable – Inadequate.

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

Area

3.58 Changes in the area of ***6230 Species-rich *Nardus* grasslands** were recorded for the period 1995 to 2010 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.

Table 18: Monitoring criteria and failure rates for *6230 Species-rich *Nardus* grassland (*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	1	100.0
11	Proportion of the sward between 5-50 cm tall ≥ 25%	Relevé	1	0	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 <20m²	Local vicinity	1	0	0

Structure and functions

3.59 One monitoring stop was recorded in ***6230 Species-rich *Nardus*** within Croaghaun / Slievemore 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* grassland** were therefore assessed as Unfavourable - Bad.

3.60 The vegetation composition of the ***6230 Species-rich *Nardus* grassland** monitoring stop was good, with no failures being recorded under the relevant criteria. However, the vegetation structure of the monitoring stop was poor. Criterion 4 stipulates that the ratio of forbs to graminoids should be between 20 and 90%. A ratio of 3.8% was recorded, falling short of the threshold and causing the monitoring stop to fail. The vegetation structure and physical structure of the ***6230 Species-rich *Nardus* grassland** monitoring stop was good, with no failures being recorded under the relevant criteria.

3.61 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Croaghaun / Slievemore cSAC, where only 0.01 ha of ***6230 Species-rich *Nardus* grasslands** were recorded, comprising 0.0003% of the site.

Future prospects

3.62 Non-intensive grazing by sheep was the only impact recorded within ***6230 Species-rich *Nardus* grasslands** (Table 19).

Table 19: Assessment of future prospects for *6230 Species-rich *Nardus* grasslands. Under trend, Dis = Disimproving

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Low	Negative	100%	Dis	Inside	-1.5
	Overall score						**-1.5**

Non-intensive sheep grazing (A04.02.02)

3.63 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.64 Only one occurrence of ***6230 Species-rich *Nardus* grasslands** was recorded within the Croaghaun / Slievemore cSAC. It was located near Bunnafreva Lough East (Fig. 4d), in a relatively remote location. Sheep grazing occurred throughout this area. The intensity of this impact was assessed as low and its influence as negative, as medium intensity grazing is required to maintain this habitat and prevent it from developing into heath. The trend was assessed as disimproving due to stock reductions.

3.65 The overall impacts score for ***6230 Species-rich *Nardus* grasslands** was calculated as -1.5, which is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be disimproving due to stock reductions. The future prospects for this habitat were therefore assessed as Unfavourable - Inadequate.

***7130/7130 Blanket bog**

Area

3.66 Changes in the area of ***7130/7130 Blanket bog** were recorded for the period 1995 to 2010 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. Only losses in habitat were found, there were no gains in habitat area (Table 20). 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 loss in area of ***7130/7130 Blanket bog** was due to hand cutting of peat and the development of tracks. 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.

Table 20. Impacts causing obvious losses in areas of *7130/7130 Blanket bog, 1995-2010.
n.m. indicates not measured.

Impact code	Impact	Area loss (ha) 1995-2000	Area loss (ha) 2000-2005	Area loss (ha) 2005-2010	Area loss (ha) 1995-2010
C01.03.01	Hand cutting of peat	0.24	0.002	0.00	0.24
D01.01	Paths, tracks, cycling tracks	0.04	0.000	0.00	0.04
K01.01	Erosion	n.m.	n.m.	n.m.	n.m.
All impacts		0.28	0.002	0.00	0.28
% of habitat		0.13	0.001	0.00	0.13
% loss per year		0.03	0.0002	0.00	0.01

Structure and functions

3.67 Eight monitoring stops were recorded in ***7130/7130 Blanket bog** within Croaghaun / Slievemore cSAC (Table 21). The monitoring stops were located within ***7130 Active blanket bog**. In the assessment of structure and functions, five 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 62.5%. The structure and functions of ***7130 Active blanket bog** were therefore assessed as Unfavourable – Bad. Vegetation mapping indicated that the proportion of inactive and eroding bog within the total area of bog was 16.9% (Tables 2 and 3). These findings provide further support for the Unfavourable – Bad assessment result.

3.68 The vegetation composition of ***7130/7130 Blanket bog** was poor in some cases, with one monitoring stop (12.5%) failing due to an inadequate number of positive indicator species and inadequate cover of lichens and bryophytes. Another monitoring stop (12.5%) failed due to excessive cover of *Calluna vulgaris*.

Table 21. Monitoring criteria and failure rates for *7130/7130 Blanket bog (*n* = 8).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 7	Relevé	8	1	12.5
2	Cover of bryophyte or lichen species, excluding *Sphagnum fallax* ≥ 10%	Relevé	8	1	12.5
3	Cover of each of the following species: *Calluna vulgaris, Eleocharis multicaulis, Eriophorum vaginatum, Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually < 75%	Relevé	8	1	12.5
4	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Pteridium aquilinum, Ranunculus repens* collectively < 1%	Relevé	8	0	0
5	Cover of non-native species < 1%	Relevé	8	0	0
6	Cover of non-native species < 1%	Local vicinity	7	1	14.3
7	Cover of scattered native trees and scrub < 10%	Local vicinity	7	0	0
Vegetation structure					
8	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	7	0	0
9	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	8	0	0
10	No signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	8	0	0
11	No signs of burning inside boundaries of sensitive areas*	Local vicinity	8	1	12.5
Physical structure					
12	Cover of disturbed bare ground < 10%	Relevé	8	0	0
13	Cover of disturbed bare ground < 10%	Local vicinity	8	2	25.0
14	Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting < 10%	Local vicinity	7	1	14.3
15	Cover of erosion gullies and eroded areas within the greater bog mosaic < 5%	Local vicinity	8	5	50.0

*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.

3.69 The vegetation structure of ***7130/7130 Blanket bog** was poor in one case, with one monitoring stop (12.5%) failing due to burning in sensitive areas of the habitat. The physical structure of ***7130/7130 Blanket bog** was poor, with four monitoring stops (50.0%) failing due to high levels of peat erosion in the local vicinity. One of these monitoring stops (14.3%) also failed due to

excessive drainage and two of these monitoring stops (25.0%) also failed due to excessive cover of disturbed bare ground in the local vicinity.

Future prospects

3. 70 Eight impacts were recorded within ***7130/7130 Blanket bog** (Table 22).

Non-intensive sheep grazing (A04.02.02)

3.71 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Some areas of **PB2 Upland blanket bog** had also been damaged by overgrazing. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.72 During the assessment of structure and functions, grazing intensity within ***7130/7130 Blanket bog** was found to vary across the site. The proportion of dwarf shrub shoots showing signs of grazing ranged from 0-30%. No monitoring stops failed due to excessive grazing. However, the cover of disturbed bare ground ranged from 0-65% and was excessive in the local vicinity of two monitoring stops (25.0%). This may be related to trampling by sheep. The intensity of this impact was assessed as medium overall and its influence as negative. The trend was assessed as improving due to the CFP stock reductions.

Peat extraction (C01.03)

3.73 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that turf cutting was ongoing on the southern margins of the site. This impact was identified as one of the main management issues within the site, having caused damage to ***7130/7130 Blanket bog**.

3.74 During vegetation mapping, turf cutting was found to be concentrated in the area north-west of Dooagh village. Most of the turf banks within the boundaries of the cSAC did not appear to have been cut recently. Hand cutting and mechanical removal of peat are discussed separately below.

Hand cutting of peat (C01.03.01)

3.75 Abandoned, revegetated cutovers were observed in areas of ***7130/7130 Blanket bog** and turf cutting by hand is ongoing within this habitat in the area north-west of Dooagh village. The intensity of this impact has been assessed as high 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.

Mechanical removal of peat (C01.03.02)

3.76 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that while much of the peat extraction within the site is carried out by mechanical means, there is little commercial turf cutting. Nevertheless, the intensity of this impact has been assessed as high 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 22: Assessment of future prospects for *7130/7130 Blanket bog. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Medium	Negative	100%	Imp	Inside	-3.0
C01.03.01	Hand cutting of peat	High	Negative	<1%	Ins	Inside	-0.75
C01.03.02	Mechanical removal of peat	High	Negative	<1%	Ins	Inside	-0.75
D01.01	Paths, tracks, cycling tracks	High	Negative	0.13%	Ins	Inside	-0.75
G01.02	Walking, horse riding and non-motorised vehicles	High	Negative	<1%	Ins	Inside	-0.75
H05.01	Garbage and solid waste	Medium	Negative	<1%	Ins	Inside	-0.5
I01	Invasive non-native species	Low	Neutral	0.1%	Ins	Inside	0
K01.01	Erosion	High	Negative	9.3%	Ins	Inside	-1.5
	Overall score						**-8.0**

Paths, tracks, cycling tracks (D01.01)

3.77 There have been some minor losses of this habitat due to the development of a large track on the south-eastern side of Slievemore. The intensity of this impact has been assessed as high and its influence as negative.

Walking, horse riding and non-motorised vehicles (G01.02)

3.78 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that walking is one of the main recreational activities within the site. While most walkers favour coastal walks, small numbers of hillwalkers climb Slievemore and Croaghaun. Walking paths were observed in ***7130/7130 Blanket bog**, resulting in erosion in some cases. The intensity of this impact was assessed as high and its impact as negative. The area of the habitat affected has been estimated to be less than 1%, due to the localised nature of this impact.

Garbage and solid waste (H05.01)

3.79 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that a number of cars and other rubbish have been dumped on cutover bog within the boundaries of the site, causing small-scale habitat damage and decreasing aesthetic value. 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.

Invasive non-native species (I01)

3.80 *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.

3.81 One ***7130/7130 Blanket bog** monitoring stop failed due to excessive cover of *C. introflexus* in the local vicinity, with a cover score of 1%. The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within two polygons dominated by **7130/7130 Blanket bog** during vegetation mapping, but its cover did not exceed 0.1%. As *C. introflexus* was not recorded as forming extensive carpets, the intensity of this impact was assessed as low and its influence as neutral. The mean cover of *C. introflexus* in the local vicinity of **7130/7130 Blanket bog** monitoring stops was 0.1%.

Erosion (K01.01)

3.82 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that erosion was widespread within the site, particularly on gentler slopes that are accessible to sheep. Overgrazing by sheep had accelerated peat erosion in some areas, particularly on the lower slopes, which had been eroded down to the mineral soil in places. During vegetation mapping peat hagging was observed within ***7130/7130 Blanket bog** on both Slievemore and Croaghaun. Due to CFP stock reductions *c.* 2002 the number of sheep on this site has fallen. However, once exposed by removal of the vegetation, areas of bare peat may continue to erode due to climatic conditions regardless of manipulation of grazing levels; the mean annual rainfall for this area was within the range of 1600-2000 mm per year, and 2000-2400 mm per year at the summit of Croaghaun, for 1981-2010 (Met Éireann, 2013). Therefore unless restoration measures are undertaken in badly eroded areas, erosion is likely to continue. The intensity of this impact is assessed as high and its influence as negative. It was assessed that there is insufficient data to determine the trend for this impact. The area of ***7130/7130 Blanket bog** estimated to be under threat from erosion is 9.3%; this is the proportion of the habitat occurring in polygons with at least 5% **PB5 Eroding blanket bog**.

3.83 The overall impacts score for ***7130/7130 Blanket bog** has been calculated as -8.0. This is below the nominal Favourable Reference Value of zero. Whilst there are signs of improvement due to stock reductions (see paragraph 3.7), it is not thought this will result in a significant change in the conservation status of the habitat overall within the next twelve years due to continued erosion in the absence of restoration measures and other ongoing impacts. The combined future trend for area and structure and functions was assessed as no change. The future prospects for this habitat were therefore assessed as Unfavourable – Bad.

7140 Transition mires

Area

3.84 Changes in the area of **7140 Transition mires** were recorded for the period 1995 to 2010 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.

Table 23: 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	1	0	0
1b	PFLU5: number of positive indicator species from Groups i or ii present ≥ 3		0	n/a	n/a
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 disturbed bare ground < 10%	Relevé	1	0	0
8	Cover of disturbed bare ground < 10%	Local vicinity	1	0	0
9	Area showing signs of drainage resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	1	1	100.0

Structure and functions

3.85 One monitoring stop was recorded in **7140 Transition mires** within Croaghaun / Slievemore cSAC (Table 23). The monitoring stop was recorded in the PO1a *Menyanthes trifoliata - Carex limosa* infilling pool sub-community. In the assessment of structure and functions, the 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 **7140 Transition mires** were therefore assessed as Unfavourable – Bad.

3.86 The vegetation composition and vegetation structure of the **7140 Transition mires** monitoring stop were good with no failures being recorded under the relevant criteria. However, the physical structure of the **7140 Transition mires** monitoring stop was poor, failing due to excessive drainage.

3.87 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Croaghaun / Slievemore cSAC, where only 0.06 ha of **7140 Transition mires** were recorded, comprising 0.002% of the site.

Future prospects

3.88 Non-intensive grazing by sheep was the only impact recorded within **7140 Transition mires** (Table 24).

Table 24: Assessment of future prospects for 7140 Transition mires. Under trend, Imp = Improving

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Low	Negative	100%	Imp	Inside	-1.5
	Overall score						**-1.5**

Non-intensive sheep grazing (A04.02.02)

3.89 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.90 During the assessment of structure and functions, the **7140 Transition mires** monitoring stop was not found to be excessively grazed (Criterion 6). However, the cover of disturbed bare ground within the monitoring stop and in the local vicinity was 3% and the monitoring stop failed due to excessive drainage. This may be due to trampling by sheep. The intensity of this impact was assessed as low and its influence as negative. The trend was assessed as improving due to stock reductions.

3.91 The overall impacts score for **7140 Transition mires** was calculated as -1.5, which 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 stock reductions. The future prospects for this habitat were therefore assessed as Favourable.

7150 *Rhynchosporion* depressions

3.92 **7150 *Rhynchosporion* depressions** are relatively rare within Croaghaun / Slievemore cSAC where only 0.19 ha of this habitat was recorded, comprising 0.01% of the site. As the examples of **7150 *Rhynchosporion* depressions** within the site were small and possibly marginal, the conservation status of this habitat has not been assessed.

7230 Alkaline fens

Area

3.93 Changes in the area of **7230 Alkaline fens** were recorded for the period 1995 to 2010 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

3.94 One monitoring stop was recorded in **7230 Alkaline fens** within Croaghaun / Slievemore cSAC (Table 25). The monitoring stop was recorded in the RFLU1a *Carex viridula* subsp. *oedocarpa - Pinguicula vulgaris - Juncus bulbosus* flush brown moss sub-community. In the assessment of structure and functions, the monitoring stop failed three criteria. 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 **7230 Alkaline fens** were therefore assessed as Unfavourable – Bad.

3.95 The vegetation composition of the **7230 Alkaline fens** monitoring stop was poor, failing due to an inadequate cover of brown moss and vascular indicator species. The vegetation structure of the **7230 Alkaline fens** monitoring stop was good with no failures being recorded under the relevant criterion. The physical structure of the **7230 Alkaline fens** monitoring stop was poor, failing due to excessive cover of disturbed bare ground within the monitoring stop and in the local vicinity.

3.96 The small sample size of one monitoring stop reflects the relative rarity of this habitat within Croaghaun / Slievemore cSAC, where only 0.20 ha of **7230 Alkaline fens** were recorded, comprising 0.01% of the site.

Table 25: 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	1	0	0
2b	RFLU4/RFEN1a: number of positive vascular indicator species present ≥ 3		0	n/a	n/a
3a	RFLU1a/RFLU2: vegetation cover of brown mosses and vascular indicator species ≥ 20%	Relevé	1	1	100.0
3b	RFLU4/RFEN1a: vegetation cover of brown mosses and vascular indicator species ≥ 75%		0	n/a	n/a
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		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	1	100.0
10	Cover of disturbed, bare ground < 10%	Local vicinity	1	1	100.0
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

3.97 Non-intensive grazing by sheep was the only impact recorded within **7230 Alkaline fens** (Table 26).

Table 26: Assessment of future prospects for 7230 Alkaline fens. Under trend, Imp = Improving

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Negative	100%	Inside	-1.5	Imp
	Overall score					**-1.5**	

Non-intensive sheep grazing (A04.02.02)

3.98 The Croaghaun / Slievemore cSAC Conservation Plan (NPWS, 2009) stated that the main land use within the site was sheep grazing. The level of grazing varied substantially throughout the site. Overgrazing by sheep was considered to be the single biggest threat to the conservation of the site and had caused damage to vegetation and accelerated erosion in some areas. Grazing

levels were particularly intense on the lower slopes, which had been eroded down to the mineral soil in some places. Although exact numbers of livestock were unknown, the stocking rates in some areas at that time were not considered to be compatible with conservation objectives for the site. A Commonage Framework Plan, applicable to approximately 95% of the site, recommended destocking levels between 0 and 100%, depending on the agricultural unit. Three commonage units were identified as being undamaged while three others were identified as being moderately to severely damaged.

3.99 During the assessment of structure and functions, the **7230 Alkaline fens** monitoring stop was not found to be excessively grazed (Criterion 8). However, the monitoring stop failed due to excessive cover of disturbed bare ground (15%) within the monitoring stop and in the local vicinity. This may be due to trampling by sheep. The intensity of this impact was assessed as low and its influence as negative. The trend was assessed as improving due to stock reductions.

3.100 The overall impacts score for **7230 Alkaline fens** was calculated as -1.5, which 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 stock reductions. The future prospects for this habitat were therefore assessed as Favourable.

8110 Siliceous scree

Area

3.101 Changes in the area of **8110 Siliceous scree** were recorded for the period 1995 to 2010 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

3.102 Two monitoring stops were recorded in **8110 Siliceous scree** within Croaghaun / Slievemore cSAC (Table 27). In the assessment of structure and functions, these 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.

Future prospects

3.103 No impacts (Threats, Pressures and Activities code X) were recorded within **8110 Siliceous scree**.

3.104 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.

Table 27: Monitoring criteria and failure rates for 8110 Siliceous scree (*n* = 2).

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	2	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	2	0	0
3	Proportion of vegetation composed of non-native species < 1%	Relevé	2	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	2	0	0
6	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	2	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	2	0	0
9	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Local vicinity	2	0	0

8220 Siliceous rocky slopes

Area

3.105 Changes in the area of **8220 Siliceous rocky slopes** were recorded for the period 1995 to 2010 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

3.106 Two monitoring stops were recorded in **8220 Siliceous rocky slopes** within Croaghaun / Slievemore cSAC (Table 28). In the assessment of structure and functions, these 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.

Table 28: 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

Future prospects

3.107 No impacts (Threats, Pressures and Activities code X) were recorded within **8220 Siliceous rocky slopes**.

3.108 The overall impacts score for **8220 Siliceous 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.

1230 Vegetated sea cliffs

3.109 Although the conservation status of **1230 Vegetated sea cliffs** was not assessed during this survey, it should be noted that populations of the highly invasive non-native *Gunnera tinctoria* were observed to be establishing within this habitat.

Summary of conservation assessment

3.110 The results of the conservation assessment of Annex I habitats are summarised in Table 29. Of the nine habitats assessed, seven were assessed as Unfavourable – Bad and two as Favourable.

3.111 Habitats generally performed well in the assessment of area, with no major losses of habitat being readily apparent. Peatland habitats and ***6230 Species-rich *Nardus* grassland** performed poorly in the assessments of structure and functions and in the overall assessment, while rocky habitats performed better. **4030 Dry heath, 4060 Alpine and Boreal heath, 7140 Transition mire** and **7230 Alkaline fens** performed better in the assessment of future prospects than the

assessment of structure and functions as it is expected that these habitats will gradually recover as stock numbers have been reduced from previously higher levels.

Table 29: Summary of conservation assessments for assessed Annex I habitats in the Croaghaun / Slievemore survey area.

Annex I code	Habitat	Change in % area	Structure and function	Future prospects	Overall score
4010	Wet heath	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Bad	Unfavourable - Bad
4030	Dry heath	Favourable	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
4060	Alpine and Boreal heath	Favourable	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
*6230	Species-rich *Nardus* grassland	Favourable	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
*7130/7130	Blanket bog (*active only)	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Bad	Unfavourable - Bad
7140	Transition mire	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
7230	Alkaline fens	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
8110	Siliceous scree	Favourable	Favourable	Favourable	Favourable
8220	Siliceous rocky slopes	Favourable	Favourable	Favourable	Favourable

4. DISCUSSION

Natura 2000 assessment

4.1 Eleven Annex I habitats were recorded in the cSAC that are currently not listed for the site in the Natura 2000 Standard Data Form, habitats 1140, 1160, 2120, *21A0, 3160, 3260, *6230, 7150, 7230, 8110 and 8220. The beach at Pollawaddy was recorded as **1140 Tidal mudflats and sandflats** and behind this beach occur ***21A0 Machair** and **2120 Marram dunes (white dunes)**. Within the bay at Keem are the cSAC includes a small marine area recorded as **1160 Large shallow inlets and bays**. Around the lower eastern slopes of Croaghaun, **3160 Dystrophic lakes** were recorded. Small streams on Croaghaun supported **3260 Floating river vegetation**. A very small example of ***6230 Species-rich *Nardus* grassland** was recorded on the northern slopes of Croaghaun and around the lakes north of here were small localised occurrences of **7150 *Rhynchosporion* depressions**. A marginal example of **7140 Transition mire** occurs off the Dooagh road. Flushes referable to **7230 Alkaline fens** occur in several places on Slievemore. Unlike the previous nine habitats, **8110 Siliceous scree** and **8220 Siliceous rocky slopes** are relatively abundant across the site on steeper ground.

4.2 Six of the seven Annex I habitats listed on the Natura 2000 Standard Data Form, habitats 1230, 4010, 4030, *7130/7130, 8110 and 8220, are rated as 'D' under representativity and hence are not currently qualifying interests as they are deemed to have a 'non-significant presence'. It is not clear on what basis these habitats have been deemed non-significant. **4010 Wet heath** covers 42.8% of the cSAC, making the 18% currently listed as occurring a significant underestimation. **1230 Vegetated sea cliffs** cover 2.6% of the cSAC and 4.7% of the larger survey area. The currently listed cSAC area of 10% is therefore an overestimate; these include some of the highest sea cliffs in the country. **4030 Dry heath** covers 8.0% of the cSAC and ***7130/7130 Blanket bog** covers 6.6%. **3130 Upland oligotrophic lakes** are significantly represented by Lough Acorrymore and Bunnafreva Lough West. **3110 Lowland oligotrophic lakes** are significantly represented by Lough Nakeeroge East and West.

4.3 Currently the only qualifying interest for the site is **4060 Alpine and Boreal heath**; the area for this appears to have been fairly accurately assessed. An area of 9% is listed on the Standard Data Form, whilst the present survey calculated the cover to be 8.1%.

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.

Other recommendations

4.5 Whilst a Conservation Statement exists for Croaghaun / Slievemore cSAC, a Conservation Plan 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 main impacts are livestock grazing and, to a lesser extent, peat extraction and blanket peat erosion.

4.6 Levels of livestock grazing are being addressed through the CFP. Whilst stock reductions *c.*2002 appear 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 Active turf-cutting by mechanised methods is occurring within the site having a major localised impact on ***7130/7130 Blanket bog**.

4.8 Erosion of blanket peat is an impact in ***7130/7130 Blanket bogs.** Whilst some areas of eroded peat may gradually revegetate as a result of stock reductions, 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 priority status.

4.9 The boundary between Croaghaun / Slievemore (cSAC 001955) and Achill Head (cSAC 002268) should be reviewed with regard to the incorrect delineation of the marine and terrestrial environment that results from erroneous mapping in the original six-inch maps. In particular, substantial areas of **1230 Vegetated sea cliffs** on the northwest face of Croaghaun occur within the area currently designated as Achill Head cSAC, but are contiguous with the same habitat within Croaghaun / Slievemore cSAC. Habitat **1230 Vegetated sea cliffs** is not listed on the Standard Data Form for Achill Head cSAC.

4.10 It would be desirable for future phases of monitoring to expand on the network of monitoring stops established by this survey, particularly for habitats with low numbers of stops. Placement of additional stops should take into account the spatial distribution of existing stops.

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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 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 Tidal mudflats and sandflats
1160	Large shallow inlets and bays	1160 Large shallow inlets and bays
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	1230 Vegetated sea cliffs
2120	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	2120 Marram Dunes (White Dunes)
21A0	Machairs (* in Ireland)	*21A0 Machair
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
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	3260 Floating river vegetation
4010	Northern Atlantic wet heaths with *Erica tetralix*	4010 Wet heath
4030	European dry heaths	4030 Dry heath
4060	Alpine and Boreal heaths	4060 Alpine and Boreal heath
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	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
8210	Calcareous rocky slopes with chasmophytic vegetation	8210 Calcareous rocky slopes
8220	Siliceous rocky slopes with chasmophytic vegetation	8220 Siliceous rocky slopes

APPENDIX 2: PHOTOGRAPHS

Plate A1: *Salix herbacea* growing with *Calluna vulgaris* on exposed rock, Croaghaun. (Photo: Jenni Roche).

Plate A2: North Atlantic hepatic mat of *Herbertus aduncus* and *Pleurozia purpurea,* growing with *Vaccinium myrtillus, Calluna vulgaris, Cladonia portentosa* and *Racomitrium lanuginosum* (Photo: Jenni Roche).

Plate A3: Sea cliffs on Little Saddle Head at the western tip of Achill Island (Photo: Jenni Roche).

Plate A4: View east from Croaghaun across the lowland bog to Slievemore (Photo: Jenni Roche).

Plate A5: View of the beach at Keem and Moyteoge Head (Photo: Jenni Roche).

Plate A6: *Molinia*-dominated wet heath (Photo: Orla Daly).

Plate A7: Relevé recorded in montane heath from Croaghaun. *Calluna vulgaris* dominates with a bright green patch of *Juniperus communis* and scattered *Cladonia* spp. (Photo: Jenni Roche).

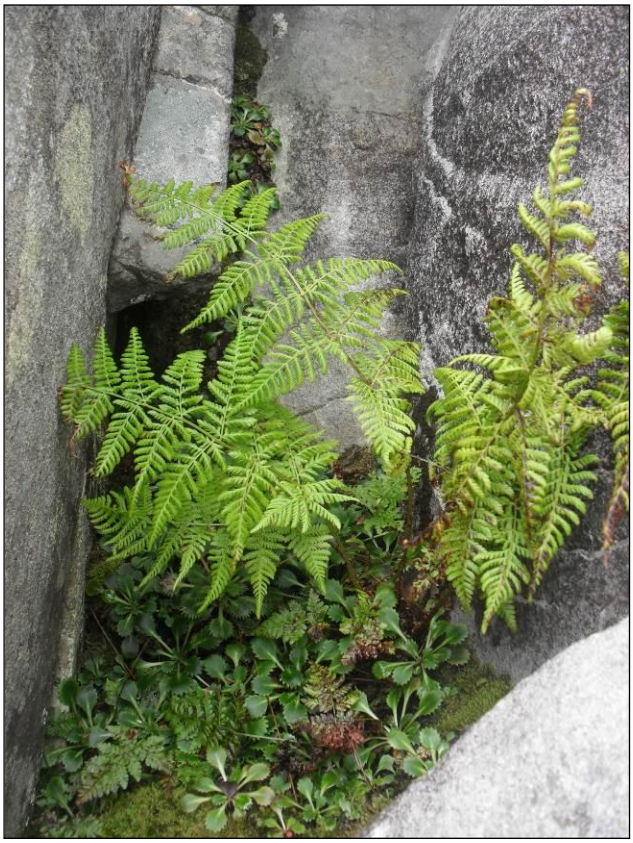


Plate A8: Rocky cleft sheltering *Dryopteris dilatata* and *Saxifraga spathularis* (Photo: Orla Daly).

Plate A9: View west across Lough Acorrymore, an upland oligotrophic lake, to the rocky upper slopes of Croaghaun (Photo: Orla Daly).

APPENDIX 3: PLANT SPECIES LIST

All species recorded from relevés, waypoints and polygons during the NSUH survey of Croaghaun / Slievemore cSAC are listed.

VASCULAR SPECIES	
Species name	**Common name**
Agrostis canina	Velvet Bent
Agrostis capillaris	Common Bent
Agrostis stolonifera	Creeping Bent
Agrostis vinealis	Brown Bent
Anagallis tenella	Bog Pimpernel
Anthoxanthum odoratum	Sweet Vernal-grass
Arctostaphylos uva-ursi	Bearberry
Asplenium adiantum-nigrum	Black Spleenwort
Blechnum spicant	Hard-fern
Cakile maritima	Sea Rocket
Calluna vulgaris	Heather
Carex bigelowii	Stiff Sedge
Carex binervis	Green-ribbed Sedge
Carex echinata	Star Sedge
Carex flacca	Glaucous Sedge
Carex nigra	Common Sedge
Carex panicea	Carnation Sedge
Carex viridula subsp. *brachyrrhyncha*	a Yellow-sedge
Carex viridula subsp. *oedocarpa*	a Yellow-sedge
Chrysosplenium oppositifolium	Opposite-leaved Golden-saxifrage
Cirsium dissectum	Meadow Thistle
Daboecia cantabrica	St Dabeoc's Heath
Dactylorhiza maculata	Heath Spotted-orchid
Danthonia decumbens	Heath-grass
Deschampsia flexuosa	Tufted Hair-grass
Drosera rotundifolia	Round-leaved Sundew
Dryopteris dilatata	Broad Buckler-fern
Eleocharis multicaulis	Many-stalked Spike-rush
Empetrum nigrum	Crowberry
Erica cinerea	Bell Heather
Erica tetralix	Cross-leaved Heath

VASCULAR SPECIES

Species name	Common name
Eriophorum angustifolium	Common Cottongrass
Eriophorum vaginatum	Hare's-tail Cottongrass
Euphrasia sp.	an Eyebright
Festuca ovina	Sheep's-fescue
Festuca rubra	Red Fescues
Festuca vivipara	Viviparous Sheep's-fescue
Galium saxatile	Heath Bedstraw
Gunnera tinctoria	Giant-rhubarb
Holcus lanatus	Yorkshire-fog
Huperzia selago	Fir Clubmoss
Hydrocotyle vulgaris	Marsh Pennywort
Jasione montana	Sheep's-bit
Juncus bulbosus	Bulbous Rush
Juncus effusus	Soft-rush
Juncus squarrosus	Heath Rush
Juniperus communis subsp. *nana*	Common Juniper
Leontodon autumnalis	Autumn Hawkbit
Lotus corniculatus	Common Bird's-foot-trefoil
Luzula sylvatica	Great Wood-rush
Lysimachia nemorum	Yellow Pimpernel
Menyanthes trifoliata	Bogbean
Molinia caerulea	Purple Moor-grass
Montia fontana	Blinks
Nardus stricta	Mat-grass
Narthecium ossifragum	Bog Asphodel
Pedicularis sylvatica	Lousewort
Pinguicula vulgaris	Common Butterwort
Plantago lanceolata	Ribwort Plantain
Polygala serpyllifolia	Heath Milkwort
Polygala vulgaris	Common Milkwort
Potamogeton polygonifolius	Bog Pondweed
Potentilla erecta	Tormentil
Prunella vulgaris	Selfheal
Pteridium aquilinum	Bracken
Ranunculus acris	Meadow Buttercup
Ranunculus flammula	Lesser Spearwort

VASCULAR SPECIES

Species name	Common name
Rhododendron ponticum	Rhododendron
Rhynchospora alba	White Beak-sedge
Sagina procumbens	Procumbent Pearlwort
Salix herbacea	Dwarf Willow
Saxifraga spathularis	St Patrick's-cabbage
Saxifraga stellaris	Starry Saxifrage
Schoenus nigricans	Black Bog-rush
Solidago virgaurea	Goldenrod
Sorbus aucuparia	Rowan
Succisa pratensis	Devil's-bit Scabious
Trichophorum germanicum	Deergrass
Trifolium pratense	Red Clover
Utricularia sp.	a Bladderwort
Vaccinium myrtillus	Bilberry
Viola palustris	Marsh Violet

BRYOPHYTES

Species name	Common name
Anastrepta orcadensis	Orkney Notchwort
Bazzania tricrenata	Lesser Whipwort
Brachythecium rutabulum	Rough-stalked Feather-moss
Breutelia chrysocoma	Golden-head Moss
Calliergonella cuspidata	Pointed Spear-moss
Calypogeia muelleriana	Mueller's Pouchwort
Campylopus atrovirens var. *atrovirens*	Bristly Swan-neck Moss
Campylopus flexuosus	Rusty Swan-neck Moss
Campylopus introflexus	Heath Star-moss
Campylopus setifolius	Silky Swan-neck Moss
Cephalozia bicuspidata	Two-horned Pincerwort
Cephalozia connivens	Forcipated Pincerwort
Cephalozia leucantha	-
Cephaloziella sp.	a Threadwort
Dicranella palustris	Marsh Forklet-moss
Dicranum majus	Greater Fork-moss
Dicranum scoparium	Broom Fork-moss
Diplophyllum albicans	White Earwort

BRYOPHYTES

Species name	Common name
Drepanocladus revolvens	Rust Hook-moss
Fissidens sp.	a Pocket-moss
Frullania tamarisci	Tamarisk Scalewort
Frullania teneriffae	Sea Scalewort
Herbertus aduncus subsp. *hutchinsiae*	Juniper Prongwort
Hylocomium splendens	Glittering Wood-moss
Hymenophyllum tunbrigense	Tunbridge Filmy-Fern
Hymenophyllum wilsonii	Wilson's Filmy-Fern
Hypnum jutlandicum	Heath Plait-moss
Isothecium myosuroides	Mouse-tail Moss
Isothecium myosuroides var. *brachythecioides*	Mouse-tail Moss
Kurzia pauciflora	Bristly Fingerwort
Lepidozia cupressina	Rock Fingerwort
Leucobryum glaucum	Large White-moss
Lophozia ventricosa	Tumid Notchwort
Mastigophora woodsii	Wood's Whipwort
Mnium hornum	Swan's-neck Thyme-moss
Mylia taylorii	Taylor's Flapwort
Nardia scalaris	Ladder Flapwort
Odontoschisma denudatum	Matchstick Flapwort
Odontoschisma sphagni	Bog-moss Flapwort
Pellia endiviifolia	Endive Pellia
Pellia epiphylla	Overleaf Pellia
Philonotis fontana	Fountain Apple-moss
Plagiochila punctata	Spotty Featherwort
Plagiochila spinulosa	Prickly Featherwort
Plagiothecium undulatum	Waved Silk-moss
Pleurozia purpurea	Purple Spoonwort
Pleurozium schreberi	Red-stemmed Feather-moss
Polytrichum commune	Common/Dense Haircap
Polytrichum formosum	Bank Haircap
Racomitrium fasciculare	Green Mountain Fringe-moss
Racomitrium lanuginosum	Wooly Fringe-moss
Rhizomnium punctatum	Dotted Thyme-moss
Rhytidiadelphus loreus	Little Shaggy-moss
Rhytidiadelphus squarrosus	Springy Turf-moss

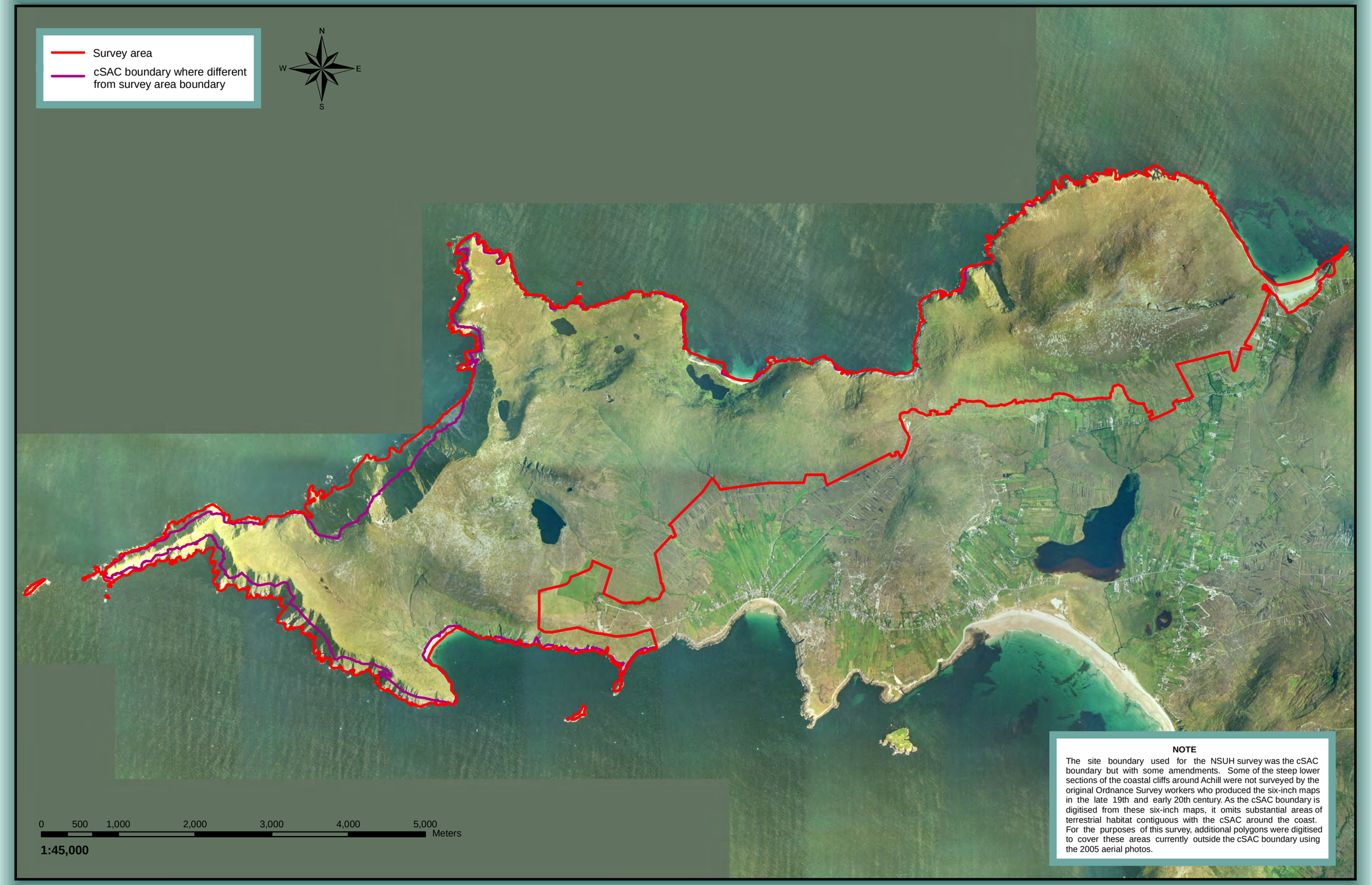
BRYOPHYTES

Species name	Common name
Rhytidiadelphus triquetrus	Big Shaggy-moss
Riccardia palmata	Palmate Germanderwort
Saccogyna viticulosa	Straggling Pouchwort
Scapania gracilis	Western Earwort
Scapania umbrosa	Shady Earwort
Scapania undulata	Water Earwort
Scleropodium purum	Neat Feather-moss
Sphagnum capillifolium	Acute-leaved/Red Bog-moss
Sphagnum cuspidatum	Feathery Bog-moss
Sphagnum denticulatum	Cow-horn Bog-moss
Sphagnum fallax subsp. *fallax*	Flat-topped Bog-moss
Sphagnum inundatum	Lesser Cow-horn Bog-moss
Sphagnum palustre	Blunt-leaved Bog-moss
Sphagnum papillosum	Papillose Bog-moss
Sphagnum quinquefarium	Five-ranked Bog-moss
Sphagnum tenellum	Soft Bog-moss
Thuidium tamariscinum	Common Tamarisk-moss

LICHENS

Species name	Species name
Bunodophoron melanocarpum	*Cladonia subcervicornis*
Cladonia arbuscula	*Cladonia uncialis*
Cladonia ciliata var. *tenuis*	*Ochrolechia xanthostoma*
Cladonia floerkeana	*Parmelia sulcata*
Cladonia furcata	*Peltigera canina*
Cladonia furcata	*Peltigera hymenina*
Cladonia gracilis	*Peltigera membranacea*
Cladonia portentosa	*Stereocaulon vesuvianum*
Cladonia squamosa var. *subsquamosa*	*Usnea* sp.

Figure 1. Survey area and boundary of Croaghaun / Slievemore cSAC (001955), Co. Mayo



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Commissioned by National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

NSUH (Phase 1, 2010-2011) Site Report No. 6: Croaghaun / Slievemore cSAC (001955), Co. Mayo. Map size A3.

Figure 2. Primary Fossitt habitats within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

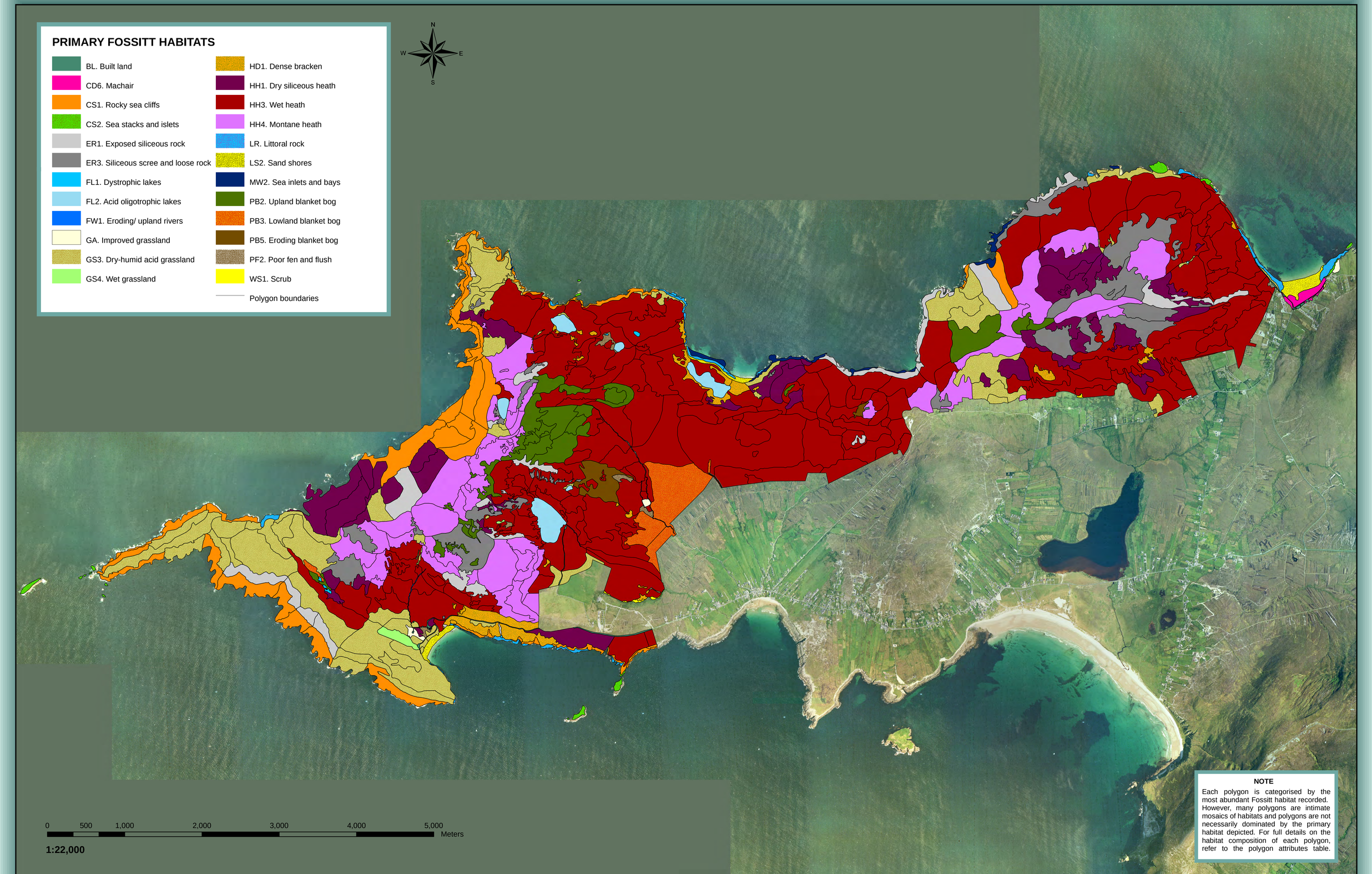

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Figure 3. Primary Annex I habitats within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

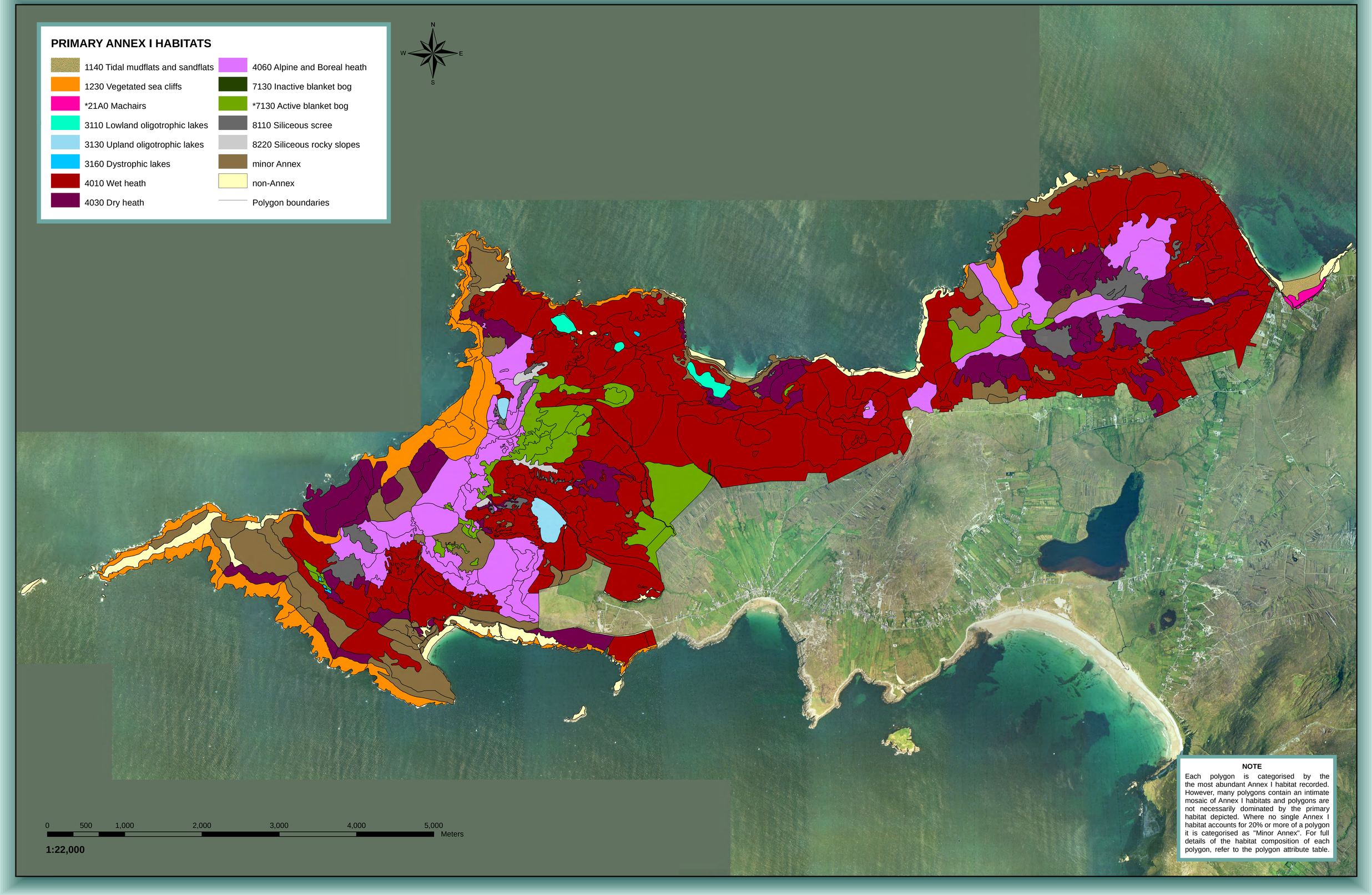

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Figure 4a. Cover of 4010 WET HEATH within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

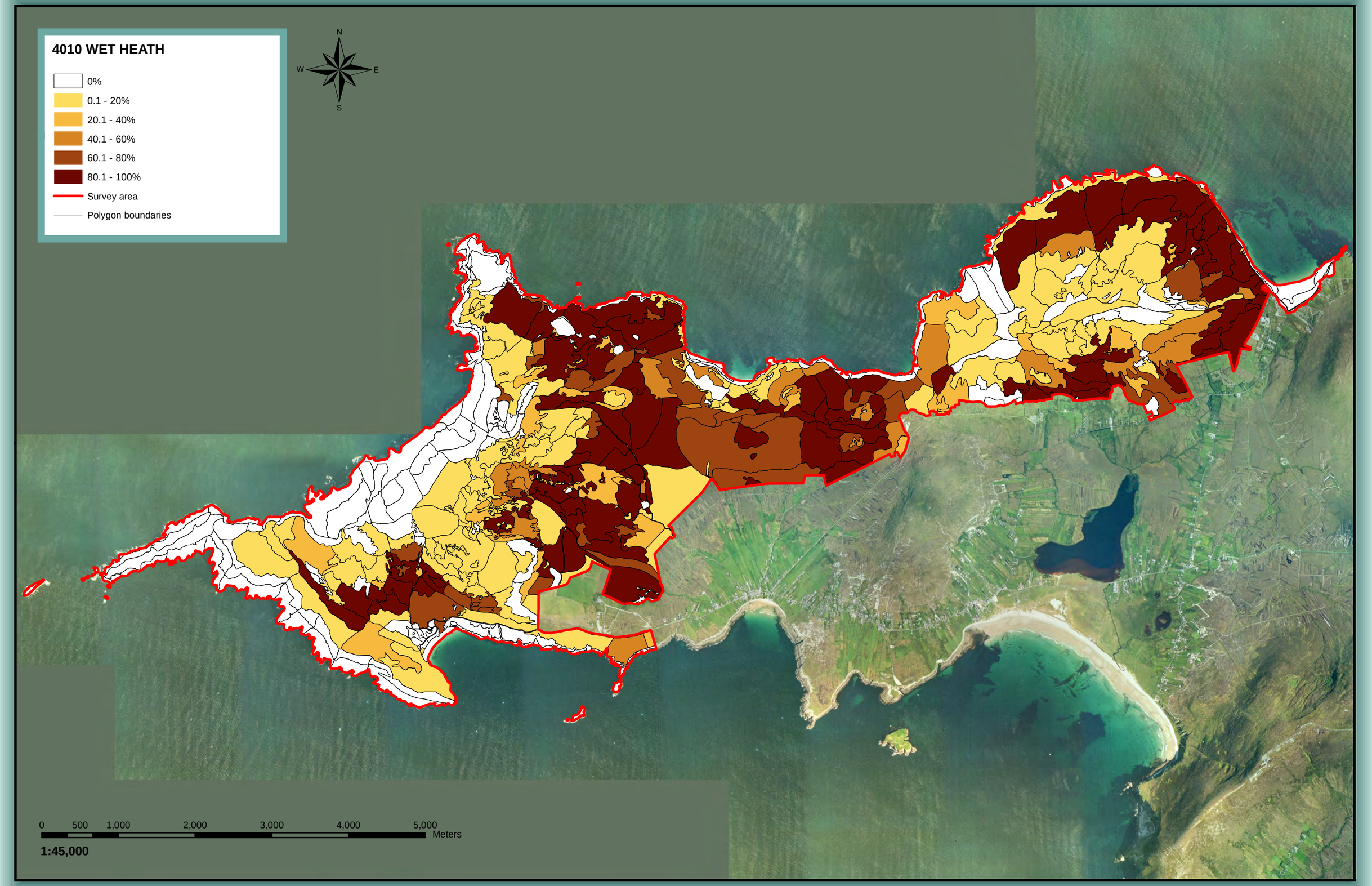

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Figure 4b. Cover of 4030 DRY HEATH within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

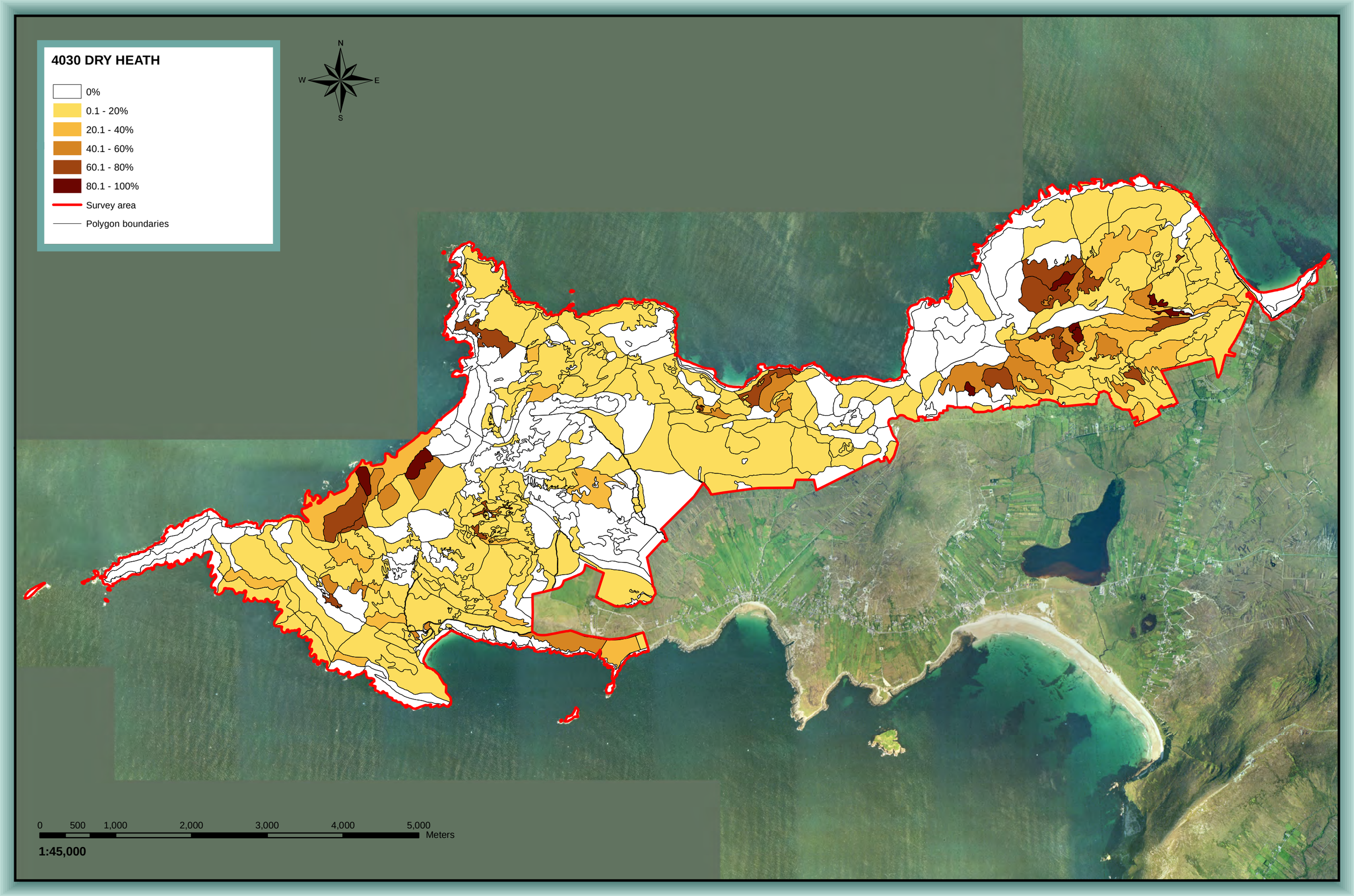

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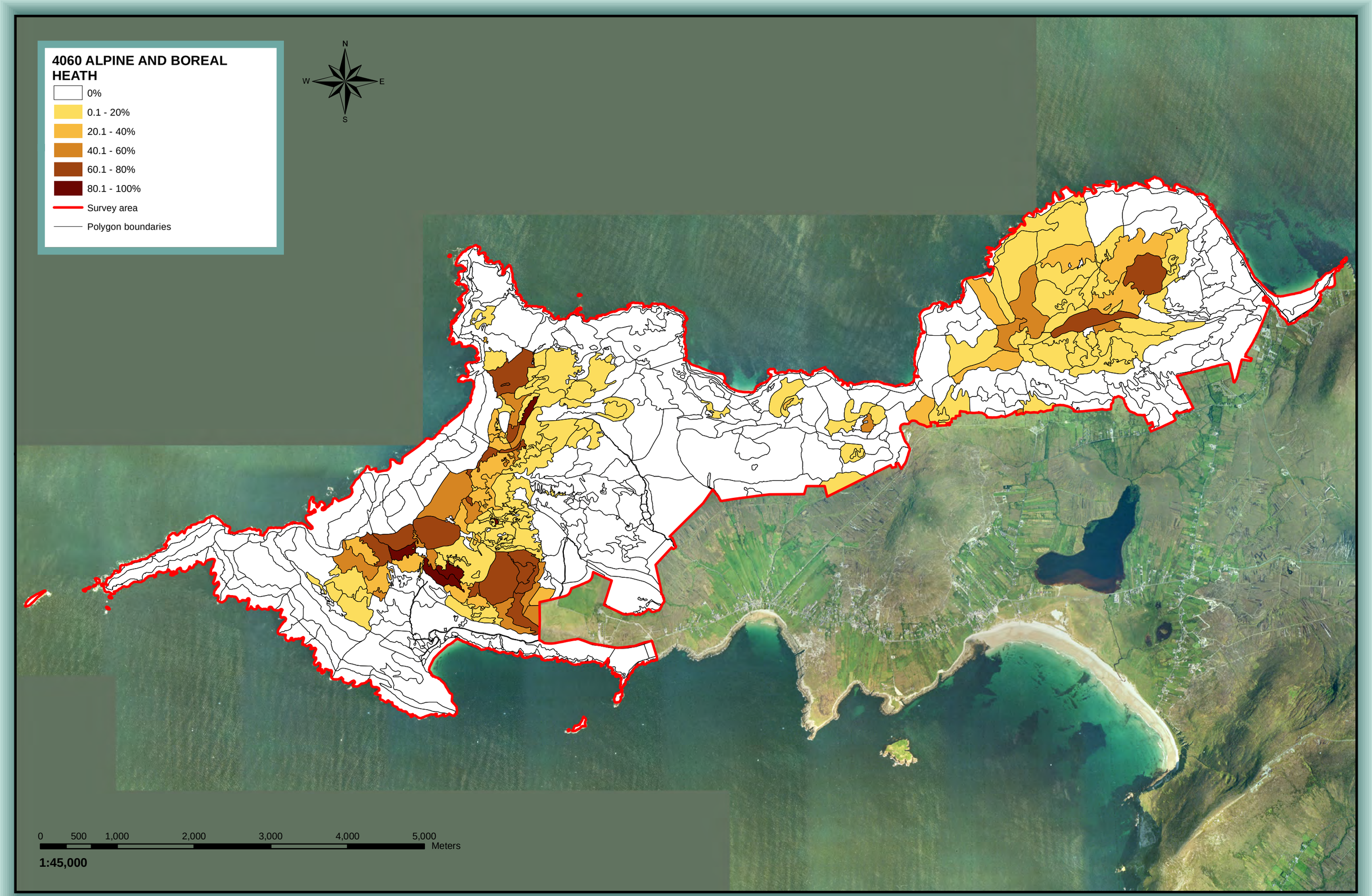
Figure 4c. Cover of 4060 ALPINE AND BOREAL HEATH within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo



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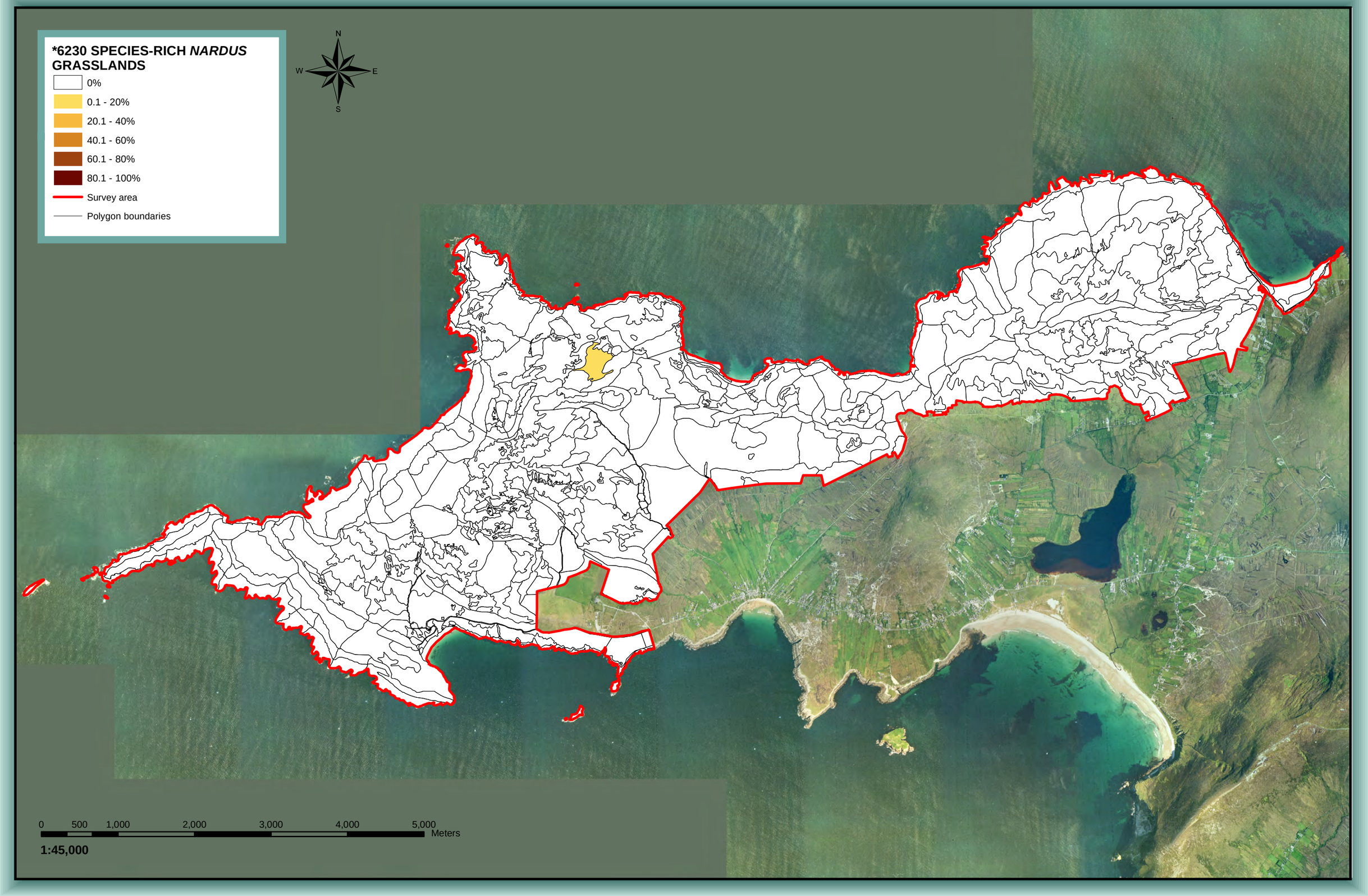
NSUH (Phase 1, 2010-2011) Site Report No. 6: Croaghaun / Slievemore cSAC (001955), Co. Mayo. Map size A3.

Figure 4d. Cover of *6230 SPECIES-RICH *NARDUS* GRASSLANDS within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo



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NSUH (Phase 1, 2010-2011) Site Report No. 6: Croaghaun / Slievemore cSAC (001955), Co. Mayo. Map size A3.

Figure 4e. Cover of *7130 ACTIVE BLANKET BOG within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

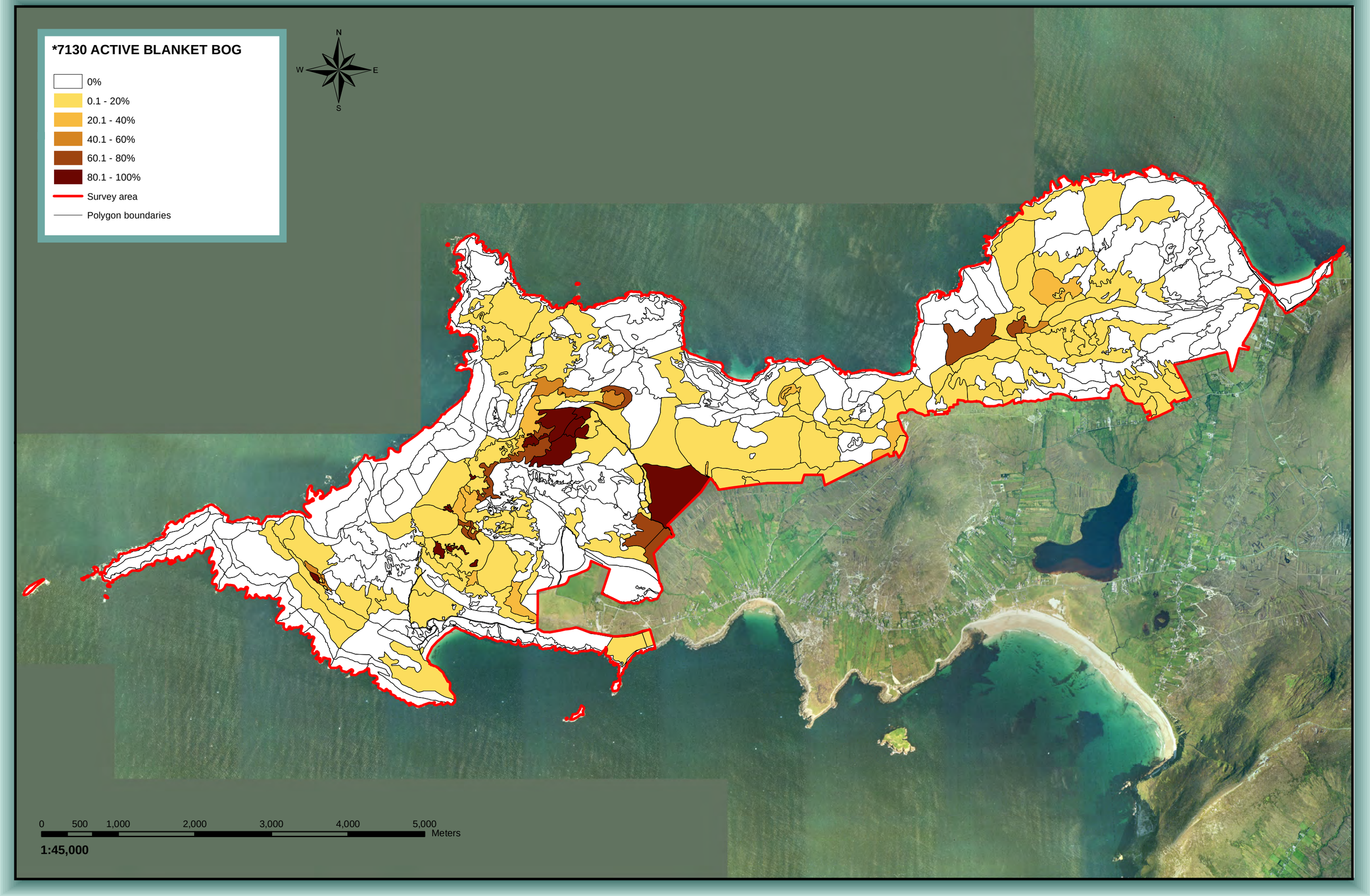

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Figure 4f. Cover of 7130 INACTIVE BLANKET BOG within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

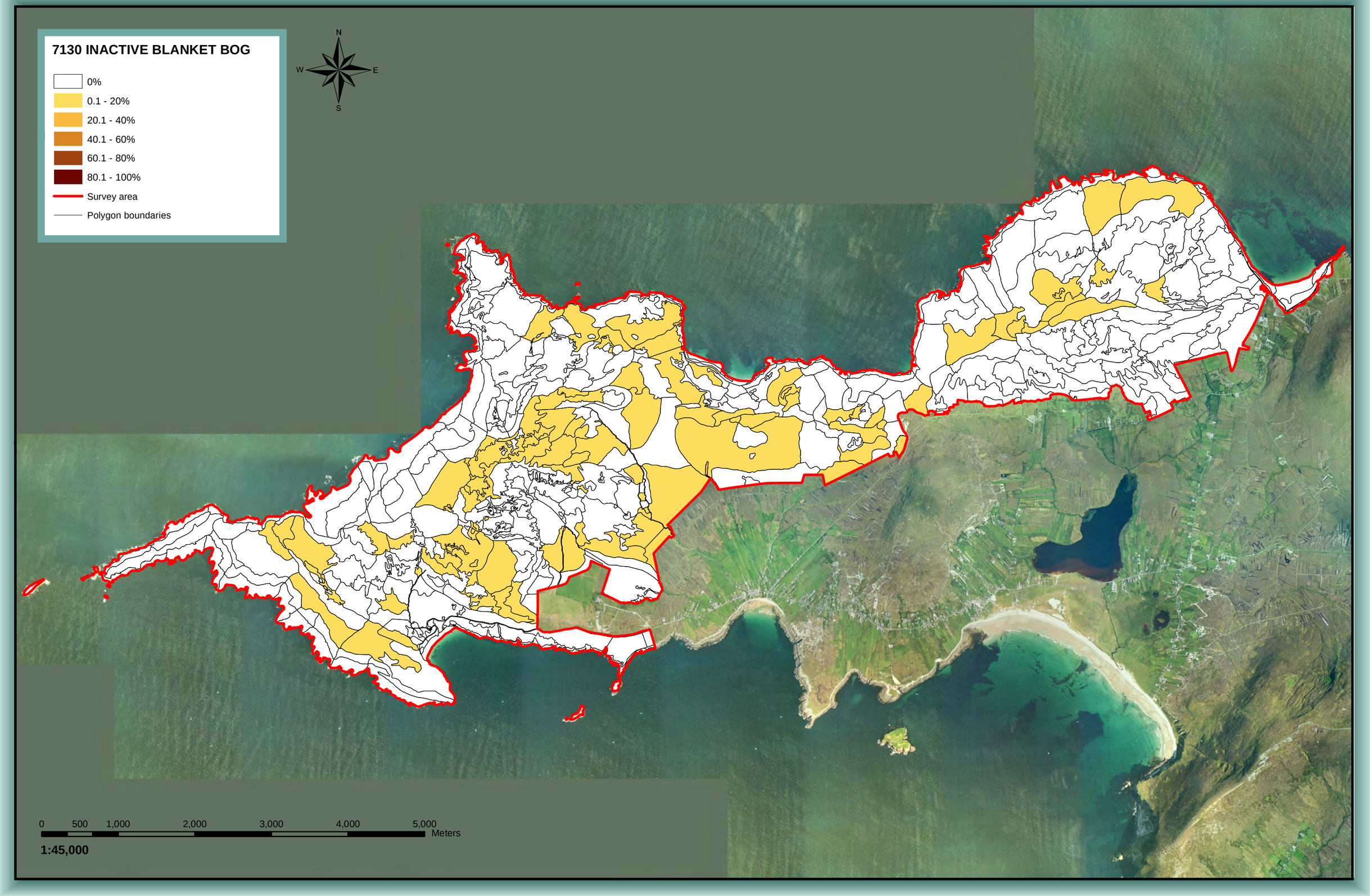

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Figure 4g. Cover of 7140 TRANSITION MIRES within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

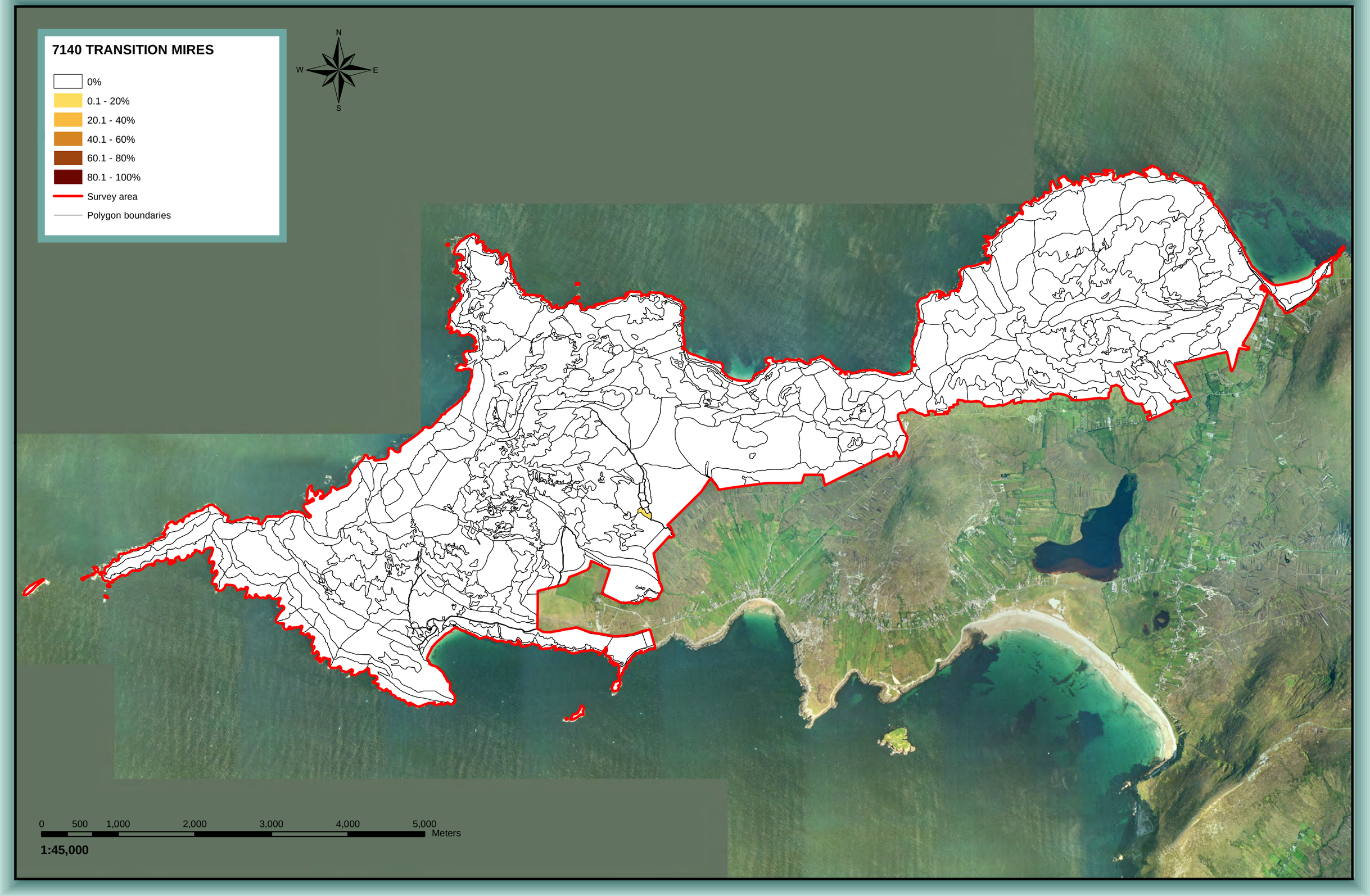

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Figure 4h. Cover of 7150 *RHYNCHOSPORION* DEPRESSIONS within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

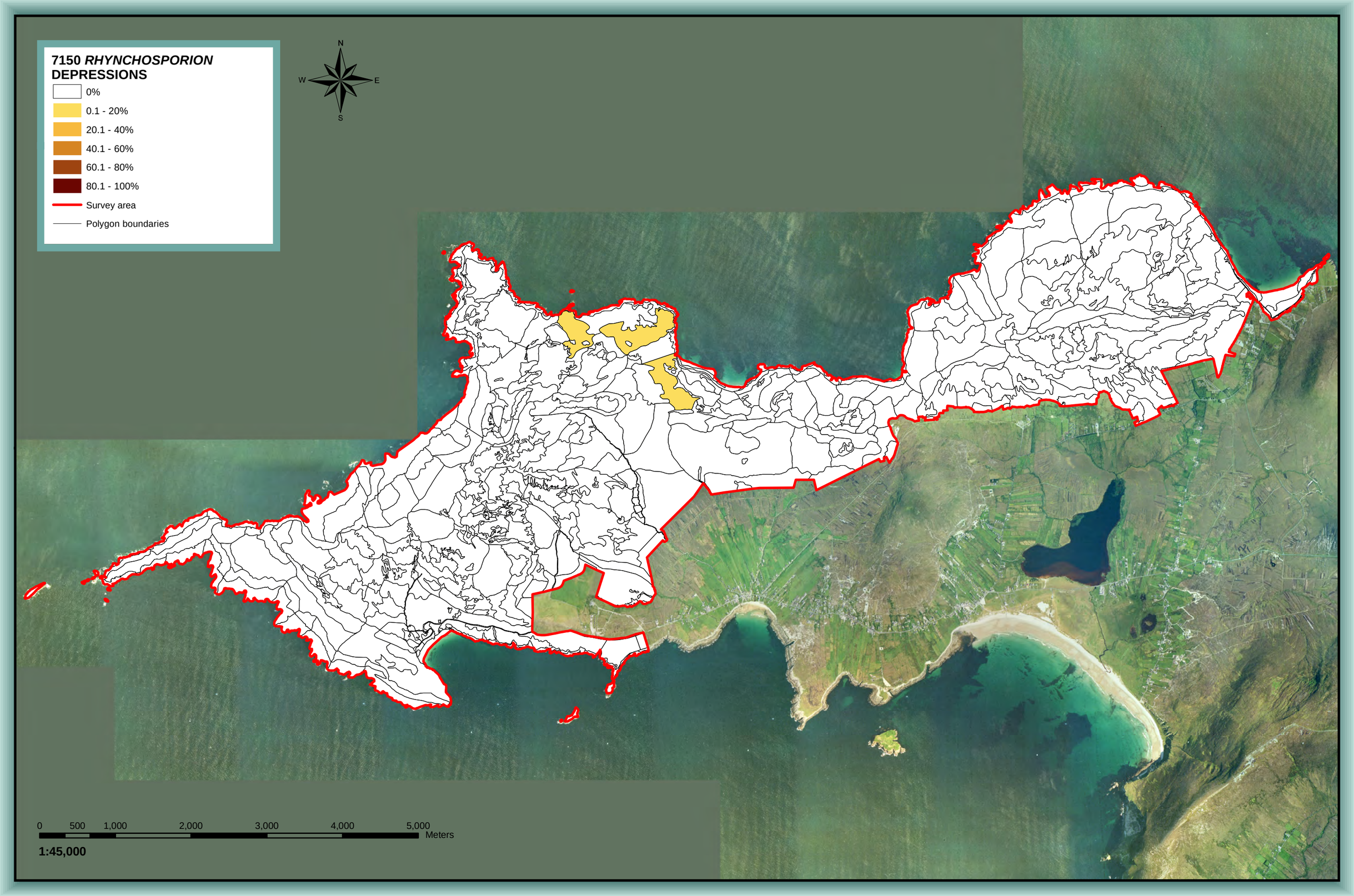

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Figure 4i. Cover of 7230 ALKALINE FENS within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

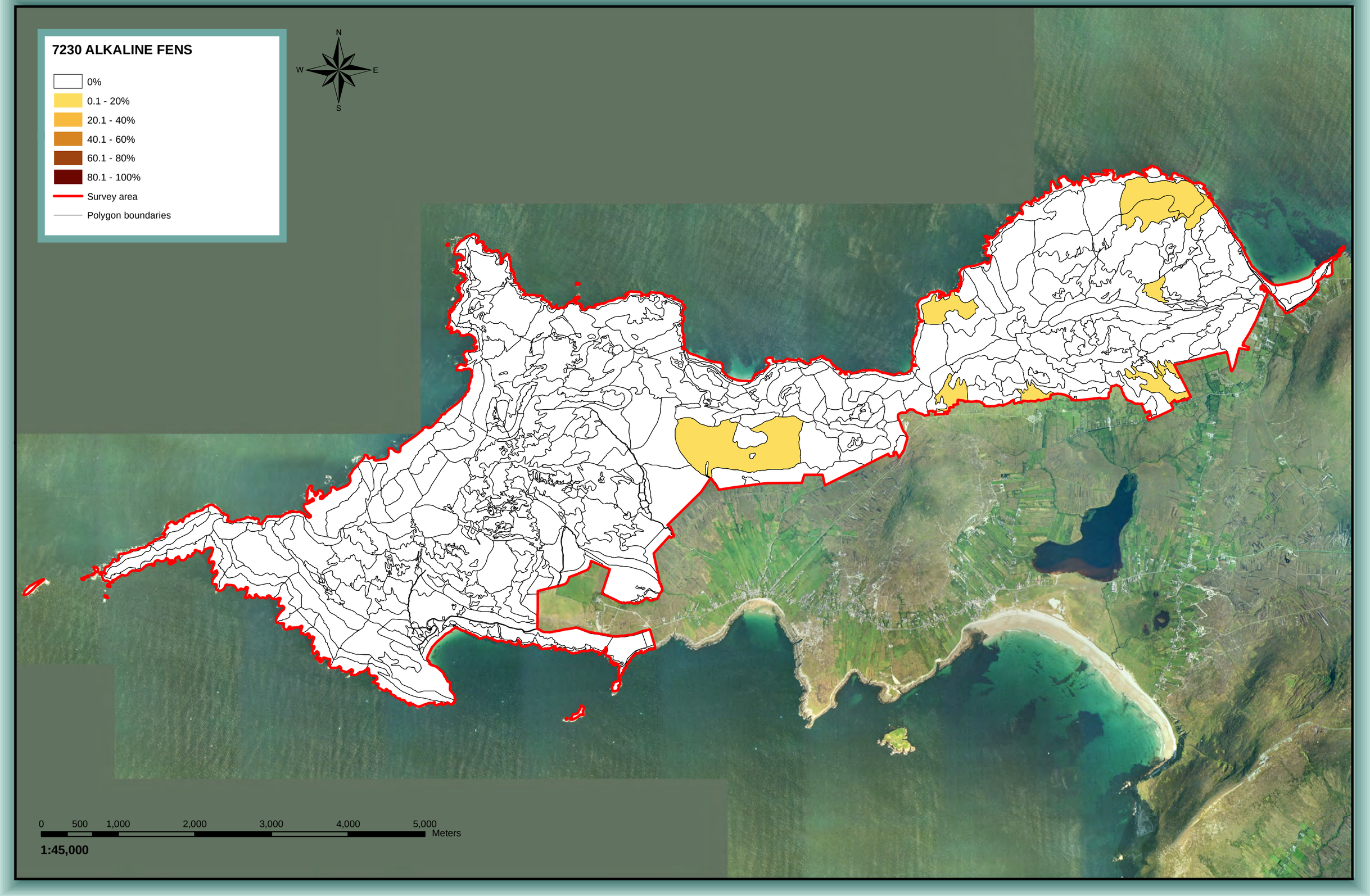

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Figure 4j. Cover of 8110 SILICEOUS SCREE within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

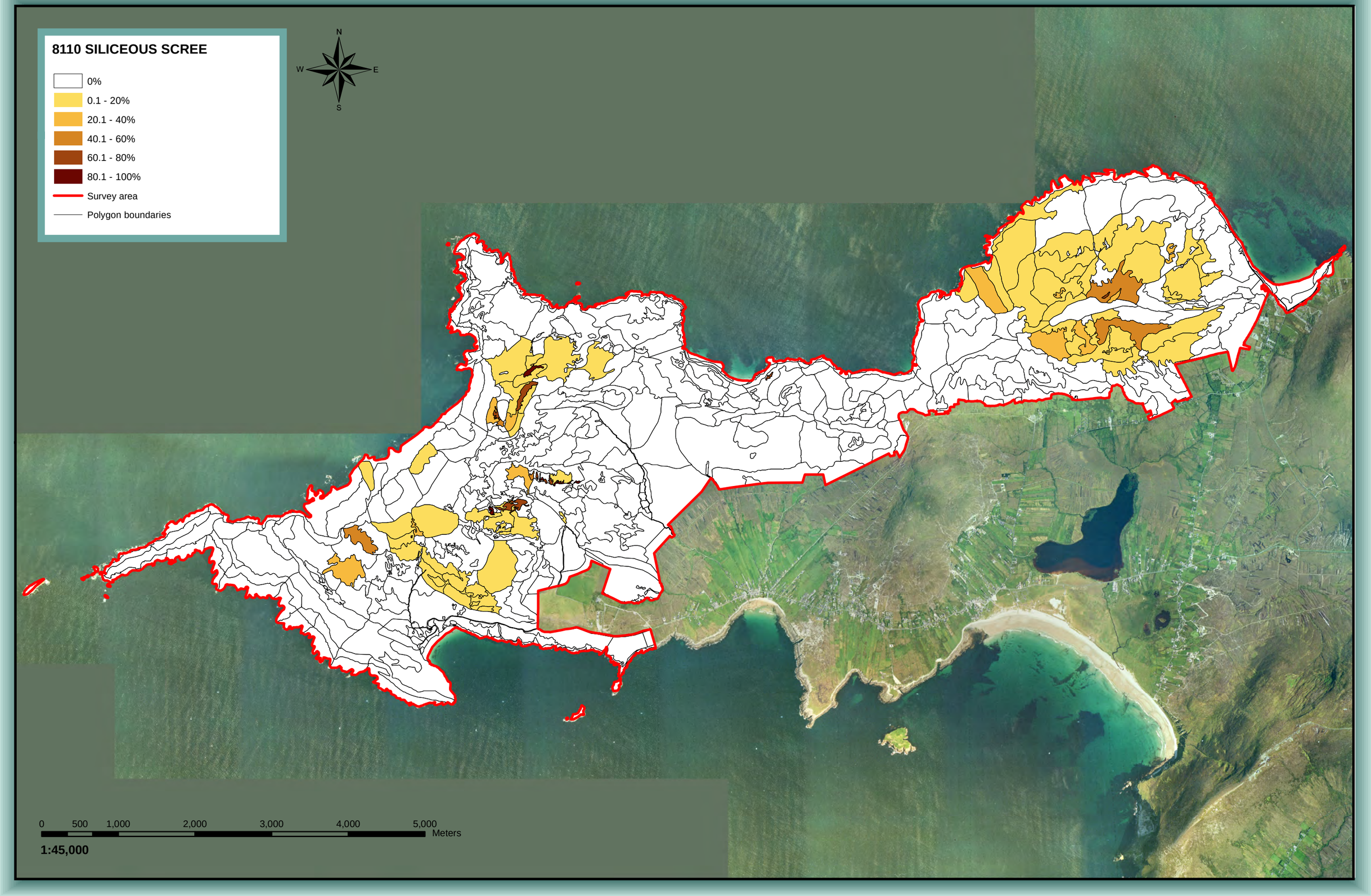

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Figure 4k. Cover of 8220 SILICEOUS ROCKY SLOPES within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

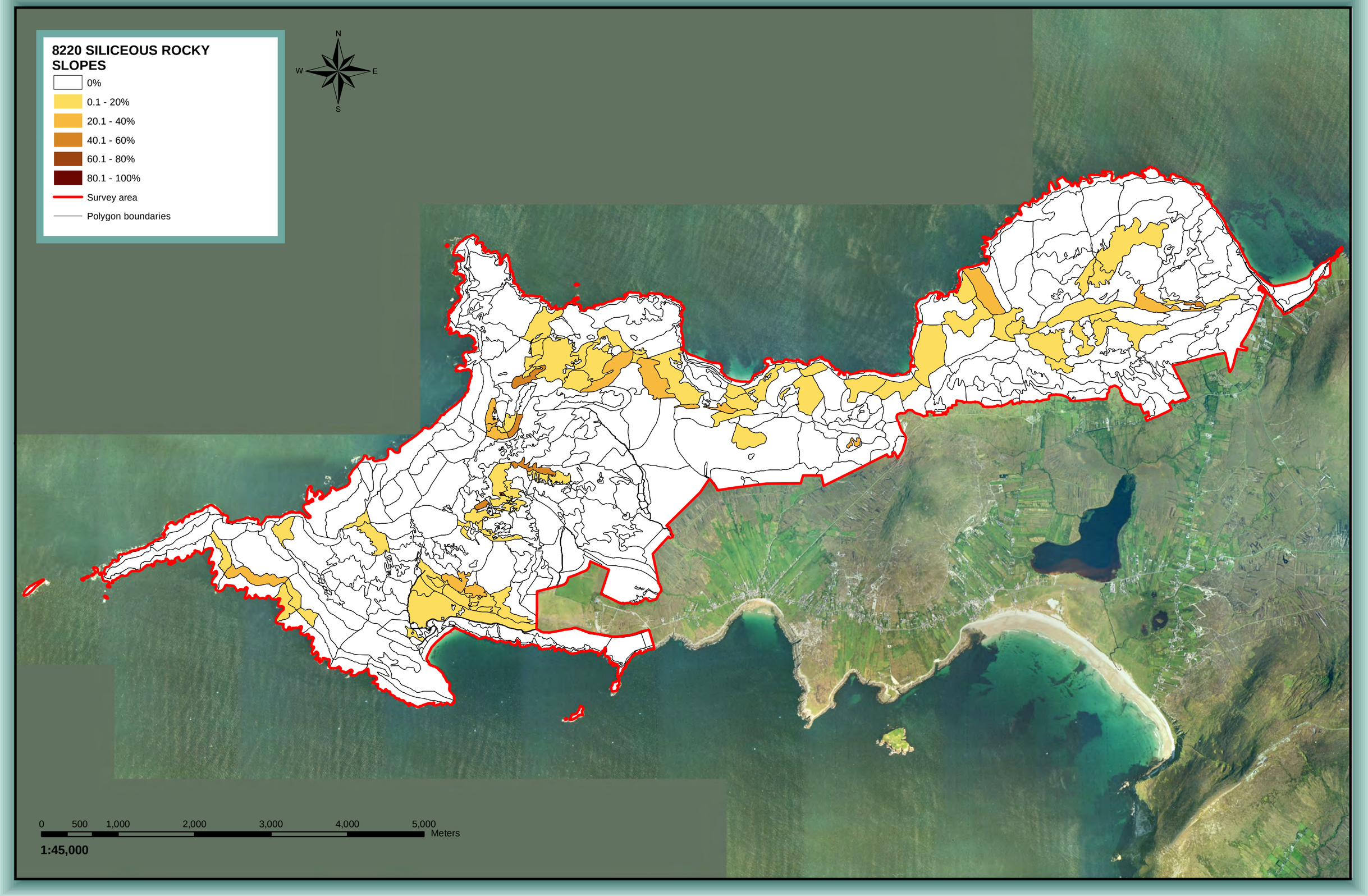

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Figure 5. Location of rare and notable plant records within and surrounding Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

RARE AND NOTABLE RECORDS

NSUH RECORDS

- Listed species
- Unlisted species

EXTERNAL RECORDS

- Listed species
- Unlisted species
- Survey area

SPECIES INDEX

1 - *Adelanthus lindenbergianus*
2 - *Anthelia juratzkana*
3 - *Arctostaphylos uva-ursi*
4 - *Atrichum tenellum*
5 - *Bryum riparium*
6 - *Campylopus shawii*
7 - *Carex bigelowii*
8 - *Cyclodictyon laetevirens*
9 - *Daboecia cantabrica*
10 - *Dicranodontium uncinatum*
11 - *Douinia ovata*
12 - *Geocalyx graveolens*
13 - *Hypnum callichroum*
14 - *Leptodontium flexifolium*
15 - *Lobaria virens*
16 - *Massalongia carnosa*
17 - *Mastigophora woodsii*
18 - *Metzgeria leptoneura*
19 - *Nardia geoscyphus*
20 - *Parmotrema arnoldii*
21 - *Plagiothecium cavifolium*
22 - *Pohlia lutescens*
23 - *Pohlia flexuosa*
24 - *Salix herbacea*
25 - *Scapania ornithopodioides*
26 - *Tortula marginata*

N
W
E
S

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 where the locations of records are approximate.

0 500 1,000 2,000 3,000 4,000 5,000
Meters

1:45,000

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Figure 6. Location and results of conservation assessment monitoring stops and other relevés within Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo

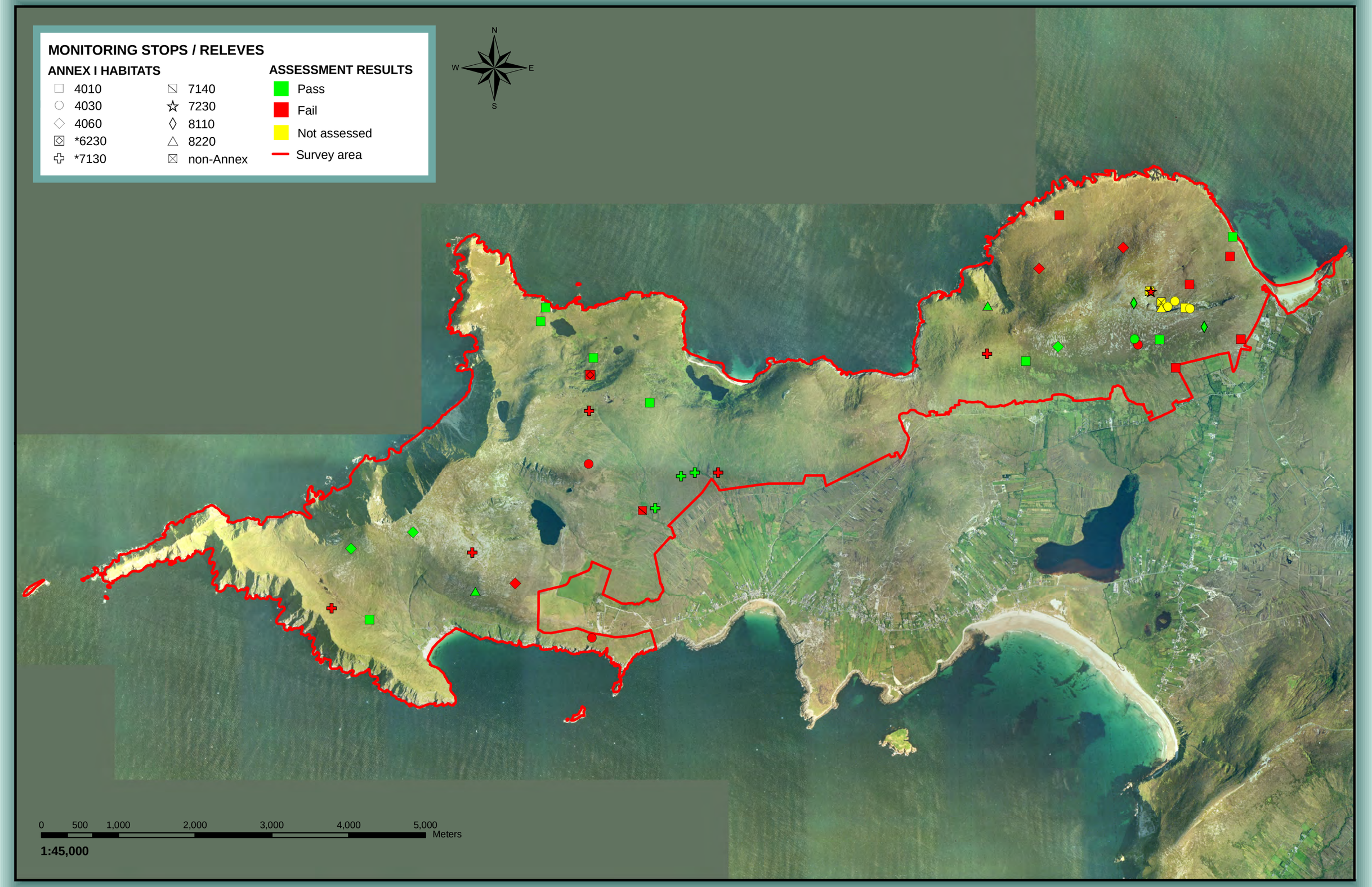

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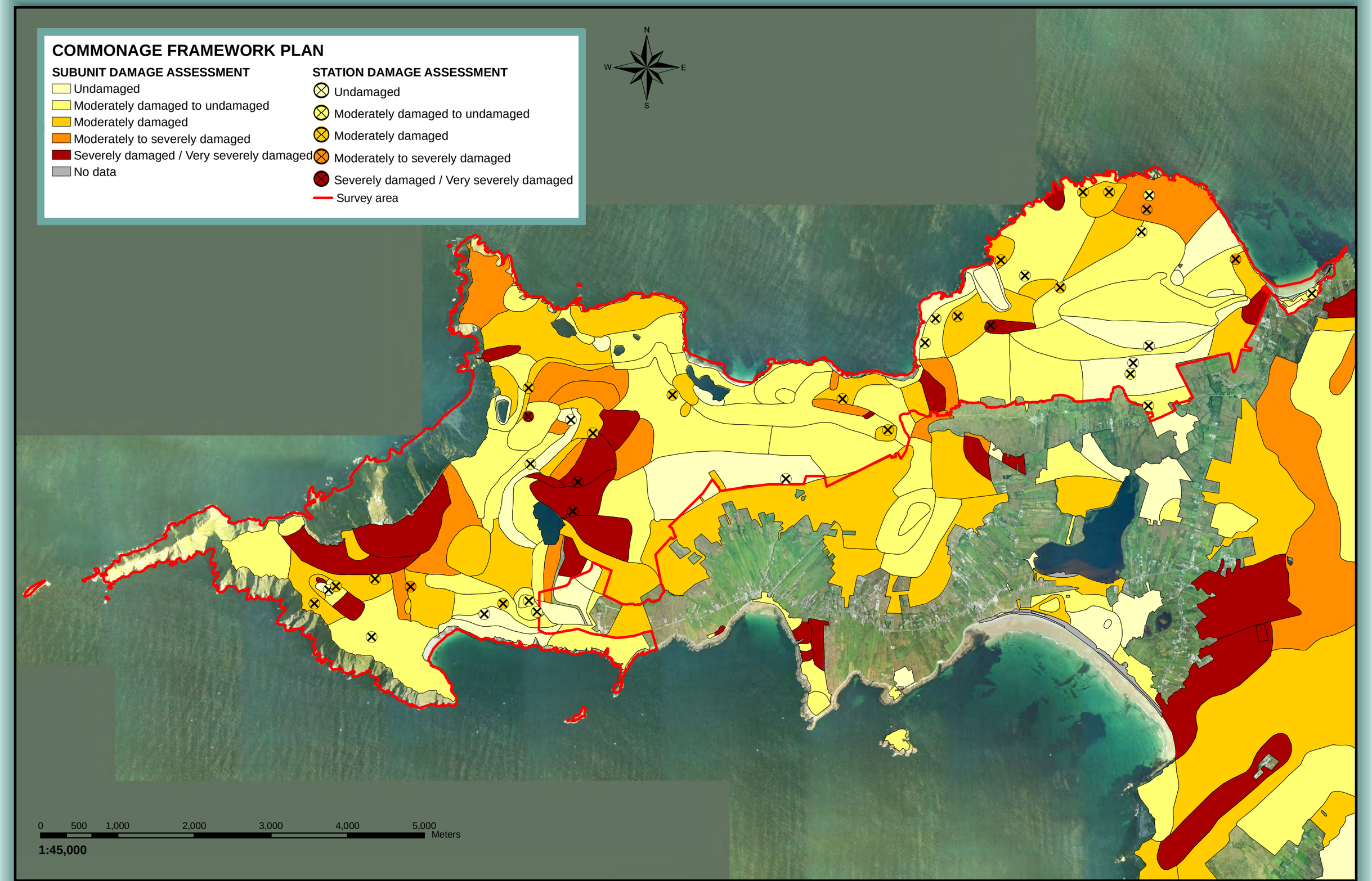
Figure 7. Commonage Framework Plan damage assessment (1999-2004) within and surrounding Croaghaun / Slievemore cSAC (001955) and extended survey area, Co. Mayo



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