

National Survey of Upland Habitats

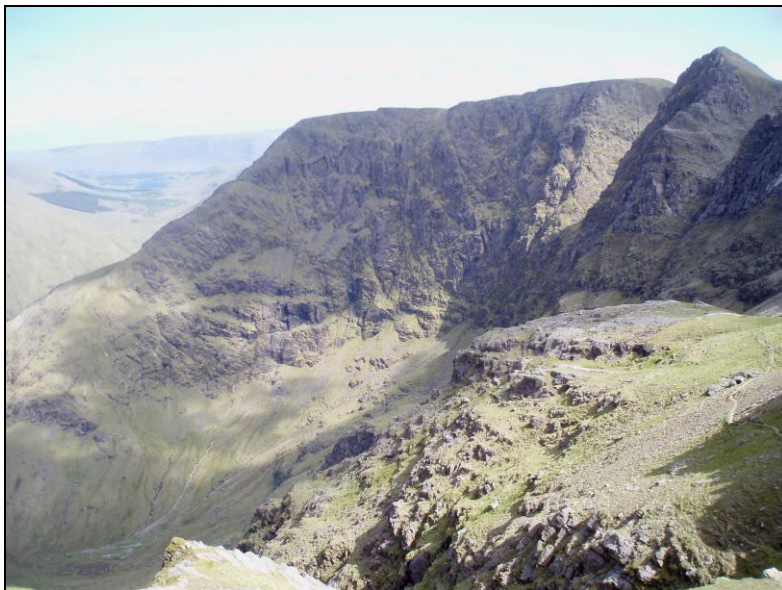
(Phase 1, 2010-2011)

Site Report No. 1:

Mweelrea / Sheeffry / Erriff Complex

cSAC (001932) 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
Department of Environment, Heritage and Local Government**

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Botanical, Environmental & Conservation Consultants Ltd.

Ground Floor Offices, Loft 31, South Cumberland Street,
Dublin 2.

www.botanicalenvironmental.com

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Cover photo: The corrie at Lugmore viewed from Ben Bury, Mweelrea Mountains,
taken by Jenni Roche

Commissioned by National Parks & Wildlife Service

Department of Environment, Heritage and Local Government, Ireland

EXECUTIVE SUMMARY

- Mweelrea / Sheeffry / Erriff Complex cSAC (001932) Co Mayo was surveyed as part of the National Survey of Upland Habitats (NSUH). The majority of the site was surveyed between August and October 2010 as part of Phase 1 of the NSUH. An area centred on the high peaks of the Mweelrea Mountains had already been surveyed as part of the Pilot Phase of the survey between April and July 2009 (Perrin *et al.*, 2009). This report revises and supersedes an original site report, by the same authors in 2011, by updating the format and assessment procedures to those finalised during Phase 3 of the NSUH (2012-2013).
- The area of the site is 209.83 km². Using GIS and aerial photograph interpretation, the site was divided into 3,061 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 33 Annex I habitats, 78 Fossitt habitats and 90 provisional upland vegetation communities were recorded. Annex I habitats comprise 56.8% of the site. The Annex I upland habitats present which are primary focus habitats for the NSUH are 4010 Wet heath (23.2%), *7130 Active blanket bog (20.4%), 7150 *Rhynchosporion* depressions (1.9%), 4030 Dry heath (1.7%), 7130 Inactive blanket bog (1.1%), 8220 Siliceous rocky slopes (0.8%), 4060 Alpine and Boreal heath (0.7%), 7140 Transition mires (0.5%), 7230 Alkaline fens (0.3%), *6230 Species-rich *Nardus* grassland (0.2%), 8110 Siliceous scree (0.1%), 8210 Calcareous rocky slopes (0.01%) and 8120 Calcareous scree (0.0003%).
- Rare and notable species recorded during the survey include *Diphasiastrum alpinum*, *Saussurea alpine*, *Saxifraga oppositifolia*, *Eriocaulon aquaticum*, *Adiantum capillus-veneris*, *Plagiochila carringtonii*, *Amphidium lapponicum*, *Sphagnum platyphyllum*, *Grimmia donniana*, *Mastigophora woodsii* and *Cladonia rangiferina*.
- Areas of particular botanical interest include the high ridges of both the Mweelrea Mountains and the Sheeffry Hills and the rocky slopes above Lugaloughan, which are home to rare arctic-alpine species. The large corrie at Lugmore in the Mweelrea Mountains is an important site for montane bryophytes including examples of the North Atlantic Hepatic Mat community. Numerous rare vascular plants and bryophytes have been recorded from the coastal plain at Dooaghtry. The woodlands at Aasleagh and Erriff Bridge support numerous rare lichen species.
- The conservation status of the upland Annex I habitats that form the primary focus of the NSUH was assessed. A total of 146 monitoring stops were recorded in these habitats. The conservation status of 8210 Calcareous rocky slopes was assessed as Favourable. The conservation status of 7140 Transition mire and 8220 Siliceous rocky slopes was assessed as Unfavourable – Inadequate while that of the remaining primary focus habitats was assessed as Unfavourable – Bad.
- The main impacts/activities affecting the site are impacts are livestock grazing, turf-cutting by machine and peat erosion.

- It is recommended that:

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

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

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

* Priority Annex I habitat

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CONTENTS

1. INTRODUCTION	1
Overview	1
Background site information	2
2. FIELD SURVEY	4
Description of habitats	4
Habitat statistics	6
Rare and notable flora	13
Fauna	16
3. CONSERVATION ASSESSMENT	17
Commonage Framework Plan	17
4010 Wet heath	20
4030 Dry heath	27
4060 Alpine and Boreal heath	31
*6230 Species-rich <i>Nardus</i> grasslands	33
*7130/7130 Blanket bog	36
7140 Transition mires	44
7150 <i>Rhynchosporion</i> depressions	46
7230 Alkaline fens	49
8110 Siliceous scree	52
8210 Calcareous rocky slopes	54
8220 Siliceous rocky slopes	56
Summary of conservation assessment	58
4. DISCUSSION	59
Natura 2000 assessment	59
Additional recommendations	60
REFERENCES	61
APPENDIX 1: ANNEX I HABITATS	63
APPENDIX 2: PHOTOGRAPHS	65
APPENDIX 3: PLANT SPECIES LIST	71

MAPS ACCOMPANYING REPORT

- Figure 1. Survey area / boundary of cSAC
 - Figure 2. Primary Fossitt habitats
 - Figure 3. Primary Annex I habitats
 - Figure 4a. Cover of 4010 Wet heath
 - Figure 4b. Cover of 4030 Dry heath
 - Figure 4c. Cover of 4060 Alpine and Boreal heath
 - Figure 4d. Cover of 6150 Siliceous alpine and boreal grasslands
 - Figure 4e. Cover of *6230 Species-rich *Nardus* grasslands
 - Figure 4f. Cover of 6430 Hydrophilous tall herb communities
 - Figure 4g. Cover of *7130 Active blanket bog
 - Figure 4h. Cover of 7130 Inactive blanket bog
 - Figure 4i. Cover of 7140 Transition mires
 - Figure 4j. Cover of 7150 *Rhynchosporion* depressions
 - Figure 4k. Cover of 7230 Alkaline fens
 - Figure 4l. Cover of 8110 Siliceous scree
 - Figure 4m. Cover of 8120 Calcareous scree
 - Figure 4n. Cover of 8210 Calcareous rocky slopes
 - Figure 4o. Cover of 8220 Siliceous rocky slopes
 - Figure 5a. Location of rare and notable vascular plant records
 - Figure 5b. Location of rare and notable bryophyte and lichen records
 - Figure 6. Location of monitoring stops and other relevés
 - Figure 7. Commonage Framework Plan damage assessment
- Field survey maps 1-38

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 a scoping study and pilot survey of upland habitats completed in 2009 (Perrin *et al.*, 2009).
- 1.3 This report summarises the results of the field survey of Mweelrea / Sheeffry / Erriff Complex candidate Special Area of Conservation (cSAC 001932). It revises an original report, by the same authors in 2011, 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 The majority of the Mweelrea / Sheeffry / Erriff Complex cSAC was surveyed between August and October 2010 as part of Phase 1 of the NSUH. An area centred on the high peaks of the Mweelrea Mountains was surveyed as part of the Pilot Phase of the survey between April and July 2009 (Perrin *et al.*, 2009). The boundary of the cSAC as used in this survey is the version that was provided by NPWS in July 2010.
- 1.8 Coastal areas of the site had been covered during the Saltmarsh Monitoring Project 2006-2008 (McCorry 2007; McCorry & Ryle 2009) and the Coastal Monitoring Project 2004-2006 (Ryle *et al.*,

2009). This report combines the mapping and assessment data from the two upland surveys together with the mapping data from the two coastal surveys. The areas covered by the coastal surveys equate to 1.2% of the cSAC.

- 1.9 Permission to access lands for purposes of the survey was denied by landowners in three locations: an area of blanket bog and lowland farmland at Derryherbert, the corries of Lugaloughan and Lough Lugacollivee, and the coastal area at Uggool. These areas, which equate to 3.4% of the cSAC, were surveyed remotely using binoculars or scopes, or assessed from aerial photographs.

Table 1: Annex I habitats listed by the Natura 2000 assessment for Mweelrea / Sheeffry / Erriff Complex cSAC. Rep. = Representativity, Surf. = Relative Surface, Cons. = Conservation status, Glob. = Global Assessment. Data retrieved from <http://natura2000.eea.europa.eu> 20th January 2011

Annex I code	Habitat	Area (%)	Rep.	Surf.	Cons.	Glob.
*1150	Coastal lagoons	1	C	C	B	C
1210	Annual vegetation of drift lines	1	C	C	B	C
1330	Atlantic salt meadows	1	C	C	B	C
1410	Mediterranean salt meadows	1	C	C	B	C
2110	Embryonic shifting dunes	1	C	C	B	C
2120	Marram dunes (white dunes)	1	B	C	B	B
2150	Atlantic decalcified dunes (<i>Calluno-Ulicetea</i>)	1	B	C	B	B
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)	1	B	C	B	B
*21A0	Machair	2	A	B	B	A
3110	Lowland oligotrophic lakes	2	B	C	B	B
3130	Upland oligotrophic lakes	1	A	B	B	A
3160	Dystrophic lakes	1	B	C	B	C
3260	Floating river vegetation	1	B	B	B	B
4010	Wet heath	5	B	B	C	C
4030	Dry heath	2	B	B	B	B
4060	Alpine and Boreal heath	3	B	B	B	B
5130	<i>Juniperus communis</i> formations on heath or calcareous grasslands	1	B	C	B	B
*7130	Blanket bog (*active only)	55	B	B	B	B
7140	Transition mires	1	B	C	B	B
7150	<i>Rhynchosporion</i> depressions	1	A	C	B	A
7230	Alkaline fens	1	B	C	B	B
7220	Petrifying springs with tufa formation (<i>Cratoneurion</i>)	1	B	C	B	B
8210	Calcareous rocky slopes	3	A	B	A	A
8220	Siliceous rocky slopes	5	A	B	A	A

Background site information

- 1.10 The Mweelrea / Sheeffry / Erriff Complex cSAC, Co. Mayo (Fig. 1) is a very large site, being 209.8 km² in extent and stretching from the fjord of Killary Harbour in the southwest across to the edge of the Partry Mountains in the east (refer to OS Discovery maps 37 and 38). The site has been designated for a large number of upland Annex I habitats as well as several coastal

habitat types that occur in the west of the site (Table 1). The site chiefly comprises the Sheeffry Hills (762 m in altitude), Ben Gorm (700 m), the Mweelrea Mountains (814 m), the area of the Partry Mountains around Lough Glenawough, and a large area of lowland blanket bog in the valley of the Erriff River.

- 1.11 Table 1 lists the Annex I habitats for which the site has been designated. The full category titles for Annex I habitats mentioned in this report are found in Appendix 1.

2. FIELD SURVEY

Description of habitats

Sheeffry Hills

- 2.1 Under Fossitt's (2000) habitat classification scheme, the summit plateau of the Sheeffry Hills is dominated by species-poor variants of montane vegetation (**HH4 Montane heath**). Substantial areas are dominated by *Nardus stricta*, *Juncus squarrosus* and *Racomitrium lanuginosum*. Rocky areas are dominated by a sparse mixture of *Festuca vivipara*, *Thymus polytrichus* and *Galium saxatile*. There are some small patches characterised by the presence of the arctic-alpine species *Salix herbacea*, *Carex bigelowii* and *Diphasiastrum alpinum*.
- 2.2 The steeper slopes of the Sheeffry Hills proper are dominated by species-poor *Nardus stricta* grassland (**GS3 Dry-humid acid grassland**). There are substantial areas of scree (**ER3 Siliceous scree and loose rock**) and **ER1 Exposed siliceous rock** on the higher slopes and within the corries, some of which contain **FL2 Acid oligotrophic lakes**. The scree areas are characterised by *Festuca vivipara*, *Galium saxatile* and acrocarpous mosses. The clefts in the rock faces are characterised by *Saxifraga spathularis* and various fern species. Where there is seepage on the rock faces, small patches of hydrophilous tall herb vegetation and vegetation with affinities to **ER2 Exposed calcareous rock** occurs. The former comprises *Sedum rosea*, *Angelica sylvestris* and *Alchemilla filicaulis*. The latter habitat is characterised by *Saxifraga oppositifolia*, *Oxyria digyna* and *Tortella tortuosa*. These are found along the slopes northeast of Lough Brawn corrie.
- 2.3 To the northwest of the main ridge, on the lower slopes are areas of **HH3 Wet heath** typically dominated by *Schoenus nigricans* and *Molinia caerulea* with some *Erica tetralix*. A small area of alkaline fen (**PF1 Rich fen and flush**) dominated by *Schoenus nigricans*, *Carex* spp., *Scorpidium scorpioides* and *Campylium stellatum* occurs here. Associated with this are small areas of *Cladium mariscus* fen (**PF1 Rich fen and flush**). Dotted along the lower slopes to the southeast of here, above the Doo Lough road, are some small patches of species-rich *Nardus* grassland (**GS3 Dry-humid acid grassland**), characterised by *Campanula rotundifolia*, *Thymus polytrichus* and *Linum catharticum*.
- 2.4 The very large broad valley of Laghta Ougher, north of the main ridge is dominated by blanket bog. Higher up this is **PB2 Upland blanket bog** dominated by *Trichophorum germanicum* but lower down it transitions into a mosaic with **PB3 Lowland blanket bog** dominated by *Schoenus nigricans* with smaller areas of *Eriophorum vaginatum* bog. **PB5 Eroding bog** is prevalent in upland bog areas and **HH1 Dry heath** vegetation has formed on much of the dried out hags.

Laghta Eighter and Tangincartoor

- 2.5 The northern hill of Tangincartoor and the neighbouring ridge at Laghta Eighter are dominated by **HH3 Wet heath** but on the drier tops areas of **HH1 Dry heath** of *Calluna vulgaris* and *Erica cinerea* occur. These are the main areas of this habitat in the cSAC as grazing levels appear to be

lower. Surrounding the hills are areas of **PB3 Lowland bog** with *Schoenus nigricans* and in the north substantial areas of bog rich in *Rhynchospora alba*.

Ben Gorm and Ben Creggan

- 2.6 The slopes of this mountain are dominated by species-poor **GS3 Dry-humid acid grassland** dominated by *Nardus stricta* and **HH3 Wet heath** dominated by *Molinia caerulea*. Tussocky areas of **GS4 Wet grassland** formed of *Molinia caerulea* also occur. **ER1 Exposed siliceous rock** and scree (**ER3 Siliceous scree and loose rock**) occur on many of the steeper slopes. On the north and east facing slopes of the two valleys here, Glendavock and Lugharry corrie, hepatic mats dominated by *Herbertus aduncus* are common. Some of these are of genuine conservation grade with *Bazzania pearsonii*, *Scapania ornithopodioides* and *Mastigophora woodsii* all being recorded. In lower areas around the massif are areas of *Rhynchosporion* depressions and other forms of **PB3 Lowland blanket bog**.

Glenawough

- 2.7 Glenawough forms an imposing valley and corrie with a large tract of *Schoenus nigricans* dominated **PB3 Lowland blanket bog** leading up to the large **FL2 Acid oligotrophic lake**. This bog is badly trampled by sheep but still supports a system of **FL1 Dystrophic pools**. The low northern lip of the valley supports *Schoenus nigricans* – *Molinia caerulea* **HH3 Wet heath**. On the massive back wall of the corrie is an unusual type of **HH1 Dry heath** formed of hard-bitten *Vaccinium myrtillus*, *Calluna vulgaris*, *Dryopteris aemula* and *Rhytidiadelphus loreus*. A scattering of birch and rowan trees suggest that elements of woodland flora may linger here.
- 2.8 The steep slopes consist of **ER1 Exposed siliceous rock** and species-poor **GS3 Dry-humid acid grassland**. Above the corrie is a rocky plateau, comprising a mosaic of *Trichophorum germanicum* **PB2 Upland blanket bog** in the hollows and a low-growing **HH4 Montane heath** on the stony ridges. This heath is dominated by *Calluna vulgaris* and *Racomitrium lanuginosum* but *Juniperus communis* ssp. *nana* occurs in patches.

Mweelrea Mountains

- 2.9 The lower flanks of the Mweelrea Mountains form an extensive swathe of *Molinia*-dominated **HH3 Wet heath**. Along the fjordside the regionally restricted *Erica erigena* is present; it is practically absent from the rest of the site. The upper slopes are composed of **ER3 Siliceous scree and loose rock** and **ER1 Exposed siliceous rock**. On the summits are found a variety of montane heaths and montane grasslands (**HH4 Montane heath**). The montane grasslands are characterised by the presence of the arctic-alpine species *Salix herbacea* and *Carex bigelowii*. Spring and flushes (**FP2 Non-calcareous springs**) dominated by the liverwort *Anthelia julacea* are frequent.

The lowlands

- 2.10 The lower lying lands of the Erriff valley and around Cregganbaun are dominated by large areas of **PB3 Lowland blanket bog** and **HH3 Wet heath**. Areas of *Rhynchosporion* bog are

locally frequent and small areas of **PF3 Transition mire and quaking bog** characterised by *Carex rostrata* occur. Some excellent examples of **FL1 Dystrophic pools** also occur but are restricted in their distribution.

Dooaghtry and the coast

2.11 The coastal area contains a host of habitats including **CD1 Embryonic dunes, CD3 Fixed dunes, CD6 Machair, CW1 Lagoons and saline lakes** (Corragaun Lough and Doolvira Lough), **LS2 Sand shores, CM1 Lower salt marsh** and **CM2 Upper salt marsh**.

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

Habitat statistics

2.13 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 patterning 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 1-38).

2.14 The most abundant habitat within a polygon is termed the primary habitat. The primary Fossitt habitat types for Mweelrea / Sheeffry / Erriff Complex 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.

2.15 A total of 78 Fossitt (2000) habitats were recorded within the Mweelrea / Sheeffry / Erriff Complex cSAC and details of their coverage are presented in Table 2. **HH3 Wet heath** was the most extensive, covering 23.2% of the site, followed by **GS3 Dry-humid acid grassland** at 18.8% and **PB3 Lowland blanket bog** at 16.0%.

2.16 A total of 33 Annex I habitats were recorded within the Mweelrea / Sheeffry / Erriff Complex cSAC, covering 56.8% of the site (Table 3). The main Annex I habitats were **4010 Wet heath** and ***7130 Active blanket bog** which covered 23.2% and 20.4% of the site respectively. These were far more abundant than the next most frequent habitat **7150 *Rhynchosporion* depressions** at 1.9%. 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.

Table 2: Extent of Fossitt habitats within the Mweelrea / Sheeffry / Erriff Complex cSAC.

Fossitt code	Habitat	Total area (ha)	% of site
BC4	Flower beds and borders	0.03	0.0002
BL1	Stone walls and other stonework	5.7	0.03
BL2	Earth banks	0.7	0.004
BL3	Buildings and artificial surfaces	37.4	0.18
CB1	Shingle and gravel banks	0.6	0.003
CC1	Sea walls, piers and jetties	0.2	0.001
CC2	Fish cages and rafts	0.1	0.001
CD1	Embryonic dunes	0.03	0.0002
CD2	Marram dunes	19.3	0.09
CD3	Fixed dunes	77.1	0.37
CD5	Dune slacks	0.7	0.003
CD6	Machair	133.2	0.64
CM1	Lower salt marsh	26.0	0.12
CM2	Upper salt marsh	7.8	0.04
CS1	Rocky sea cliffs	1.9	0.01
CS2	Sea stacks and islets	3.1	0.02
CW1	Lagoons and saline lakes	9.1	0.04
CW2	Tidal rivers	1.8	0.01
ED1	Exposed sand, gravel or till	61.9	0.30
ED2	Spoil and bare ground	56.6	0.27
ED3	Recolonising bare ground	34.4	0.16
ED5	Refuse and other waste	0.7	0.003
ER1	Exposed siliceous rock	963.4	4.59
ER2	Exposed calcareous rock	9.3	0.04
ER3	Siliceous scree and loose rock	964.3	4.60
ER4	Calcareous scree and loose rock	0.1	0.0003
FL1	Dystrophic lakes	53.7	0.26
FL2	Acid oligotrophic lakes	395.6	1.89
FL4	Mesotrophic lakes	6.3	0.03
FL8	Other artificial lakes and ponds	0.01	0.00004
FP2	Non-calcareous springs	15.4	0.07
FS1	Reed and large sedge swamps	42.0	0.20
FS2	Tall-herb swamps	0.3	0.001
FW1	Eroding/upland rivers	104.6	0.50
FW2	Depositing/lowland rivers	93.6	0.45
FW4	Drainage ditches	6.4	0.03
GA1	Improved agricultural grassland	100.5	0.48
GA2	Amenity grassland (improved)	0.1	0.0004
GM1	Marsh	18.3	0.09
GS1	Dry calcareous and neutral grassland	8.8	0.04
GS2	Dry meadows and grassy verges	1.4	0.01
GS3	Dry-humid acid grassland	3941.0	18.8
GS4	Wet grassland	754.1	3.59
HD1	Dense bracken	339.2	1.62

Table 2: continued

Fossitt code	Habitat	Total area (ha)	% of site
HH1	Dry siliceous heath	360.3	1.72
HH2	Dry calcareous heath	0.02	0.0001
HH3	Wet heath	4861.9	23.17
HH4	Montane heath	876.1	4.18
LR1	Exposed rocky shores	4.2	0.02
LR2	Moderately exposed rocky shores	7.9	0.04
LR3	Sheltered rocky shores	0.5	0.003
LR4	Mixed substrata shores	0.3	0.001
LS2	Sand shores	140.8	0.67
LS5	Mixed sediment shores	5.3	0.03
MW1	Open marine water	49.9	0.24
MW2	Sea inlets and bays	10.8	0.05
MW4	Estuaries	16.8	0.08
PB2	Upland blanket bog	1589.0	7.57
PB3	Lowland blanket bog	3347.7	15.95
PB4	Cutover bog	4.7	0.02
PB5	Eroding blanket bog	495.9	2.36
PF1	Rich fen and flush	107.5	0.51
PF2	Poor fen and flush	499.5	2.38
PF3	Transition mire and quaking bog	96.4	0.46
SR3	Sheltered infralittoral rock	0.5	0.002
WD1	(Mixed) broadleaved woodland	25.4	0.12
WD2	Mixed broadleaved/conifer woodland	11.3	0.05
WD3	(Mixed) conifer woodland	0.6	0.003
WD4	Conifer plantation	26.3	0.13
WD5	Scattered trees and parkland	14.1	0.07
WL1	Hedgerows	0.3	0.002
WL2	Treelines	11.7	0.06
WN1	Oak-birch-holly woodland	14.3	0.07
WN6	Wet willow-alder-ash woodland	8.1	0.04
WS1	Scrub	81.9	0.39
WS2	Immature woodland	3.7	0.02
WS3	Ornamental/non-native shrubs	1.2	0.01
WS5	Recently-felled woodland	11.8	0.06
	Total site area	20983.4	

Table 3: Extent of Annex I habitats within the Mweelrea / Sheeffry / Erriff Complex cSAC. Asterisk denotes priority habitat

Annex I code	Habitat	Total area (ha)	% of site
1130	Estuaries	16.7	0.08
1140	Tidal mudflats and sandflats	136.6	0.65
*1150	Coastal lagoons	9.1	0.04
1210	Annual vegetation of drift lines	0.1	0.0003
1330	Atlantic salt meadows	25.3	0.12
1410	Mediterranean salt meadows	7.1	0.03
2110	Embryonic shifting dunes	0.03	0.0002
2120	Marram dunes (white dunes)	19.3	0.09
*2130	Fixed dunes (grey dunes)	77.1	0.37
2190	Humid dune slacks	0.7	0.003
*21A0	Machair	133.2	0.64
3110	Lowland oligotrophic lakes	263.5	1.26
3130	Upland oligotrophic lakes	131.8	0.63
3160	Dystrophic lakes	41.6	0.20
3260	Floating river vegetation	5.5	0.03
4010	Wet heath	4861.9	23.17
4030	Dry heath	359.8	1.71
4060	Alpine and Boreal heath	147.8	0.70
6150	Siliceous alpine and boreal grasslands	138.2	0.66
6210	Calcareous grasslands	7.3	0.04
*6230	Species-rich <i>Nardus</i> grasslands	36.3	0.17
6430	Hydrophilous tall herb communities	1.5	0.01
*7130	Active blanket bog	4287.7	20.43
7130	Inactive blanket bog	236.3	1.13
7140	Transition mires	96.2	0.46
7150	<i>Rhynchosporion</i> depressions	406.0	1.93
*7210	<i>Cladium</i> fens	3.1	0.02
7230	Alkaline fens	44.8	0.21
8110	Siliceous scree	234.7	0.12
8120	Calcareous scree	0.1	0.0003
8210	Calcareous rocky slopes	1.7	0.01
8220	Siliceous rocky slopes	164.9	0.79
91A0	Old oak woodlands	1.1	0.01
	non-Annex I habitats	9072.4	43.24
	Total site area	20983.4	
	Total area of Annex I habitats	11911.0	56.76

Table 4: Extent of provisional vegetation communities (Perrin *et al.*, 2014) within Mweelrea / Sheeffry / Erriff Complex cSAC.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
PO1	<i>Menyanthes trifoliata</i> – <i>Carex limosa</i> pool community			
PO1a	infilling pool sub-community	66.9	0.32	90.1
PO1b	aquatic sub-community	7.3	0.04	9.9
SW1	<i>Potamogeton polygonifolius</i> soakway	42.4	0.20	100.0
SPG1	<i>Philonotis fontana</i> - <i>Saxifraga stellaris</i> spring			
SPG1a	typical sub-community	5.7	0.03	36.8
SPG1b	species-poor <i>Sphagnum denticulatum</i> sub-community	5.7	0.03	36.5
SPG3	<i>Anthelia julacea</i> – <i>Sphagnum</i> spp. flush	4.2	0.02	26.7
PFLU1	<i>Carex nigra/echinata</i> – <i>Sphagnum denticulatum</i> flush	108.6	0.52	16.6
PFLU2	<i>Juncus effusus</i> - <i>Sphagnum cuspidatum/palustre</i> flush	201.9	0.96	30.9
PFLU3	<i>Juncus acutiflorus/effusus</i> - <i>Calliergonella cuspidata</i> flush	196.0	0.93	30.0
PFLU4	<i>Molinia caerulea</i> - <i>Sphagnum palustre</i> flush			
PFLU4a	typical sub-community	122.7	0.59	18.8
PFLU4b	<i>Erica erigena</i> sub-community	2.3	0.01	0.4
PFLU5	<i>Carex rostrata</i> – <i>Sphagnum</i> spp. flush	21.7	0.10	3.3
RFLU1	<i>Carex viridula oedocarpa</i> - <i>Pinguicula vulgaris</i> - <i>Juncus bulbosus</i> flush			
RFLU1a	brown moss sub-community	14.1	0.07	15.7
RFLU1b	species-poor sub-community	45.2	0.22	50.1
RFLU2	<i>Eleocharis quinqueflora</i> – <i>Carex viridula</i> flush	0.1	0.001	0.1
RFLU3	<i>Carex panicea</i> – <i>Carex viridula</i> subsp. <i>oedocarpa</i> flush	0.1	0.001	0.2
RFLU4	<i>Schoenus nigricans</i> – <i>Scorpidium scorpioides</i> flush	30.6	0.15	33.9
RFEN1	<i>Carex rostrata</i> fen			
RFEN1b	species-poor sub-community	7.6	0.04	100.0
UG1	<i>Agrostis capillaris</i> - <i>Festuca ovina</i> upland grassland			
UG1a	typical sub-community	425.2	2.03	9.6
UG1b	<i>Sphagnum</i> spp. sub-community	13.6	0.07	0.3
UG1c	species-rich calcareous sub-community	7.2	0.04	0.2
UG1d	<i>Juncus squarrosus</i> sub-community	12.1	0.06	0.3
UG2	<i>Nardus stricta</i> - <i>Galium saxatile</i> upland grassland			
UG2a	typical sub-community	2438.5	11.62	55.0
UG2b	<i>Sphagnum</i> spp. sub-community	441.5	2.10	10.0
UG2c	Species-rich sub-community	29.1	0.14	0.7
UG2d	<i>Juncus squarrosus</i> sub-community	541.7	2.58	12.2
UG4	<i>Molinia caerulea</i> – <i>Anthoxanthum odoratum</i> wet grassland	524.7	2.50	11.8
BK1	<i>Pteridium aquilinum</i> community	339.2	1.62	100.0
DH1	<i>Ulex gallii</i> – <i>Erica cinerea</i> dry heath	0.01	0.00003	0.002
DH2	<i>Calluna vulgaris</i> – <i>Erica erigena</i> – <i>Molinia caerulea</i> dry heath	9.1	0.04	2.6
DH3	<i>Calluna vulgaris</i> - <i>Erica cinerea</i> dry heath	316.2	1.51	89.1
DH4	<i>Calluna vulgaris</i> - <i>Sphagnum capillifolium</i> dry/damp heath	17.1	0.08	4.8
DH5	<i>Calluna vulgaris</i> – <i>Antennaria dioica</i> dry heath	0.02	0.0001	0.01
DH6	<i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> dry heath	12.7	0.06	3.6

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
WH1	<i>Schoenus nigricans</i> – <i>Erica tetralix</i> wet heath			
WH1a	continuous cover sub-community	1127.4	5.37	23.2
WH1b	open cover sub-community	647.6	3.09	13.3
WH2	<i>Trichophorum germanicum</i> – <i>Cladonia</i> spp. – <i>Racomitrium lanuginosum</i> wet heath	46.2	0.22	1.0
WH3	<i>Calluna vulgaris</i> - <i>Molinia caerulea</i> - <i>Sphagnum capillifolium</i> wet/damp heath	964.0	4.59	19.8
WH4	<i>Trichophorum germanicum</i> - <i>Eriophorum angustifolium</i> wet heath			
WH4a	typical sub-community	731.1	3.48	15.0
WH4b	<i>Calluna vulgaris</i> sub-community	333.3	1.59	6.9
WH4c	<i>Juncus squarrosus</i> sub-community	134.5	0.64	2.8
WH5	<i>Trichophorum germanicum</i> - <i>Nardus stricta</i> - <i>Racomitrium lanuginosum</i> montane wet heath	172.6	0.82	3.6
WH6	<i>Schoenus nigricans</i> – <i>Molinia caerulea</i> – <i>Myrica gale</i> wet heath	705.0	3.36	14.5
MH1	<i>Calluna vulgaris</i> - <i>Racomitrium lanuginosum</i> montane heath			
MH1a	typical sub-community	81.0	0.39	9.3
MH1b	<i>Juncus squarrosus</i> sub-community	26.2	0.13	3.0
MH2	<i>Vaccinium myrtillus</i> – <i>Racomitrium lanuginosum</i> – <i>Herbertus aduncus</i> montane heath	21.9	0.10	2.5
MH3	<i>Vaccinium myrtillus</i> <i>Rhytidiadelphus loreus</i> – <i>Anthoxanthum odoratum</i> montane heath	3.9	0.02	0.5
MH4	<i>Calluna vulgaris</i> – <i>Juniperus communis</i> subsp. <i>nana</i> montane heath	14.5	0.07	1.7
MH5	<i>Nardus stricta</i> - <i>Carex binervis</i> - <i>Racomitrium lanuginosum</i> montane grass-heath	577.7	2.75	66.0
MH6	<i>Carex bigelowii</i> – <i>Racomitrium lanuginosum</i> montane vegetation			
MH6a	typical sub-community	27.4	0.13	3.1
MH6b	<i>Dicranum fuscescens</i> sub-community	2.8	0.01	0.3
MH6c	<i>Juncus squarrosus</i> sub-community	0.2	0.001	0.02
MH6d	<i>Deschampsia flexuosa</i> sub-community	25.1	0.12	2.9
MH7	<i>Nardus stricta</i> – <i>Carex bigelowii</i> montane vegetation			
MH7a	typical sub-community	54.7	0.26	6.3
MH7b	<i>Anthoxanthum odoratum</i> sub-community	4.3	0.02	0.5
MH7c	<i>Juncus squarrosus</i> sub-community	23.7	0.11	2.7
MH8	<i>Festuca vivipara</i> – <i>Thymus polytrichus</i> – <i>Galium saxatile</i> montane vegetation	12.5	0.06	1.4
BB1	<i>Schoenus nigricans</i> – <i>Eriophorum angustifolium</i> bog			
BB1a	continuous cover sub-community	1663.4	7.93	39.2
BB1b	open sub-community	649.2	3.09	15.3
BB2	<i>Schoenus nigricans</i> – <i>Sphagnum</i> spp. bog	421.3	2.01	9.9
BB3	<i>Eriophorum vaginatum</i> – <i>Sphagnum papillosum</i> bog	204.5	0.98	4.8
BB4	<i>Trichophorum germanicum</i> – <i>Eriophorum angustifolium</i> bog	1168.5	5.57	27.5
BB5	<i>Calluna vulgaris</i> - <i>Eriophorum</i> spp. bog			
BB5a	typical sub-community	72.6	0.35	1.7
BB5b	<i>Juncus squarrosus</i> sub-community	46.4	0.22	1.1
BB6	<i>Eriophorum angustifolium</i> – <i>Juncus squarrosus</i> bog			
BB6a	typical sub-community	23.2	0.11	0.6
BB6b	arctic-alpine sub-community	0.02	0.0001	0.0004

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
HW1	<i>Sphagnum denticulatum/cuspidatum</i> hollow			
HW1i	upland variant	4.7	0.02	0.7
HW1ii	lowland variant	33.9	0.16	4.8
HW1iii	flush variant	0.3	0.001	0.04
HW2	<i>Eriophorum angustifolium</i> - <i>Sphagnum fallax</i> hollow			
HW2i	upland variant	69.1	0.33	9.8
HW2ii	lowland variant	167.2	0.80	23.6
HW3	<i>Rhynchospora alba</i> hollow	406.0	1.94	57.3
HW4	<i>Eleocharis multicaulis</i> hollow			
HW4i	bog variant	6.7	0.03	1.0
HW4ii	flush variant	20.4	0.10	2.9
DP1	<i>Campylopus introflexus</i> - <i>Polytrichum</i> spp. degraded peat community	33.3	0.16	20.3
DP2	<i>Nardus stricta</i> – <i>Eriophorum angustifolium</i> degraded peat community	130.7	0.62	79.7
TH1	<i>Luzula sylvatica</i> - <i>Vaccinium myrtillus</i> tall herb vegetation			
TH1i	rock face variant	3.0	0.01	66.0
TH3	<i>Sedum rosea</i> – <i>Angelica sylvestris</i> tall herb vegetation	1.5	0.01	34.0
SC1	Siliceous scree community	6.2	0.03	99.6
SC2	Calcareous scree community	0.03	0.0001	0.5
RS1	<i>Saxifraga spathularis</i> - <i>Asplenium adiantum-nigrum</i> rock cleft community	15.6	0.07	96.4
RS2	<i>Saxifraga aizoides</i> – <i>Asplenium</i> spp. – <i>Orthothecium rufescens</i> rock cleft community	0.6	0.003	3.6
HM1	<i>Calluna vulgaris</i> – <i>Scapania gracilis</i> hepatic mat			
HM1i	non-Annex I grassland variant	0.1	0.0002	0.8
HM1iii	dry heath variant	4.7	0.02	85.8
HM1iv	wet heath variant	0.1	0.0003	1.1
HM2	<i>Calluna vulgaris</i> – <i>Herbertus aduncus</i> hepatic mat			
HM2i	non-Annex I grassland variant	0.1	0.0003	1.0
HM2iii	dry heath variant	0.1	0.001	2.0
HM2iv	wet heath variant	0.3	0.001	4.6
HM2v	montane heath variant	0.3	0.001	4.7
HM2vii	Annex I siliceous rock face variant	0.001	0.000004	0.02
	Total area of vegetation communities	16902.2	80.55	
	Not covered	1004.0	4.79	
	Non-vegetation cover types	3077.2	14.67	
	Total site area	20983.4		

2.17 A total of 90 provisional upland vegetation communities and sub-communities (Perrin *et al.*, 2014) were recorded within Mweelrea / Sheeffry / Erriff Complex cSAC. Details of their coverage are presented in Table 4.

2.18 Gradated maps displaying the cover of Annex I habitats currently assessed under the NSUH plus **6150 Siliceous alpine and boreal grassland** and **6430 Hydrophilous tall herb communities** and are shown in Figs. 4a-o. These maps present the actual distributions of

individual habitats within the site which may be masked in the primary habitat maps which show only the most extensive habitat in each polygon.

Rare and notable flora

- 2.19 Rare and notable plant records for the site are listed in Table 5 and their locations, where accurately known, are presented in Figs. 5a-b. The list is compiled from records made during the present survey and existing records. For each species it is indicated whether it is listed on the Flora Protection Order, 1999 and/or are listed under the relevant Red Data List. For vascular plants this is Curtis & McGough (1988) and for bryophytes 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 to these species.
- 2.20 A number of rare arctic-alpines were recorded. *Salix herbacea* and *Carex bigelowii* were recorded on the ridges of both the Mweelrea Mountains and the Sheeffry Hills. *Diphasiastrum alpinum*, a species which is rare, declining and yet under-recorded in Ireland and is also likely to be threatened by climate change (Roche, 2011; Roche & Perrin, 2010), was found on the ridge of the Sheeffry Hills. *Saussurea alpina* has previously been recorded at Lough Brawn in the Sheeffry Hills. It was not refound at this station during the NSUH but the species was recorded nearby above Lough Tarriff.
- 2.21 *Saxifraga oppositifolia* has previously been recorded on Mweelrea and at Lugaloghaun in the Sheeffry Hills and the population at Lugaloghaun was refound during the NSUH. *Daboecia cantabrica* was recorded in several locations where it was inaccessible to browsing sheep. *Eriocaulon aquaticum* was found at Lough Alisheen and *Adiantum capillus-veneris* was found amongst rocks in Dooaghtry. Other notable plants recorded during the NSUH include *Erica erigena*, *Galium boreale*, *Gentianella campestris*, *Thelypteris palustris*, *Phegopteris connectilis*, *Thalictrum alpinum*, *Oxyria digyna* and *Asplenium viride*.
- 2.22 Previously recorded vascular records include *Polystichum lonchitis*, which has been recorded at Mweelrea, Lough Brawn and Lugaloghaun. *Pseudorchis albida* is known historically from Mweelrea and Glenlaur. *Najas flexilis* has been recorded at Fin Lough and the Owengarr River. *Pilularia globulifera* and *Hypericum canadense* are known from Glencullin Lough and Croaghribeg respectively. There are records in the coastal Dooaghtry area of *Epipactis palustris*, *Cephalanthera longifolia* and *Spiranthes romanzoffiana* of which the latter two are listed on the FPO. *Vaccinium vitis-idaea* was noted on the Sheeffry Hills by Roden (1986).

Table 5: Records of rare and notable plants species Mweelrea / Sheeffry / Erriff Complex cSAC.

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Vascular plants						
<i>Asplenium adiantum-nigrum</i>	-	-	-	2010	•	-
<i>Asplenium viride</i>	-	-	-	2010	•	3
<i>Carex bigelowii</i>	-	-	-	2010	•	-
<i>Cephalanthera longifolia</i>	VU	•	-	1910, 1940	-	1, 2, 3
<i>Daboecia cantabrica</i>	-	-	-	2010	•	-
<i>Diphasiastrum alpinum</i>	-	-	-	2010	•	-
<i>Epipactis palustris</i>	RA	-	-	-	-	3
<i>Erica erigena</i>	-	-	-	2010	•	2, 3
<i>Eriocaulon aquaticum</i>	-	-	-	2010	•	-
<i>Galium boreale</i>	-	-	-	2010	•	-
<i>Gentianella campestris</i>	-	-	-	2010	•	-
<i>Gnaphalium sylvaticum</i>	-	-	-	1899	-	1
<i>Hammarbya paludosa</i>	RA	•	-	2009	•	-
<i>Hypericum canadense</i>	RA	•	-	2004, 2005	-	1
<i>Najas flexilis</i>	-	•	•	1937	-	2, 3
<i>Oxyria digyna</i>	-	-	-	2010	•	3
<i>Phegopteris connectilis</i>	-	-	-	2010	•	3
<i>Pilularia globulifera</i>	RA	•	-	1984, 1989	-	1
<i>Polystichum lonchitis</i>	RA	-	-	1912, 1934, 1994	-	2
<i>Pseudorchis albida</i>	VU	•	-	1883	-	1
<i>Rhynchospora fusca</i>	-	-	-	2010	•	-
<i>Ruppia maritima</i>	-	-	-	-	-	2
<i>Salix herbacea</i>	-	-	-	2009, 2010	•	-
<i>Saussurea alpina</i>	RA	-	-	1899, 2010	•	2, 3
<i>Saxifraga oppositifolia</i>	RA	-	-	1883, 1986, 2010	•	3
<i>Spiranthes romanzoffiana</i>	RA	•	-	-	-	2, 3
<i>Thalictrum alpinum</i>	-	-	-	2010	•	3
<i>Thelypteris palustris</i>	-	-	-	2010	•	-
<i>Vaccinium vitis-idaea</i>	-	-	-	1986	-	4
Bryophytes						
<i>Acrobolbus wilsonii</i>	VU	-	-	2003	-	1
<i>Amphidium lapponicum</i>	VU	-	-	2003	-	1
<i>Bazzania pearsonii</i>	VU	-	-	2010	•	2, 3, 5
<i>Bryum calophyllum</i>	EN	•	-	2003	-	1
<i>Bryum riparium</i>	EN	-	-	2003, 2008	-	3, 5
<i>Catosciopium nigritum</i>	NT	•	-	2003	-	1
<i>Fossombronia fimbriata</i>	VU	-	-	-	-	5
<i>Glyphomitrium daviesii</i>	-	-	-	-	-	5
<i>Grimmia donniana</i>	NT	-	-	2010	•	-
<i>Grimmia funalis</i>	NT	-	-	2003	-	1
<i>Hygrohypnum duriusculum</i>	CR	-	-	2003	-	1
<i>Lejeunea hibernica</i>	NT	-	-	2003	-	1, 5
<i>Lophozia opacifolia</i>	VU	-	-	-	-	3
<i>Kiaeria blyttii</i>	-	-	-	-	-	3
<i>Marsupella adusta</i>	NT	-	-	2003	-	1
<i>Mastigophora woodsii</i>	NT	-	-	2008, 2010	•	3, 5
<i>Metzgeria leptoneura</i>	NT	-	-	2008	-	1
<i>Oedipodium griffithianum</i>	CR	-	-	2003	-	1
<i>Paraleptodontium recurvifolium</i>	NT	-	-	2008	-	3, 5
<i>Petalophyllum ralfsii</i>	-	•	•	2003	-	2, 3, 5

Table 5: continued

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
<i>Philonotis cernua</i>	CR	-	-	-	-	5
<i>Philonotis tomentella</i>	VU	-	-	2003, 2008	-	1
<i>Plagiochila carringtonii</i>	EN	-	-	2009	•	2, 3, 5
<i>Pogonatum nanum</i>	EN	-	-	2008	-	1
<i>Pohlia elongata</i> var. <i>elongata</i>	NT	-	-	2008	-	1
<i>Ptilium crista-castrensis</i>	CR	-	-	-	-	2
<i>Scapania ornithopodioides</i>	VU	-	-	2010	•	-
<i>Scapania nimbosa</i>	EN	-	-	-	-	3, 5
<i>Sphagnum platyphyllum</i>	NT	-	-	2010	•	-
<i>Sphagnum pulchrum</i>	-	-	-	2010	•	2
<i>Sphagnum skyense</i>	DD	-	-	-	-	7
<i>Sphagnum subsecundum</i>	NT	-	-	2010	•	8
<i>Sphagnum strictum</i>	DD	-	-	-	-	2
Lichens						
<i>Cladonia rangiferina</i>	•	-	-	1989, 2009	•	6
<i>Arthonia arthonioides</i>	•	-	-	2009	-	6
<i>Degelia atlantica</i>	•	-	-	1966, 2007, 2009	-	6
<i>Hypotrachyna sinuosa</i>	•	-	-	2007	-	6
<i>Hypotrachyna taylorensis</i>	•	-	-	2009	-	6
<i>Lobaria virens</i>	•	-	-	2009	-	6
<i>Pachyphiale carneola</i>	•	-	-	2009	-	6
<i>Pannaria conoplea</i>	•	-	-	1966, 2009	-	6
<i>Parmeliella parvula</i>	•	-	-	2007, 2009	-	6
<i>Pilophorus strumaticus</i>	•	-	-	1988, 2009	-	6
<i>Schismatomma quercicola</i>	•	-	-	2007	-	6
<i>Sticta canariensis sensu str.</i>	•	-	-	2007	-	6
<i>Sticta fuliginosa</i>	•	-	-	1966, 2007, 2009	-	6
<i>Sticta limbata</i>	•	-	-	1966, 2007, 2009	-	6
<i>Sticta sylvatica</i>	•	-	-	2007, 2009	-	6
Previous records:	1, NPWS Recorder database and associated data			5, Averis & Stewart (1995)		
	2, Natura 2000 assessment form			6, LichenIreland database		
	3, cSAC site synopsis			7, Lockhart et al. (2012)		
	4, Roden (1986)			8, N. Stewart (unpub. data)		
Red Data List:	CR, Critically Endangered			RA, Rare		
	EN, Endangered			NT, Near Threatened		
	VU, Vulnerable					

2.23 Rare bryophytes recorded in the present survey include *Plagiochila carringtonii* that was recorded in the large north-east-facing corrie at Lugmore in the Mweelrea Mountains, a previously known station. *Amphidium lapponicum*, which has previously been found on Mweelrea (Holyoak & Long 2005), was found in a rock cleft on the Sheeffry Hills at 574 m, above Lugaloughaun. This is only the fourth Irish record for this species. *Sphagnum platyphyllum* that had previously been recorded at Sheeffry Bridge was found in a flush at Skirragohiffern, near Killary Harbour. *Grimmia donniana* was found amongst scree at Lugboy in the Sheeffry Hills and amongst scree on the west face of Ben Gorm. *Mastigophora woodsii* was found in grassland west of Lough Brawn in the Sheeffry Hills, in wet heath in the Glendavock valley, east of Ben Gorm and amongst hepatic mats above Lugharry Lough, also east of Ben Gorm, where it occurred with *Bazzania pearsonii* and *Scapania ornithopodioides*. *Sphagnum*

subsecundum was recorded from wet heath in Srahrooskey, just north of Glencullin Lough. *Sphagnum pulchrum* was recorded from several locations within the site; although not on the Red Data List, this constitutes a new vice-county record for West Mayo.

- 2.24 Notable previous bryophyte records from the coastal Dooaghtry area include three species on the FPO: *Petalophyllum ralfsii*, *Bryum calophyllum* and *Catascopium nigratum*. Other existing records for the site include the Critically Endangered *Philonotis cernua*, *Ptilium crista-castrensis* and *Hygrohypnum duriusculum*. *Sphagnum skyense* has recently been recorded from the large corrie at Lugmore in the Mweelrea Mountains.
- 2.25 The NSUH and pilot survey did not actively seek to relocate previous rare plant records; therefore no inference should be made by the absence of a record in the current survey.
- 2.26 A list of all vascular plants, bryophytes and lichens recorded during the NSUH survey and the pilot survey are presented in Appendix 3.

Fauna

- 2.27 Faunal records from during this survey include Common Frog (*Rana temporaria*), Common Lizard (*Zootoca vivipara*), Irish Hares (*Lepus timidus* subsp. *hibernicus*), Fox (*Vulpes vulpes*), Badger (*Meles meles*), Rabbit (*Oryctolagus cuniculus*), Dipper (*Cinclus cinclus* subsp. *hibernicus*), Red Grouse (*Lagopus lagopus*), Mountain Pipit (*Anthus pratensis*), Swallow (*Hirundo rustica*), Siskin (*Carduelis spinus*), Golden Plover (*Pluvialis apricaria*), Kestrel (*Falco tinnunculus*) and Raven (*Corvus corax*).
- 2.28 Previous faunal records from the cSAC include Otter (*Lutra lutra*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Atlantic Salmon (*Salmo salar*), Narrow-mouthed Whorl Snail (*Vertigo angustior*) and Geyer's Whorl Snail (*V. geyeri*), all of which are listed on Annex II of the EU Habitats Directive. Arctic Charr (*Salvelinus alpinus*), which are listed as Vulnerable by Whilde (1993), have also been recorded from the cSAC. Greenland White-fronted Geese (*Anser albifrons*), Merlin (*Falco columbarius*), Peregrine (*Falco peregrinus*) and Chough (*Pyrrhocorax pyrrhocorax*), which are listed on Annex I of the Birds Directive, have also previously been noted onsite. The geese have been known to utilise bog and wet grassland within the site but, according to anecdotal evidence from landowners, their numbers have declined substantially in recent decades.

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 146 monitoring stops were recorded within Mweelrea / Sheeffry / Erriff Complex cSAC for this purpose (Fig. 6 and Table 6); 39 additional relevés were recorded in habitats that were not assessed including 25 relevés from Annex I habitats (**4030 Dry heath**, **6150 Siliceous alpine and boreal grasslands** and **6430 Hydrophilous tall herb communities**) and 14 relevés from non-Annex habitats. The future prospects parameter examines the current impacts to 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	35
4030	Dry heath	11
4060	Alpine and Boreal heath	9
*6230	Species-rich <i>Nardus</i> grasslands	5
*7130/7130	Blanket bog	39
7140	Transition mires	5
7150	<i>Rhynchosporion</i> depressions	14
7230	Alkaline fens	9
8110	Siliceous scree	10
8210	Calcareous rocky slopes	1
8220	Siliceous rocky slopes	8

Commonage Framework Plan

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

3.3 The Mweelrea / Sheeffry / Erriff Complex cSAC contains significant areas of commonage with

these areas comprising 141.6 km² ha or 67.5% of the site. A baseline CFP survey of these areas occurred between 1999 and 2004, with the majority of recording occurring in 1999 and 2000. An interim destocking level of 30% had been applied in Mayo prior to the CFP commencing. This was then adjusted using available CFP results *c.* 2004. A resurvey of all stations and a subset of subunits in section MA15 occurred in 2006; this section covers much of the Mweelrea Mountains and the Sheeffry Hills. Results from these surveys are shown in Figs. 7a and 7b.

- 3.4 Of the 203 subunits within or partially within the cSAC, 97 were resurveyed in 2006, comprising 77.5 % of the commonage area (Table 7). The baseline survey indicates commonage within the site was in bad condition at that time with only 21.4% of the area being undamaged (U) and 29.9% of the area being moderately to severely damaged (MS) or worse. Pairwise comparison of the resurveyed subunits indicates that 29 subunits (29.9%) improved, 47 subunits (48.5%) did not change significantly and 21 subunits (21.6%) disimproved. This resulted in a decrease in the area of undamaged (U) subunits but also a decrease in the area of severely or very severely damaged (S/S*), whilst the area of moderately damaged (MM) subunits increased.

Table 7: Frequency of CFP subunit damage in Mweelrea / Sheeffry / Erriff Complex cSAC, baseline surveys and 2006 resurvey.

Damage level	Baseline (<i>n</i> = 203)		Resurvey (<i>n</i> = 97)	
	Frequency	Area %	Frequency	Area %
U	42 (20.7%)	21.4	14 (14.4%)	8.4
MU	49 (24.1%)	36.5	21 (21.6%)	37.5
MM	30 (14.8%)	11.8	34 (35.1%)	34.3
MS	32 (15.8%)	11.2	19 (19.6%)	13.7
S/S*	49 (24.1%)	18.7	9 (9.3%)	6.1
Not recorded	1 (0.5%)	0.3	-	-

- 3.5 The CFP baseline survey recorded 184 stations within Mweelrea / Sheeffry / Erriff Complex cSAC (but data was available for only 182 stations) and in section MA15 126 stations were recorded in the resurvey (Table 8.) The baseline survey indicates that commonage within section MA15 was in bad condition at this time with only 19.8% of stations being undamaged (U) and 37.3% of stations being moderately severely damaged (MS) or worse. One of the changes between the baseline survey and the resurvey in 2006 was an increase in the number of severely damaged (S) and very severely damaged (S*) stations, although paradoxically the number and area of subunits deemed to have this level of damage fell. Similarly, the number of undamaged stations (U) remained fairly comparable, but this is not reflected in the subunit data. The number of moderately damaged to undamaged (MU) and moderately severely damaged (MS) decreased, whilst the number of moderately damaged (MM) stations increased.

Table 8. Frequency of CFP station damage level in Mweelrea / Sheeffry / Erriff Complex cSAC, baseline surveys and 2006 resurvey. Percentages indicate proportion of stations within each column.

Damage level	Wet heath/Dry heath/ Blanket bog			Upland grassland and other habitats		All habitats	
	Baseline all (n = 182)	Baseline MA15 (n = 108)	Resurvey MA15 (n = 112)	Baseline MA15 (n = 18)	Resurvey MA15 (n = 14)	Baseline MA15 (n = 126)	Resurvey MA15 (n = 126)
U	37 (20.1%)	23 (21.3%)	16 (14.3%)	2 (11.1%)	6 (42.9%)	25 (19.8%)	22 (17.5%)
MU	51 (27.7%)	27 (25.0%)	22 (19.6%)	15 (83.3%)	2 (14.3%)	42 (33.3%)	24 (19.0%)
MM	27 (14.7%)	11 (10.2%)	31 (27.7%)	1 (5.6%)	3 (21.4%)	12 (9.5%)	34 (27.0%)
MS	39 (21.2%)	33 (30.6%)	15 (13.4%)	0 (0.0%)	2 (14.3%)	33 (26.2%)	17 (13.5%)
S/S*	28 (15.2%)	14 (13.0%)	28 (25.0%)	0 (0.0%)	1 (7.1%)	14 (11.1%)	29 (23.0%)

3.6 Summary data for some of the key indicators recorded at CFP stations are compared with NSUH data in Table 9. Between the baseline surveys and the 2006 resurvey, these data indicate whilst the height of *Calluna* and other vegetation increased, the extent of bare peat has also increased. Cover of *Calluna* appears to have declined. The NSUH data suggest that there may have been some improvement since this time.

Table 9: Mean values for key indicators from CFP stations in Mweelrea / Sheeffry / Erriff Complex cSAC (section MA15 only), baseline survey and the 2006 resurvey, with related data from NSUH survey.

	Wet heath/Dry heath/ Blanket bog			Upland grassland	
	Original (n = 87-108)	Resurvey (n = 94-112)	NSUH (n = 105-110)	Original (n = 18)	Resurvey (n = 14)
Bare peat cover (%)	7.0	10.2	4.5	0.1	4.0
Sward height (cm)	11.8	22.8	25.9	7.2	19.4
<i>Calluna</i> height (cm)	6.8	8.2	14.8†	-	-
<i>Calluna</i> cover	6.8	5.2	10.8	-	-

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

3.7 A further resurvey was conducted in 2008 in the Glenawough and Derinkee area targeting individual plans that had been heavily destocked due to high levels of damage (>50% destocking). These results are shown in Table 10 and on Fig. 7. The data indicate that generally these areas have improved in condition, although one plan disimproved slightly.

3.8 The subunit and station data do not present a clear trend in the condition of the commonage, although there is some suggestion from the NSUH data of an improvement since 2006. Also, the fact that stock reductions occurred in over 78.6% 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 10. Plan reassessments of agricultural units with original destocking greater than 50%

Agricultural unit	Destocking 2000	Destocking 2008
MA-16-W	61.4	63.2
MA-16-Q	51.0	38.1
MA-16-I	80.6	37.2
MA-4-A	55.0	31.1

4010 Wet heath

Area

3.9 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 11). 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, afforestation, landslides, drainage and turf cutting by machine. 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 11: Impacts causing obvious losses in area of 4010 Wet heath, 2000-2010.

Impact code	Impact	Area loss (ha)	Area loss (ha)	Area loss (ha)	Area loss (ha)
		1995-2000	2000-2005	2005-2010	1995-2010
B01.02	Artificial planting on open ground (non-native trees)	0.00	0.09	0.00	0.09
C01.03.01	Hand cutting of peat	0.37	0.01	0.00	0.38
C01.03.02	Mechanical removal of peat	0.00	0.00	0.01	0.01
D01.01	Paths, tracks, cycling tracks	0.49	0.28	0.00	0.77
J02.07	Water abstractions from groundwater	0.00	0.02	0.00	0.02
L05	Collapse of terrain, landslide	0.02	0.01	0.00	0.03
All impacts		0.97	0.48	0.01	1.46
% of habitat		0.02	0.01	0.0002	0.03
% loss per year		0.004	0.002	0.00003	0.002

Structure and functions

3.10 A total of 35 monitoring stops were recorded within **4010 Wet heath** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 12). In the assessment of structure and functions, 30 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 85.7%. The structure and functions of **4010 Wet heath** were therefore assessed as Unfavourable – Bad.

Table 12: Monitoring criteria and failure rates for 4010 Wet heath ($n = 35$).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition				
1 <i>Erica tetralix</i> present	20m radius	35	7	20.0
2 Cover of positive indicator species $\geq 50\%$	Relevé	35	14	40.0
3 Total cover of <i>Cladonia</i> species, <i>Sphagnum</i> species, <i>Racomitrium lanuginosum</i> and pleurocarpous mosses $\geq 10\%$	Relevé	35	14	40.0
4 Cover of ericoid species and <i>Empetrum nigrum</i> $\geq 15\%$	Relevé	35	23	65.7
5 Cover of dwarf shrub species $< 75\%$	Relevé	35	0	0
6 Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>Holcus lanatus</i> , <i>Phragmites australis</i> , <i>Ranunculus repens</i> collectively $< 1\%$	Relevé	35	1	2.9
7 Cover of non-native species $< 1\%$	Relevé	35	0	0
8 Cover of non-native species $< 1\%$	Local vicinity	35	1	2.9
9 Cover of scattered native trees and scrub $< 20\%$	Local vicinity	35	0	0
10 Cover of <i>Pteridium aquilinum</i> $< 10\%$	Local vicinity	35	0	0
11 Cover of <i>Juncus effusus</i> $< 10\%$	Local vicinity	35	0	0
Vegetation structure				
12 Crushed, broken and/or pulled up <i>Sphagnum</i> species $< 10\%$ of <i>Sphagnum</i> cover	Relevé	35	0	0
13 Last complete growing season's shoots of ericoids, <i>Empetrum nigrum</i> and <i>Myrica gale</i> showing signs of <u>browsing</u> collectively $< 33\%$	Relevé	24	5	20.8
14 No signs of <u>burning</u> into the moss, liverwort or lichen layer, or exposure of peat surface due to burning	Local vicinity	35	0	0
15 No signs of <u>burning</u> inside boundaries of sensitive areas*	Local vicinity	35	0	0
Physical structure				
16 Cover of <u>disturbed</u> bare ground $< 10\%$	Relevé	35	4	11.4
17 Cover of <u>disturbed</u> bare ground $< 10\%$	Local vicinity	35	7	20.0
18 Area showing signs of <u>drainage</u> resulting from heavy trampling or tracking or ditches $< 10\%$	Local vicinity	35	6	17.1

*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, hags 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.

3.11 The vegetation composition of **4010 Wet heath** was poor, with multiple failures being recorded under several criteria. The cover of ericoid species was inadequate at 65.7% of stops, while

Erica tetralix was absent from the local vicinity of 20.0% of monitoring stops. The cover of positive indicator species and the cover of *Cladonia* spp., *Sphagnum* spp. and pleurocarpous mosses were inadequate at 40.0% of monitoring stops. The cover of the negative indicator species *Agrostis capillaris* was excessive at one monitoring stop (2.9%). The cover of non-native species in the local vicinity of the monitoring stop was also excessive at one monitoring stop (2.9%).

- 3.12 The vegetation structure of **4010 Wet heath** was poor in some cases with 20.8% of monitoring stops failing due to excessive grazing. The physical structure of **4010 Wet heath** was poor with 17.1% of monitoring stops failing due to excessive drainage. The cover of disturbed bare ground was excessive within 11.4% of monitoring stops and in the local vicinity of 20.0% of monitoring stops.
- 3.13 Grazing by sheep, along with associated impacts such as trampling, appears to be the most significant impact on the structure and functions of **4010 Wet heath** in Mweelrea / Sheeffry / Erriff Complex cSAC. The effects of this impact are apparent in the vegetation composition, vegetation structure and physical structure of this habitat.
- 3.14 The failure rates recorded under the criteria relating to vegetation composition are much higher than those for vegetation structure or physical structure. The current impacts recorded under vegetation structure and physical structure do not, therefore, account for the high levels of failure under vegetation composition. The poor vegetation composition may be a legacy of previous damage. Whilst the CFP stock reductions have undoubtedly reduced grazing pressure, this management intervention has not yet been manifested in the vegetation composition of **4010 Wet heath**, indicating that recovery is ongoing.

Future prospects

- 3.15 The impacts codes (Ssyman, 2009) and associated data recorded for **4010 Wet heath** are presented in Table 13. Twelve impacts were recorded within **4010 Wet heath**.

Non-intensive cattle grazing (A04.02.01)

- 3.16 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that cattle grazing occasionally occurs within the site, principally at Dooaghtry, the Bunowen valley and near Carrowkennedy (Dúchas, 1999). During the present survey, this impact was observed within **4010 Wet heath**, with resultant damage due to poaching. The intensity of this impact was assessed as high and its influence as negative. The trend was assessed as improving due to stock reductions.

Non-intensive sheep grazing (A04.02.02)

- 3.17 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there has been substantial stock reduction within the site (see paragraph 3.8).

3.18 During the present survey, 20.8% of **4010 Wet heath** monitoring stops failed due to excessive grazing. Levels of sheep grazing were extremely high in some areas, resulting in severe degradation of **4010 Wet heath** (Plate 1). Although intact **4010 Wet heath** were recorded, some of which exhibited good growth of *Calluna vulgaris*, the intensity of this impact was assessed as high overall and its influence as negative. The trend was assessed as improving due to stock reductions.



Plate 1: Overgrazing of **4010 Wet heath** on southeast slopes at Tangincartoor. (Photo: BEC Consultants)

Non-intensive horse grazing (A04.02.03)

3.19 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that small numbers of donkeys grazed within the site (Dúchas, 1999). During the present survey, this impact was observed within **4010 Wet heath**. The intensity of this impact was assessed as low and its influence as negative.

Artificial planting on open ground (non-natives trees) (B01.02)

- 3.20 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that, while most of the forestry plantations within the cSAC boundary were quite old, recent plantations had been established in the north of the site at Tangincartoor, Tawnyslinnaun and Leenavista. The recent increase in the rate of afforestation in the area was believed to have contributed to increased peat and soil erosion in parts of the site (Dúchas, 1999).
- 3.21 The assessment of area estimated that 0.09 ha of **4010 Wet heath** had been lost to afforestation between 2000 and 2005 (0.002% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.

Table 13: 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
A04.02.01	Non-intensive cattle grazing	High	Negative	<1%	Inside	-0.75	Imp
A04.02.02	Non-intensive sheep grazing	High	Negative	100%	Inside	-4.5	Imp
A04.02.03	Non-intensive horse grazing	Low	Negative	<1%	Inside	-0.25	Ins
B01.02	Artificial planting on open ground (non-native trees)	High	Negative	0.002%	Inside	-0.75	Ins
C01.03.01	Hand cutting of peat	High	Negative	0.01%	Inside	-0.75	Ins
C01.03.02	Mechanical removal of peat	High	Negative	0.0002%	Inside	-0.75	Ins
D01.01	Paths, tracks, cycling tracks	High	Negative	0.02%	Inside	-0.75	Ins
G01.02	Walking, horse riding and non-motorised vehicles	Low	Neutral	<1%	Inside	0	Ins
I01	Invasive non-native species	Medium	Negative	<1%	Inside	-0.5	Ins
J02.07	Water abstractions from groundwater	High	Negative	0.0004%	Inside	-0.75	Ins
K01.01	Erosion	High	Negative	10.1%	Inside	-1.5	Ins
L05	Collapse of terrain, landslide	High	Negative	0.004%	Inside	-0.75	Ins
Overall score						-12.0	

Peat extraction (C01.03)

- 3.22 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that peat extraction was commonly carried out in lowland areas of the site. The damage from turf cutting and associated drainage is localised but widespread. The main areas where peat cutting occurs are Knockeen, Kinnakillew, Cregganbaun, Carrowkennedy, Croaghribbeg and between the Owenmore and Bunowen river catchments (Dúchas, 1999). Hand cutting and mechanical removal of peat are discussed separately below.

Hand cutting of peat (C01.03.01)

- 3.23 Turf cutting by hand is practiced within the site (Dúchas, 1999). The assessment of area estimated that 0.38 ha of **4010 Wet heath** had been lost to turf cutting by hand between 1995

and 2005 (0.01% of the habitat area). The intensity of this impact is assessed as high and its influence as negative.

Mechanical removal of peat (C01.03.02)

3.24 Within Mweelrea / Sheeffry / Erriff Complex cSAC, peat extraction is largely conducted by mechanical methods (Dúchas, 1999). The assessment of area estimated that 0.01 ha of **4010 Wet heath** had been lost to mechanised turf cutting between 2005 and 2010 (0.0002% of the habitat area). The intensity of this impact is assessed as high and its influence as negative.

Paths, tracks, cycling tracks (D01.01)

3.25 The assessment of area estimated that 0.77 ha of **4010 Wet heath** had been lost to track development between 1995 and 2005 (0.02% of the habitat area). These tracks are often associated with turf cutting activities (Dúchas, 1999). The intensity of this impact is assessed as high and its influence as negative.

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

3.26 Hill walking is one of the main recreational activities within the site. The Delphi Centre organises tuition and supervised trips for this activity e.g. mountaineering on Ben Creggan (Dúchas, 1999). The Western Way, an official waymarked walking route, passes through a small section of the Sheeffry Hills. Walkers cross some areas of **4010 Wet heath** on the Western Way and 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.

Invasive non-native species (I01)

3.27 *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.

3.28 *Campylopus introflexus* was recorded at 8.6% of **4010 Wet heath** monitoring stops, but its cover was not sufficient to cause the stops to fail. The mean cover of *C. introflexus* within **4010 Wet heath** monitoring stops was 0.04%. The degraded peat vegetation community DP1 *Campylopus introflexus* – *Polytrichum* spp. was recorded within 188 polygons dominated by **4010 Wet heath** during vegetation mapping, with cover scores of up to 34.1%.

3.29 During the present survey, the highly invasive non-native shrub *Rhododendron ponticum* was found within **4010 Wet heath**. 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*.

Water abstractions from groundwater (J02.07)

- 3.30 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 (Szymank, 2009).
- 3.31 The assessment of area estimated that 0.02 ha of **4010 Wet heath** had been lost to drainage between 2000 and 2005 (0.0004% of the habitat area). Drains within the site are generally associated with roads, afforestation and peat extraction (Dúchas, 1999). The intensity of this impact is assessed as high and its influence as negative.

Erosion (K01.01)

- 3.32 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that increases in afforestation and livestock numbers were believed to have contributed to increased rates of peat and soil erosion in parts of the site and signs of erosion such as soilcreep, rills and gullies were evident on many of the upland slopes within the cSAC (Dúchas, 1999).
- 3.33 Due to CFP stock reductions 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 the lower slopes of the site 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 10.1% 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.

Collapse of terrain, landslide (L05)

- 3.34 The assessment of area estimated that 0.2 ha of **4010 Wet heath** (0.004% of the habitat area) had been lost to landslides at Derry and Ballyheer, on the southern side of the Mweelrea Mountains and Ben Gorm respectively, between 1995-2005. The intensity of this impact is assessed as high and its influence as negative.

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- 3.35 The overall impacts score for **4010 Wet heath** has been calculated as -12.0. This is significantly below the nominal Favourable Reference Value of zero. Whilst stock reductions has resulted in reduced grazing levels within this habitat (see paragraph 3.8), 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.

4030 Dry heath

Area

3.36 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. Only losses in habitat were found, there were no gains in habitat area (Table 14). 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 **4030 Dry heath** were due to the development of tracks and landslides. 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 14: Impacts causing obvious losses in area of 4030 Dry heath, 1995-2010.

Impact code	Impact	Area loss (ha)	Area loss (ha)	Area loss (ha)	Area loss (ha)
		1995-2000	2000-2005	2005-2010	1995-2010
D01.01	Paths, tracks, cycling tracks	0.01	0.05	0.00	0.06
L05	Collapse of terrain, landslide	0.01	0.00	0.00	0.01
All impacts		0.03	0.05	0.00	0.08
% of habitat		0.01	0.01	0.00	0.02
% loss per year		0.001	0.003	0.00	0.001

Structure and functions

3.37 A total of 11 monitoring stops were recorded in **4030 Dry heath** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 15). In the assessment of structure and functions, eight monitoring stops failed one criterion or more. Following a review of the ecological condition of these monitoring stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 72.7%. The structure and functions of **4030 Dry heath** were therefore assessed as Unfavourable – Bad.

3.38 The vegetation composition of **4030 Dry heath** was poor in some cases. Two monitoring stops (18.2%) failed due to inadequate cover of positive indicator species. Another monitoring stop (9.1%) failed due to excessive cover of *Pteridium aquilinum* in the local vicinity.

3.39 The vegetation structure of **4030 Dry heath** was poor, with 54.5% of monitoring stops failing due to poor structural diversity of *Calluna vulgaris*. One of these monitoring stops (12.5%) also failed due to excessive grazing. Another monitoring stop (9.1%) failed due to excessive cover of senescent *Calluna vulgaris*. The physical structure of **4030 Dry heath** was poor in one case, with one monitoring stop (9.1%) failing due to excessive cover of disturbed bare ground in the local vicinity.

Table 15: Monitoring criteria and failure rates for 4030 Dry heath (n = 11).

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 <i>Campylopus</i> spp. and <i>Polytrichum</i> spp. ≥ 3	Relevé	11	0	0
2	Number of positive indicator species present ≥ 2	Relevé	11	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%		11	2	18.2
4	Proportion of dwarf shrub cover composed of <i>Myrica gale</i> , <i>Salix repens</i> , <i>Ulex gallii</i> collectively < 50%	Relevé	11	0	0
5	Cover of the following weedy negative indicator species: <i>Cirsium arvense</i> , <i>C. vulgare</i> , <i>Ranunculus repens</i> , large <i>Rumex</i> species (except <i>R. acetosa</i>), <i>Senecio jacobaea</i> , <i>Urtica dioica</i> collectively < 1%	Relevé	11	0	0
6	Cover of non-native species < 1%	Relevé	11	0	0
7	Cover of non-native species < 1%	Local vicinity	11	0	0
8	Cover of scattered native trees and scrub < 20%	Local vicinity	11	0	0
9	Cover of <i>Pteridium aquilinum</i> < 10%	Local vicinity	11	1	9.1
10	Cover of <i>Juncus effusus</i> < 10%	Local vicinity	11	0	0
Vegetation structure					
11	Senescent proportion of <i>Calluna vulgaris</i> cover < 50%	Relevé	11	1	9.1
12	Last complete growing season's shoots of ericoids and <i>Empetrum nigrum</i> showing signs of <u>browsing</u> collectively < 33%	Relevé	8	1	12.5
13	No signs of <u>burning</u> inside boundaries of sensitive areas*	Local vicinity	11	0	0
14	Outside boundaries of sensitive areas, all growth phases of <i>Calluna vulgaris</i> should occur throughout, with ≥ 10% of cover in mature phase	Local vicinity	11	6	54.5
Physical structure					
15	Cover of <u>disturbed</u> bare ground < 10%	Relevé	11	0	0
16	Cover of <u>disturbed</u> bare ground < 10%	Local vicinity	11	1	9.1

*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, hagsgs and erosion gullies, and within 5 – 10 m of the edge of watercourses.

3.40 Grazing by sheep appears to be the most significant impact on the structure and functions of **4030 Dry heath** in Mweelrea / Sheeffry / Erriff Complex cSAC. The effects of this impact are apparent in the vegetation composition, vegetation structure and physical structure of this habitat.

Future prospects

3.41 Six impacts were recorded within **4030 Dry heath** (Table 16).

Table 16: Assessment of impacts 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	90%	Inside	-2.5	Imp
D01.01	Paths, tracks, cycling tracks	High	Negative	0.02%	Inside	-0.75	Ins
G01.02	Walking, horse riding and non-motorised vehicles	Low	Neutral	<1%	Inside	0	Ins
I01	Invasive non-native species	Low	Negative	0.01%	Inside	-0.25	Ins
I02	Problematic native species	High	Negative	<1%	Inside	-0.75	Ins
L05	Collapse of terrain, landslide	High	Negative	0.003%	Inside	-0.75	Ins
	Overall score					-5.0	

Non-intensive sheep grazing (A04.02.02)

3.42 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).

3.43 During the present survey, 12.5% of **4030 Dry heath** monitoring stops failed due to excessive grazing and 54.5% failed due to poor structural diversity of *Calluna vulgaris*, with the majority exhibiting a lack of *C. vulgaris* in the mature phase. However, in areas that were less accessible to grazers, some monitoring stops failed due to excessive cover of *C. vulgaris* in the mature phase, which indicates that grazing levels varied considerably throughout the site. 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.

Paths, tracks, cycling tracks (D01.01)

3.44 The assessment of area estimated that 0.06 ha of **4030 Dry heath** had been lost to track development between 1995 and-2005 (0.02% of the habitat area). These tracks are often associated with turf cutting activities (Dúchas, 1999). The intensity of this impact is assessed as high and its influence as negative.

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

3.45 Hill walking is one of the main recreational activities within the site. The Delphi Centre organises tuition and supervised trips for this activity e.g. mountaineering on Ben Creggan (Dúchas, 1999). The Western Way, an official waymarked walking route, passes through a small section of the Sheeffry Hills. Walkers cross some areas of **4030 Dry heath** on the Western Way and 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.

Invasive non-native species (I01)

3.46 *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.

3.47 *Campylopus introflexus* was recorded within one **4030 Dry heath** monitoring stop, but its cover was not sufficient to cause the stop to fail. The mean cover of *C. introflexus* within **4030 Dry heath** monitoring stops was 0.01%. The degraded peat vegetation community DP1 *Campylopus introflexus* – *Polytrichum* spp. was recorded within eight polygons dominated by **4030 Dry heath** during vegetation mapping, with cover scores of up to 5%. As *C. introflexus* formed extensive carpets, the intensity of this impact was assessed as low and its influence as negative.

Problematic native species (I02)

3.48 During the assessment of structure and functions, one **4030 Dry heath** monitoring stop (9.1%) 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%.

Collapse of terrain, landslide (L05)

3.49 The assessment of area estimated that 0.01 ha of **4030 Dry heath** had been lost to landslides between 1995 and 2000 (0.003% of the habitat area). The intensity of this impact is assessed as high and its influence as negative.

3.50 The overall impacts score for **4030 Dry heath** has been calculated as -5.0. This is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is however deemed to be improving due to CFP stock reductions (see paragraph

3.8). The future prospects for this habitat were therefore assessed as Unfavourable – Inadequate.

4060 Alpine and Boreal heath

Area

3.51 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

3.52 Nine monitoring stops were recorded within **4060 Alpine and Boreal heath** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 17). In the assessment of structure and functions, eight monitoring stops failed. Following a review of the ecological condition of the monitoring stops that failed one criterion or more, expert judgement determined that two should pass, resulting in an overall failure rate of 66.7%. The structure and functions of **4060 Alpine and Boreal heath** were therefore assessed as Unfavourable – Bad.

Table 17. Monitoring criteria and failure rates for 4060 Alpine and Boreal heath ($n = 9$).

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	9	0
2	Cover of positive indicator species $\geq 66\%$	Relevé	9	88.9
3	Cover of dwarf shrubs $\geq 10\%$	Relevé	9	0
4	Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>A. vinealis</i> , <i>Anthoxanthum odoratum</i> , <i>Deschampsia flexuosa</i> , <i>Festuca ovina</i> , <i>F. vivipara</i> , <i>Galium saxatile</i> , <i>Potentilla erecta</i> and <i>Poa</i> spp. (except <i>Poa alpina</i>) collectively $< 10\%$	Relevé	9	22.2
5	Cover of non-native species $< 1\%$	Relevé	9	0
Vegetation structure				
6	Live leaves of <i>Carex bigelowii</i> , <i>Deschampsia flexuosa</i> , <i>Festuca ovina</i> , <i>F. vivipara</i> showing signs of <u>grazing</u> collectively $< 10\%$	Relevé	3	0
7	Last complete growing season's shoots of ericoids and <i>Empetrum nigrum</i> showing signs of <u>browsing</u> collectively $< 33\%$	Relevé	9	11.1
8	No signs of <u>burning</u> inside feature	Local vicinity	9	0
Physical structure				
9	Cover of <u>disturbed</u> bare ground $< 10\%$	Relevé	9	11.1
10	Cover of <u>disturbed</u> bare ground $< 10\%$	Local vicinity	9	11.1

- 3.53 The vegetation composition of **4060 Alpine and Boreal heath** was poor, with 88.9% of monitoring stops failing due to inadequate cover of positive indicator species. Two of these monitoring stops (22.2%) also failed due to excessive cover of negative indicator species.
- 3.54 The vegetation structure and physical structure of **4060 Alpine and Boreal heath** was poor in the case of one monitoring stop (11.1%). This stop failed due to excessive browsing and excessive cover of disturbed bare within the monitoring stop and in the local vicinity.
- 3.55 Grazing by sheep appears to be the most significant impact on the structure and functions of **4060 Alpine and Boreal heath** in Mweelrea / Sheeffry / Erriff Complex cSAC. The effects of this impact are apparent in the vegetation composition, vegetation structure and physical structure of this habitat.

Future prospects

- 3.56 Three impacts were recorded within **4060 Alpine and Boreal heath** (Table 18).

Non-intensive sheep grazing (A04.02.02)

- 3.57 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there has been substantial stock reduction within the site (see paragraph 3.8).
- 3.58 During the present survey, one **4060 Alpine and Boreal heath** monitoring stop (11.1%) failed due to excessive grazing and excessive cover of disturbed bare ground. 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.

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

- 3.59 Hill walking is one of the main recreational activities within the site. The Delphi Centre organises tuition and supervised trips for this activity e.g. mountaineering on Ben Creggan (Dúchas, 1999). Walking activity is concentrated around the high summits where **4060 Alpine and Boreal heath** are found (Fig. 4c), 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.

Invasive non-native species (I01)

- 3.60 *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.

- 3.61 *Campylopus introflexus* was recorded within one **4060 Alpine and Boreal heath** monitoring stop, but its cover was not sufficient to cause the stop to fail. The mean cover of *C. introflexus* within **4060 Alpine and Boreal heath** monitoring stops was 0.03%. The degraded peat vegetation community DP1 *Campylopus introflexus* – *Polytrichum* spp. was recorded within one polygon dominated by **4060 Alpine and Boreal heath** during vegetation mapping, with a cover score of 3%. As *C. introflexus* formed extensive carpets, the intensity of this impact was assessed as low and its influence as negative.

Table 18: Assessment of impacts 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	-3.00	Imp
G01.02	Walking, horse riding and non-motorised vehicles	Low	Neutral	0	Inside	0	Ins
I01	Invasive non-native species	Low	Negative	0.03%	Inside	-0.25	Ins
Overall score						-3.25	

- 3.62 The overall impacts score for **4060 Alpine and Boreal heath** has been calculated as -3.25. This is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to CFP stock reductions (see paragraph 3.8) but the impact of invasive non-native species is ongoing. The future prospects for this habitat were therefore assessed as Unfavourable – Inadequate.

*6230 Species-rich *Nardus* grasslands

Area

- 3.63 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. Only losses in habitat were found, there were no gains in habitat area (Table 19). 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 ***6230 Species-rich *Nardus* grasslands** were due to landslides. This impact is 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 19: Impacts causing obvious losses in area of *6230 Species-rich *Nardus* grasslands, 1995-2010.

Impact code	Impact	Area loss (ha)	Area loss (ha)	Area loss (ha)	Area loss (ha)
		1995-2000	2000-2005	2005-2010	1995-2010
L05	Collapse of terrain, landslide	0.03	0.00	0.00	0.03
	All impacts	0.03	0.00	0.00	0.03
	% of habitat	0.07	0.00	0.00	0.07
	% loss per year	0.01	0.00	0.00	0.005

Structure and functions

3.64 Five monitoring stops were recorded within ***6230 Species-rich *Nardus* grasslands** in the Mweelrea / Sheeffry / Erriff Complex cSAC (Table 20). In the assessment of structure and functions, three 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 60.0%. The structure and functions of ***6230 Species-rich *Nardus* grasslands** were therefore assessed as Unfavourable - Bad.

Table 20: Monitoring criteria and failure rates for *6230 Species-rich *Nardus* grasslands ($n = 5$).

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	5	0	0
2a	UG1c/UG2c: Number of high quality species present ≥ 2	Relevé	5	2	40.0
2b	UG1e/UG2e: Number of high quality species present ≥ 1	Relevé	0	n/a	n/a
3	Species richness ≥ 25 species	Relevé	5	0	0
4	Cover of non-native species $\leq 1\%$	Relevé	5	0	0
5	Cover of the following negative indicator species: <i>Arrhenatherum elatius</i> , <i>Bellis perennis</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Dactylis glomerata</i> , <i>Eriophorum angustifolium</i> , <i>Eriophorum vaginatum</i> , <i>Holcus lanatus</i> , <i>Juncus effusus</i> , <i>Lolium perenne</i> , <i>Narthecium ossifragum</i> , <i>Ranunculus repens</i> , <i>Rumex crispus</i> , <i>Rumex obtusifolius</i> , <i>Senecio jacobaea</i> , <i>Trifolium repens</i> , <i>Urtica dioica</i> , individually $\leq 10\%$	Relevé	5	0	0
6	Cover of the above negative indicator species collectively $\leq 20\%$	Relevé	5	0	0
7	Cover of <i>Sphagnum</i> species $\leq 10\%$,	Relevé	5	1	20.0
8	Cover of <i>Polytrichum</i> species $\leq 25\%$		5	0	0
9	Cover of scrub, bracken and heath $\leq 5\%$	Relevé	5	0	0
Vegetation structure					
10	Forb component of forb : graminoid ratio 20-90%	Relevé	5	3	60.0
11	Proportion of the sward between 5-50 cm tall $\geq 25\%$	Relevé	5	0	0
12	Litter cover $\leq 20\%$	Relevé	5	0	0
Physical structure					
13	Cover of <u>disturbed</u> bare ground $\leq 10\%$	Relevé	5	0	0
14	Area of the habitat showing signs of serious <u>grazing</u> or <u>disturbance</u> $<20\text{m}^2$	Local vicinity	3	0	0

- 3.65 The vegetation composition of ***6230 Species-rich *Nardus* grasslands** was poor in some cases with two monitoring stops (40.0%) failing due to an inadequate number of high quality indicator species. One of these monitoring stops (20.0%) also failed due to excessive cover of *Sphagnum* species.
- 3.66 The vegetation structure of ***6230 Species-rich *Nardus* grasslands** was poor, with three monitoring stops (60.0%) failing due to an excessively low ratio of forbs to graminoids. The physical structure of the ***6230 Species-rich *Nardus* grasslands** was good, with no failures being recorded under the relevant criteria.

Future prospects

- 3.67 Two impacts were recorded within ***6230 Species-rich *Nardus* grasslands** (Table 21).

Non-intensive sheep grazing (A04.02.02)

- 3.68 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).
- 3.69 During the present survey, sheep grazing was found to occur throughout ***6230 Species-rich *Nardus* grasslands**. The intensity of this impact was assessed as medium overall and its influence as positive, as medium intensity grazing is required to maintain this habitat and prevent it from developing into heath. The trend was assessed as improving due to CFP stock reductions.

Table 21: Assessment of impacts for ***6230 Species-rich *Nardus* grasslands**. 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	Positive	100%	Inside	+3.0	Imp
L05	Collapse of terrain, landslide	High	Negative	0.07%	Inside	-0.75	Ins
Overall score						+2.25	

Collapse of terrain, landslide (L05)

- 3.70 The assessment of area estimated that 0.03 ha of ***6230 Species-rich *Nardus* grasslands** were lost due to landslides between 1995 and 2000 (0.07% of habitat area). The intensity of this impact has been assessed as high and its influence as negative.

- 3.71 The overall impacts score for ***6230 Species-rich *Nardus* grasslands** in Mweelrea / Sheeffry / Erriff Complex cSAC was calculated as +2.25 which is above the nominal Favourable Reference

Value of zero. The combined future trend for area and structure and functions is deemed to be improving. The future prospects for this habitat were therefore assessed as Favourable.

*7130/7130 Blanket bog

Area

3.72 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 22). 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 the development of tracks, turf cutting by hand, artificial planting of non-native trees on open ground, landslides, drainage and turf cutting by machine. 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 22: Impacts causing obvious losses in area of *7130/7130 Blanket bog, 1995-2010.
n.m. indicates not measured.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2011	Area (ha) 1995-2011
B01.02	Artificial planting on open ground (non-native trees)	0.00	0.08	0.00	0.08
C01.03.01	Turf cutting	1.17	0.52	0.00	1.70
C01.03.02	Mechanical removal of peat	0.00	0.00	0.08	0.08
D01.01	Paths, tracks, cycling tracks	0.09	0.19	0.00	0.28
K01.01	Erosion	n.m.	n.m.	n.m.	n.m.
L05	Collapse of terrain, landslide	0.02	0.01	0.00	0.03
All impacts		1.28	0.81	0.08	2.17
% of habitat		0.03	0.02	0.002	0.05
% loss per year		0.01	0.004	0.0003	0.003

Structure and functions

3.73 A total of 39 monitoring stops were recorded within ***7130/7130 Blanket bog** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 23). All of these stops were located within ***7130 Active blanket bog** rather than **7130 Inactive blanket bog**. In the assessment of structure and functions, 22 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 56.4%. The structure and functions of *7130/7130 Blanket bog were therefore assessed as Unfavourable – Bad. Vegetation mapping indicated that the proportion of inactive, eroding and cutover bog within the total area of bog was 14.7%, which provides further support for the Unfavourable – Bad assessment result.

Table 23. Monitoring criteria and failure rates for *7130/7130 Blanket bog ($n = 39$).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)	
Vegetation composition					
1	Number of positive indicator species present ≥ 7	Relevé	39	1	2.6
2	Cover of bryophyte or lichen species, excluding <i>Sphagnum fallax</i> $\geq 10\%$	Relevé	39	8	20.5
3	Cover of <u>each</u> of the following species: <i>Calluna vulgaris</i> , <i>Eleocharis multicaulis</i> , <i>Eriophorum vaginatum</i> , <i>Molinia caerulea</i> , <i>Schoenus nigricans</i> , <i>Trichophorum germanicum</i> individually $< 75\%$	Relevé	39	0	0
4	Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>Holcus lanatus</i> , <i>Phragmites australis</i> , <i>Pteridium aquilinum</i> , <i>Ranunculus repens</i> collectively $< 1\%$	Relevé	39	0	0
5	Cover of non-native species $< 1\%$	Relevé	39	0	0
6	Cover of non-native species $< 1\%$	Local vicinity	39	0	0
7	Cover of scattered native trees and scrub $< 10\%$	Local vicinity	39	0	0
Vegetation structure					
8	Crushed, broken and/or pulled up <i>Sphagnum</i> species $< 10\%$ of <i>Sphagnum</i> cover	Relevé	38	1	2.6
9	Last complete growing season's shoots of ericoids, <i>Empetrum nigrum</i> and <i>Myrica gale</i> showing signs of <u>browsing</u> collectively $< 33\%$	Relevé	26	2	7.7
10	No signs of <u>burning</u> into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	39	0	0
11	No signs of <u>burning</u> inside boundaries of sensitive areas*	Local vicinity	39	0	0
Physical structure					
12	Cover of <u>disturbed</u> bare ground $< 10\%$	Relevé	39	6	15.4
13	Cover of <u>disturbed</u> bare ground $< 10\%$	Local vicinity	37	9	24.3
14	Area showing signs of <u>drainage</u> resulting from heavy trampling or tracking or ditches or peat cutting $< 10\%$	Local vicinity	39	8	20.5
15	Cover of <u>erosion</u> gullies and eroded areas within the greater bog mosaic $< 5\%$	Local vicinity	39	16	41.0

*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, hags 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.

- 3.74 The vegetation composition of ***7130/7130 Blanket bog** was poor in some cases, with 20.5% monitoring stops failing due to inadequate cover of bryophyte or lichen species. One monitoring stop (2.6%) also failed due to an inadequate number of positive indicator species.
- 3.75 The vegetation structure was poor in some cases, with two monitoring stops (7.7%) failing due to excessive grazing. One monitoring stop (2.6%) also failed due to excessive disturbance to the *Sphagnum* layer.
- 3.76 The physical structure of ***7130/7130 Blanket bog** was poor with 41.0% of stops failing due to excessive erosion and 20.5% due to excessive drainage. The cover of disturbed bare ground was excessive within 15.4% of monitoring stops and in the local vicinity of 24.3% of monitoring stops.

Future prospects

- 3.77 Fourteen impacts were recorded within ***7130/7130 Blanket bog** (Table 24).

Non-intensive grazing by cattle (A04.02.01)

- 3.78 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that cattle grazing occurs occasionally within the site, principally at Dooaghtry, the Bunowen valley and near Carrowkennedy (Dúchas, 1999). During the present survey, this impact was observed within ***7130/7130 Blanket bog**, with resultant damage due to poaching. The intensity of this impact was assessed as high and its influence as negative. The trend was assessed as improving due to the CFP stock reductions.

Non-intensive grazing by sheep (A04.02.02)

- 3.79 Much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that good examples of **PB3 Lowland blanket bog** were found to the north-west of Glencullin Lough (Srahroosky), south of the Carrownisky River (Knockeen), west of the Derrycraff River (Derrinkee) and in the Erriff River vally (Derrintin, Derryaun, Derrycraff and Srahlea) (Dúchas, 1999). However, in the years leading up to the publication of that document, many of these sites had come under increasing pressure from overgrazing and the condition of some had declined as a result. The system of subsidies paid under the Common Agricultural Policy of the European Union resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, however, there have been substantial stock reductions within the site (see paragraph 3.8).
- 3.80 During the present survey, 7.7% of ***7130/7130 Blanket bog** monitoring stops failed due to excessive grazing. Levels of sheep grazing were extremely high in some areas, resulting in severe degradation of ***7130/7130 Blanket bog**. Furthermore, 24.3% of ***7130/7130 Blanket bog** monitoring stops failed due to excessive cover of disturbed bare ground in the local vicinity, which may be due to trampling by sheep. Some areas of intact ***7130/7130 Blanket bog** with pool systems were recorded, which were relatively inaccessible to sheep. However, the

intensity of this impact was assessed as high overall and its influence as negative. The trend was assessed as improving due to the CFP stock reductions.

Artificial planting on open ground (non-native trees) (B01.02)

- 3.81 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that, while most of the forestry plantations within the cSAC boundary were quite old, recent plantations had been established in the north of the site at Tangincartoor, Tawnyslinnaun and Leenavista. The recent increase in the rate of afforestation in the area was believed to have contributed to a decline in the condition of ***7130/7130 Blanket bog** and increased peat and soil erosion in parts of the site. Afforestation had also contributed to the fragmentation of ***7130/7130 Blanket bog**. **PB3 Lowland blanket bog** were particularly fragmented, generally occurring as relatively small tracts (c. 200 ha) situated between mountain cliffs, rivers and conifer plantations (Dúchas, 1999).
- 3.82 The assessment of area estimated that 0.08 ha of ***7130/7130 Blanket bog** had been lost to afforestation between 2000 and 2005 (0.002% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.



Plate 2: Handcutting of peat from blanket bog, near Cregganbaun (Photo: BEC Consultants).

Peat extraction (C01.03)

- 3.83 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that, in the years leading up to its publication, many of the **PB3 Lowland blanket bog** within the site had come under increasing pressure from peat cutting and the condition of some had declined as a result. The damage from turf cutting and associated drainage is localised but widespread. The main

areas where peat cutting occurs are Knockeen, Kinnakillew, Cregganbaun, Carrowkennedy, Croaghribeg and between the Owenmore and Bunowen river catchments (Dúchas, 1999). Hand cutting and mechanical removal of peat are discussed separately below.

Hand cutting of peat (C01.03.01)

3.84 Turf cutting by hand is practiced within the site (Dúchas, 1999) and was observed during the present survey (Plate 2). The assessment of area estimated that 1.70 ha of ***7130/7130 Blanket bog** had been lost to turf cutting by hand between 1995 and 2005 (0.04% of the habitat area). The intensity of this impact is assessed as high and its influence as negative.

Mechanical removal of peat (C01.03.02)

3.85 Within Mweelrea / Sheeffry / Erriff Complex cSAC, peat extraction is largely conducted by mechanical methods (Dúchas, 1999). The assessment of area estimated that 0.08 ha of ***7130/7130 Blanket bog** had been lost to mechanised turf cutting between 2005 and 2010 (0.002% of the habitat area). In addition, intensive mechanical extraction of peat occurs in places directly outside the cSAC boundary (Dúchas, 1999). This is likely to negatively impact the hydrology of ***7130/7130 Blanket bog** near the perimeter of the site. The intensity of this impact is assessed as high and its influence as negative. The area of habitat affected is estimated to be less than 1%.

Paths, tracks, cycling tracks (D01.01)

3.86 The assessment of area estimated that 0.28 ha of ***7130/7130 Blanket bog** had been lost to track development between 1995 and 2005 (0.006% of the habitat area). These tracks are often associated with turf cutting activities (Dúchas, 1999). The intensity of this impact is assessed as high and its influence as negative.

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

3.87 Hill walking is one of the main recreational activities within the site. The Delphi Centre organises tuition and supervised trips for this activity e.g. mountaineering on Ben Creggan (Dúchas, 1999). The Western Way, an official waymarked walking route, passes through a small section of the Sheeffry Hills. Walkers cross some areas of ***7130/7130 Blanket bog** on the Western Way and en route to the summits, but no resultant damage was noted there during the present survey. However, as the highest mountain in Connaught and with its stunning scenery, Mweelrea is quite popular with hill walkers. Trampling has resulted in erosion of ***7130/7130 Blanket bog** at and around the summit, with peat hags evident. 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.

Off-road motorised driving (G01.03.02)

3.88 Quad bike tracks were observed in ***7130/7130 Blanket bog** in several locations but the resulting disturbance was minimal. 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 less than 1%, due to the localised nature of this impact.

Fences, fencing (G05.07)

3.89 Recently constructed fences were observed within ***7130/7130 Blanket bog**. This impact is assessed with reference to the associated construction activity and does not consider any resultant changes in grazing intensity. 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

Table 24: Assessment of impacts for *7130/7130 Blanket bog. Under trend, Imp = Improving, Ins = Insufficient data.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.01	Non-intensive cattle grazing	High	Negative	<1%	Inside	-0.75	Imp
A04.02.02	Non-intensive sheep grazing	High	Negative	95%	Inside	-3.75	Imp
B01.02	Artificial planting on open ground (non-native trees)	High	Negative	0.002%	Inside	-0.75	Ins
C01.03.01	Hand cutting of peat	High	Negative	0.04%	Inside	-0.75	Ins
C01.03.02	Mechanical removal of peat	High	Negative	<1%	Inside, outside	-0.75	Ins
D01.01	Paths, tracks, cycling tracks	High	Negative	0.006%	Inside	-0.75	Ins
G01.02	Walking, horseriding and non-motorized vehicles	High	Negative	<1%	Inside	-0.75	Ins
G01.03.02	Off-road motorised driving	Low	Neutral	<1%	Inside	0	Ins
G05.07	Fences, fencing	Medium	Negative	<1%	Inside	-0.5	Ins
H05.01	Garbage and solid waste	Medium	Negative	<1%	Inside	-0.5	Ins
I01	Invasive non-native species	Medium	Negative	<1%	Inside	-0.5	Ins
J02.07	Water abstractions from groundwater	High	Negative	<1%	Inside	-0.75	Ins
K01.01	Erosion	High	Negative	20.1%	Inside	-1.5	Ins
L05	Collapse of terrain, landslide	High	Negative	0.001%	Inside	-0.75	Ins
Overall score						-12.75	

Garbage and solid waste (H05.01)

3.90 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that old cars had been dumped at a number of locations within the site, particularly adjacent to peat cutting tracks. This causes small-scale habitat damage and decreases aesthetic value. Localised dumping of small amounts of plastic and metal waste and littering by visitors were also evident. During the present survey, small amounts of domestic dumping were recorded within ***7130/7130 Blanket bog**. 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)

3.91 *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.

- 3.92 *Campylopus introflexus* was recorded within two *7130/7130 **Blanket bog** monitoring stops, but its cover was not sufficient to cause the monitoring stops to fail. The mean cover of *C. introflexus* within *7130/7130 **Blanket bog** monitoring stops was 0.02%. The degraded peat vegetation community DP1 *Campylopus introflexus* – *Polytrichum* spp. was recorded within 233 polygons dominated by *7130/7130 **Blanket bog** during vegetation mapping, with cover scores of up to 11.6%. *C. introflexus* therefore formed extensive carpets within this habitat.
- 3.93 The highly invasive non-native shrub *Rhododendron ponticum* was also found within *7130/7130 **Blanket bog**. 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*.

Water abstractions from groundwater (J02.07)

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



Plate 3: Recent drain cut into blanket bog, Derryheeagh, near Cregganbaun. (Photo: BEC Consultants)

- 3.95 During vegetation mapping, a large, recently dug 1.5 m deep drain was observed in ***7130/7130 Blanket bog** near Leenavesta and will undoubtedly lead to significant damage in an area which is already impacted by severe overgrazing and erosion. A large recently-dug drain was also observed at Derryheeagh (Plate 3). 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)

- 3.96 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC (Dúchas, 1999) stated that, in the years leading up to its publication, many of the **PB3 Lowland blanket bog** within the site had come under increasing pressure from overgrazing and erosion and the condition of some had declined as a result. Increases in afforestation and livestock numbers were believed to have contributed to increased rates of peat and soil erosion in parts of the site and signs of erosion such as soilcreep, rills and gullies were evident on many of the upland slopes within the cSAC. During the present survey severe peat erosion with hags and erosion gullies was observed within ***7130/7130 Blanket bog**. Plate 4 depicts severe erosion of **PB2 Upland blanket bog** on the ridge of the Sheeffry Hills.
- 3.97 Due to CFP stock reductions the number of sheep on this site has fallen, although some areas of ***7130/7130 Blanket bog** continue to be overgrazed. 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 the site was within the range of 1600-3600 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 20.1% of the area of ***7130/7130 Blanket bog** is estimated to be under threat from erosion; this is the proportion of the habitat occurring in polygons with at least 5% bare peat.



Plate 4: Eroding blanket bog and species-poor montane grass-heath on the Sheeffry Hills ridge (Photo: BEC Consultants).

Collapse of terrain, landslide (L05)

- 3.98 The assessment of area estimated that 0.03 ha of ***7130/7130 Blanket bog** (0.001% of the habitat area) had been lost to landslides at Derry on the southern side of the Mweelrea Mountains,

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Ballyheer on the southern side of Ben Gorm and Laghta Oughter on the northern side of the Sheeffry Hills between 1995 and 2005. The intensity of this impact is assessed as high and its influence as negative. Landslides were observed in **4010 Wet heath** and ***7130/7130 Blanket bog** at Derry and Ballyheer, on the southern slopes of the Mweelrea Mountains and Ben Gorm respectively, and in ***7130/7130 Blanket bog** at Laghta Oughter on the northern side of the Sheeffry Hills.

-
- 3.99 The overall impacts score for ***7130/7130 Blanket bog** has been calculated as -12.75. This is significantly below the nominal Favourable Reference Value of zero. Whilst there are signs that CFP stock reductions has resulted in localised decreased damage levels within this habitat (see paragraph 3.8), 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 therefore assessed as no change. The future prospects for this habitat were therefore assessed as Unfavourable – Bad.

7140 Transition mires

Area

- 3.100 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.

Structure and functions

- 3.101 Five monitoring stops were recorded within **7140 Transition mires** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 25). Four monitoring stops were located within the PO1a *Menyanthes trifoliata* – *Carex limosa* infilling pool sub-community and one was located within the RFEN1b *Carex rostrata* fen species-poor sub-community. In the assessment of structure and functions, one 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 20.0%. The structure and functions of **7140 Transition mires** were therefore assessed as Unfavourable – Inadequate.
- 3.102 The vegetation composition of **7140 Transition mires** was poor in the case of one monitoring stop (20.0%). Criterion 1b stipulates that monitoring stops within the PFLU5 *Carex rostrata* – *Sphagnum* spp. flush community should contain at least three positive indicator species. The monitoring stop in question contained two positive indicator species, falling short of the threshold and failing the assessment criterion.

3.103 The vegetation structure and physical structure of **7140 Transition mires** was good, with no failures being recorded under the relevant assessment criteria.

Future prospects

3.104 Non-intensive grazing by sheep was the only impact recorded within **7140 Transition mires** (Table 26).

Table 25: Monitoring criteria and failure rates for 7140 Transition mires ($n = 5$).

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	4	0	n/a
1b	PFLU5: number of positive indicator species from Groups i or ii present ≥ 3		1	1	n/a
1c	RFEN1b: number of positive indicator species from Groups i or ii present ≥ 6		0	n/a	n/a
	Combined results for Criteria 1a, 1b and 1c:		5	1	20.0
2	Number of species from Group i present ≥ 1	Relevé	5	0	0
3	Cover of the following species: small to medium sized <i>Carex</i> spp., <i>Equisetum fluviatile</i> , <i>Hydrocotyle vulgaris</i> , <i>Hypericum elodes</i> , <i>Mentha aquatica</i> , <i>Menyanthes trifoliata</i> , <i>Potentilla palustris</i> , <i>Sphagnum</i> spp. collectively $\geq 25\%$	Relevé	5	0	0
4	Cover of the following species: <i>Anthoxanthum odoratum</i> , <i>Epilobium hirsutum</i> , <i>Holcus lanatus</i> collectively $< 1\%$	Relevé	5	0	0
5	Cover of non-native species $< 1\%$	Relevé	5	0	0
Vegetation structure					
6	PFLU5/RFEN1b: $\geq 50\%$ of the tips of live leaves and/or flowering shoots of vascular plants should be more than 15 cm above the ground surface	Relevé	0	n/a	n/a
Physical structure					
7	Cover of <u>disturbed</u> bare ground $< 10\%$	Relevé	5	0	0
8	Cover of <u>disturbed</u> bare ground $< 10\%$	Local vicinity	5	0	0
9	Area showing signs of <u>drainage</u> resulting from heavy trampling or tracking or ditches $< 10\%$	Local vicinity	4	0	0

Non-intensive grazing by sheep (A04.02.02)

3.105 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).

3.106 In the assessment of structure and functions, no failures were recorded under criteria 7 and 8, which relate to disturbance, but a low cover of disturbed bare ground (1%) was recorded at one monitoring stop. This is likely to be due to trampling by sheep. The intensity of this impact was assessed as low and its influence as neutral (Table 26).

Table 26: Assessment of impacts for 7140 Transition mires. Under trend, Imp = Improving.

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	20%	Inside	0	Imp
	Overall score					0	

3.107 The overall impacts score for **7140 Transition mires** is calculated as zero which is equal to the nominal Favourable Reference Value. The combined future trend for area and structure and functions was deemed to be no change. The future prospects for this habitat were therefore assessed as Favourable.

7150 *Rhynchosporion* depressions

Area

3.108 Changes in the area of **7150 *Rhynchosporion* depressions** 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 27). 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. A minor loss in area of **7150 *Rhynchosporion* depressions** was recorded, due to turf cutting by hand. This impact is 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 27: Impacts causing obvious losses in area of 7150 *Rhynchosporion* depressions, 1995-2010.

Impact code	Impact	Area (ha)	Area (ha)	Area (ha)	Area (ha)
		1995-2000	2000-2005	2005-2011	1995-2011
C01.03.01	Hand cutting of peat	0.01	0.00	0.00	0.01
	All impacts	0.01	0.00	0.00	0.01
	% of habitat	0.002	0.00	0.00	0.002
	% loss per year	0.0004	0.00	0.00	0.0001

Structure and functions

3.109 A total of 14 monitoring stops were recorded within **7150 *Rhynchosporion* depressions** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 28). In the assessment of structure and

functions, four monitoring stops failed one criterion or more. Following a review of the ecological condition of these stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 28.6%. The structure and functions of **7150 *Rhynchosporion* depressions** were therefore assessed as Unfavourable – Bad.

Table 28: Monitoring criteria and failure rates for 7150 *Rhynchosporion* depressions ($n = 14$).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)	
Vegetation composition					
1	Number of positive indicator species present ≥ 5	Relevé	14	1	7.1
2	Cover of <i>Rhynchospora</i> spp. $\geq 10\%$	Relevé	14	0	0
3	Cover of <u>each</u> of the following species: <i>Eleocharis multicaulis</i> , <i>Molinia caerulea</i> , <i>Schoenus nigricans</i> , <i>Trichophorum germanicum</i> individually $< 35\%$	Relevé	14	1	7.1
4	Cover of the following negative indicator species: <i>Agrostis capillaris</i> , <i>Holcus lanatus</i> , <i>Phragmites australis</i> , <i>Pteridium aquilinum</i> , <i>Ranunculus repens</i> collectively $< 1\%$	Relevé	14	0	0
5	Cover of non-native species $< 1\%$	Relevé	14	0	0
6	Cover of scattered native trees and scrub $< 10\%$	Local vicinity	14	0	0
Vegetation structure					
7	Crushed, broken and/or pulled up <i>Sphagnum</i> species $< 10\%$ of <i>Sphagnum</i> cover	Relevé	14	0	0
8	Last complete growing season's shoots of ericoids, <i>Empetrum nigrum</i> and <i>Myrica gale</i> shrubs showing signs of <u>browsing</u> collectively $< 33\%$	Relevé	1	0	0
9	No signs of <u>burning</u> into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	14	0	0
10	No signs of <u>burning</u> inside boundaries of sensitive areas*	Local vicinity	14	0	0
Physical structure					
11	Cover of <u>disturbed</u> bare ground $< 10\%$	Relevé	14	3	21.4
12	Cover of <u>disturbed</u> bare ground $< 10\%$	Local vicinity	14	3	21.4
13	Area showing signs of <u>drainage</u> resulting from heavy trampling or tracking or ditches $< 10\%$	Local vicinity	12	2	16.7
14	Cover of <u>erosion</u> gullies and eroded areas within the greater bog mosaic $< 5\%$	Local vicinity	14	1	7.1

*Sensitive areas

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

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

(c) Areas within 50 m of functioning drains.

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

3.110 The vegetation composition of **7150 *Rhynchosporion* depressions** was poor in some cases. One monitoring stop (7.1%) failed due to an inadequate number of positive indicator species and another (7.1%) due to excessive cover of *Eleocharis multicaulis*.

- 3.111 The vegetation structure of **7150 *Rhynchosporion* depressions** was good with no failures being recorded under the relevant criteria. The physical structure of **7150 *Rhynchosporion* depressions** was poor with 21.4% of monitoring stops failing due to excessive cover of disturbed bare ground, both within and in the local vicinity of monitoring stops. Excessive drainage and erosion resulted in the failure of 16.7 and 7.1% of monitoring stops respectively.

Future prospects

- 3.112 Three impacts were recorded within **7150 *Rhynchosporion* depressions** (Table 29).

Non-intensive grazing by sheep (A04.02.02)

- 3.113 **7150 *Rhynchosporion* depressions** are generally found in mosaic with **PB3 Lowland blanket bog**. The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that good examples of **PB3 Lowland blanket bog** were found to the north-west of Glencullin Lough (Srahroosky), south of the Carrownisky River (Knockeen), west of the Derrycraff River (Derrinkee) and in the Erriff River valley (Derrintin, Derryaun, Derrycraff and Srahlea) (Dúchas, 1999). Much of the site comprises large, unfenced commonages that were used as rough grazing for sheep and, in the years leading up to the publication of the Conservation Plan, many of these sites had come under increasing pressure from overgrazing and the condition of some had declined as a result. The system of subsidies paid under the Common Agricultural Policy of the European Union resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, however, there have been substantial stock reductions within the site (see paragraph 3.8).

- 3.114 In the assessment of structure and functions, no **7150 *Rhynchosporion* depressions** monitoring stops failed due to excessive grazing. However, disturbed bare ground was present within or in the local vicinity of 85.7% of **7150 *Rhynchosporion* depressions** monitoring stops, with 21.4% failing due to excessive cover of disturbed bare ground and 16.7% failing 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 (Table 29).

Hand cutting of peat (C01.03.01)

- 3.115 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that, in the years leading up to its publication, many of the **PB3 Lowland blanket bog** within the site had come under increasing pressure from peat cutting and the condition of some had declined as a result. The damage from turf cutting and associated drainage is localised but widespread. The main areas where peat cutting occurs are Knockeen, Kinnakillew, Cregganbaun, Carrowkennedy, Croaghribeg and between the Owenmore and Bunowen river catchments. Turf cutting by hand was practiced within the site (Dúchas, 1999) and was also noted during the present survey.

- 3.116 The assessment of area estimated that 0.01 ha of **7150 *Rhynchosporion* depressions** had been lost to turf cutting by hand between 1995 and 2000 (0.002% of the habitat area). The intensity of this impact is assessed as high and its influence as negative.

Erosion (K01.01)

3.117 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC (Dúchas, 1999) stated that, in the years leading up to its publication, many of the **PB3 Lowland blanket bog** within the site had come under increasing pressure from overgrazing and erosion and the condition of some had declined as a result. Increases in afforestation and livestock numbers were believed to have contributed to increased rates of peat and soil erosion in parts of the site. However, the number of sheep on the site has fallen due to the CCFP stock reductions.

3.118 In the assessment of structure and functions, 7.1% of **7150 Rhynchosporion depressions** monitoring stops failed due to erosion in the local vicinity. 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 the lower slopes of the site 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 19.1% of the area of **7150 Rhynchosporion depressions** is estimated to be under threat from erosion; this is the proportion of the habitat occurring in polygons with at least 5% bare peat.

Table 29: Assessment of impacts for 7150 *Rhynchosporion* depressions. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Negative	85.7%	Inside	-1.25	Imp
C01.03.01	Hand cutting of peat	High	Negative	0.002%	Inside	-0.75	Ins
K01.01	Erosion	High	Negative	19.1%	Inside	-1.5	Ins
	Overall score					-3.5	

3.119 The overall impacts score for **7150 Rhynchosporion depressions** was calculated as -3.5 which is below to the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions was deemed to be improving due to CFP stock reductions but other impacts, such as erosion and hand cutting of peat, are ongoing. The future prospects for this habitat were therefore assessed as Unfavourable - Inadequate.

7230 Alkaline fens

Area

3.120 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.

Table 30: Monitoring criteria and failure rates for 7230 Alkaline fens ($n = 9$).

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

Structure and functions

3.121 Nine monitoring stops were recorded within **7230 Alkaline fens** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 30). Three monitoring stops were located within the RFLU1a *Carex viridula* subsp. *oedocarpa* – *Pinguicula vulgaris* – *Juncus bulbosus* flush brown moss sub-community, two in the RFLU2 *Eleocharis quinqueflora* – *Carex viridula* flush community and four in the RFLU4 *Schoenus nigricans* – *Scorpidium scorpioides* flush community. In the assessment of structure and functions, seven monitoring stops failed one criterion or more. Following a review of the ecological condition of these stops, expert judgement determined that three should pass because the failure were marginal, resulting in an overall failure rate of 44.4%. The structure and functions of **7230 Alkaline fens** were therefore assessed as Unfavourable – Bad.

3.122 The vegetation composition of **7230 Alkaline fens** was poor, with 77.8% of monitoring stops failing due to inadequate cover of brown mosses and vascular indicator species. One of these monitoring stops (11.1%) also failed due to excessive cover of the negative indicator species *Anthoxanthum odoratum* and *Holcus lanatus*.

3.123 The vegetation structure of **7230 Alkaline fens** was good, with no failures being recorded under the relevant criteria. However, the physical structure of **7230 Alkaline fens** was poor in the case of one monitoring stop (11.1%) which failed due to excessive drainage and excessive cover of disturbed bare ground within the monitoring stop and in the local vicinity.

Future prospects

3.124 Two impacts were recorded within **7230 Alkaline fens** (Table 31).

Non-intensive grazing by sheep (A04.02.02)

3.125 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).

3.126 In the assessment of structure and functions, no **7230 Alkaline fens** monitoring stops failed due to excessive grazing. However, disturbed bare ground was present within the majority of **7230 Alkaline fens** monitoring stops, with 11.1% failing due to excessive cover of disturbed bare ground and excessive drainage. This may be due to trampling by sheep. The intensity of this impact was assessed as low and its influence as negative (Table 31).

Table 31: Assessment of impacts for 7230 Alkaline fens. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Negative	60%	Inside	-1.0	Imp
A04.02.03	Non-intensive horse grazing	Low	Negative	<1%	Inside	-0.25	Ins
Overall score						-1.25	

Non-intensive horse grazing (A04.02.03)

3.127 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that small numbers of donkeys grazed within the site (Dúchas, 1999). During the present survey, this impact was observed within **7230 Alkaline fens**. The intensity of this impact was assessed as low and its influence as negative.

3.128 The overall impacts score for **7230 Alkaline fens** was calculated as -1.25 which is below the nominal Favourable Reference Value of zero, but the combined future trend for area and

structure and functions was deemed to be improving due to the CFP stock reductions. The future prospects for this habitat were therefore assessed as Favourable.

8110 Siliceous scree

Area

3.129 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

3.130 Ten monitoring stops were recorded within **8110 Siliceous scree** in Mweelrea / Sheeffry / Erriff Complex cSAC. In the assessment of structure and functions (Table 32), six monitoring stops failed one criterion or more. Following a review of the ecological condition of these monitoring stops, expert judgement determined that two should pass resulting in an overall failure rate of 40.0%. The structure and functions of **8110 Siliceous scree** were therefore assessed as Unfavourable – Bad.

3.131 The vegetation composition of **8110 Siliceous scree** was poor, with 60.0% of monitoring stops failing due to inadequate cover of bryophytes and lichens. One of these monitoring stops (10.0%) also failed due to excessive cover of the non-native species *Epilobium brunnescens*.

3.132 The vegetation structure and physical structure of **8110 Siliceous scree** was good with no failures being recorded under the relevant criteria.

Future prospects

3.133 Two impacts were recorded within **8110 Siliceous scree** (Table 33).

Non-intensive grazing by sheep (A04.02.02)

3.134 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).

3.135 In the assessment of structure and functions, grazing was recorded within 33.3% of **8110 Siliceous scree** monitoring stops but was not sufficiently excessive to cause any stops to fail. The intensity of this impact is assessed as low and its influence as neutral. The trend was assessed as improving due to the CFP stock reductions.

Table 32: Monitoring criteria and failure rates for 8110 Siliceous scree ($n = 10$).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition				
1 Cover of bryophyte and non-crustose lichen species $\geq 5\%$	Relevé	10	6	60.0
2 Proportion of vegetation composed of following negative indicator species: <i>Cirsium arvense</i> , <i>C. vulgare</i> , <i>Rubus fruticosus</i> agg., large <i>Rumex</i> species (except <i>R. acetosa</i>), <i>Senecio jacobaea</i> , <i>Urtica dioica</i> collectively $< 1\%$	Relevé	10	0	0
3 Proportion of vegetation composed of non-native species $< 1\%$	Relevé	10	1	10.0
4 Block scree: number of positive indicator species for 8220 present ≥ 1	Local vicinity	4	0	0
5 Cover of grass species and dwarf shrubs collectively $< 20\%$	Local vicinity	10	0	0
6 Cover of <i>Pteridium aquilinum</i> , native trees and scrub collectively $< 25\%$	Local vicinity	10	0	0
Vegetation structure				
7 Live leaves of forbs and shoots of dwarf shrubs showing signs of <u>grazing</u> or <u>browsing</u> collectively $< 50\%$	Relevé	9	0	0
Physical structure				
8 Ground <u>disturbed</u> by human & animal paths, scree running, vehicles $< 10\%$	Relevé	10	0	0
9 Ground <u>disturbed</u> by human & animal paths, scree running, vehicles $< 10\%$	Local vicinity	10	0	0

Invasive non-native species (I01)

- 3.136 *Epilobium brunnescens* is a species of damp, stony places, especially in the mountains, which is localised but spreading in Ireland (Parnell & Curtis, 2012). During the present survey, *E. brunnescens* was recorded within two **8110 Siliceous scree** monitoring stops, giving it a frequency of 20.0% within this habitat at this site, with cover scores of 0.1% and 0.7%. One monitoring stop failed due to excessive cover of the species. During vegetation mapping, the non-native *Acaena novae-zelandiae* was also recorded within **8110 Siliceous scree**.
- 3.137 The intensity of this impact on **8110 Siliceous scree** has been assessed as low, since *Epilobium brunnescens* does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative (Table 33). The area affected has been estimated to be 0.1%, based on the mean cover of *Epilobium brunnescens* within **8110 Siliceous scree** monitoring stops.

Table 33: Assessment of impacts for 8110 Siliceous scree. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	33.3%	Inside	0	Imp
I01	Invasive non-native species	Low	Negative	0.1%	Inside	-0.25	Ins
Overall score						-0.25	

3.138 The overall impacts score for **8110 Siliceous scree** was calculated as -0.25 which is marginally below the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be improving due to CFP stock reductions but the negative influence of invasive non-native species remains. The future prospects for this habitat were however assessed as Favourable.

8210 Calcareous rocky slopes

Area

3.139 Changes in the area of **8210 Calcareous 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

3.140 One monitoring stop was recorded within **8210 Calcareous rocky slopes** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 34). In the assessment of structure and functions, this monitoring stop did not fail any criteria, resulting in an overall failure rate of 0%. The structure and functions of **8210 Calcareous rocky slopes** were therefore assessed as Favourable. Similarly, the Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that the exposed calcareous rockfaces within the site's corries supported a varied assemblage of montane plant species (Dúchas, 1999).

3.141 The sample size reflects the rarity of this habitat within Mweelrea / Sheeffry / Erriff Complex cSAC, where only 1.7 ha of **8210 Calcareous rocky slopes** were recorded, comprising 0.01% of the site.

Future prospects

3.142 Two impacts were recorded within **8210 Calcareous rocky slopes** (Table 35).

Non-intensive grazing by sheep (A04.02.02)

- 3.143 The Conservation Plan for Mweelrea / Sheeffry / Erriff Complex cSAC stated that much of the site comprises large, unfenced commonages that were used as rough grazing for sheep. The system of subsidies paid under the Common Agricultural Policy of the European Union had resulted in increased numbers of livestock and intensification of agricultural practices, which had contributed to overgrazing, poaching and erosion in much of the site (Dúchas, 1999). Under the CFP, there have been substantial stock reductions within the site (see paragraph 3.8).
- 3.144 In the assessment of structure and functions, grazing was recorded within the **8210 Calcareous rocky slopes** monitoring stop but was not sufficiently excessive to cause it to fail. The intensity of this impact is assessed as low and its influence as neutral. The trend was assessed as improving due to the CFP stock reductions.

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

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

Invasive non-native species (I01)

- 3.145 *Epilobium brunnescens* is a species of damp, stony places, especially in the mountains, which is localised but spreading in Ireland (Parnell & Curtis, 2012). During the present survey, *E. brunnescens* was recorded within the **8210 Calcareous rocky slopes** monitoring stop, giving it a frequency of 100.0% within this habitat at this site, with a cover score of 0.1%. This was not sufficiently high to cause the monitoring stop to fail. The intensity of this impact has been assessed as low, since this species does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative.

Table 35: Assessment of impacts for the 8210 Calcareous rocky slopes. Under trend, Imp = Improving, Ins =

Insufficient data							
Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Inside	0	Imp
I01	Invasive non-native species	Low	Negative	0.1%	Inside	-0.25	Ins
Overall score						-0.25	

3.146 The overall impacts score for the **8210 Calcareous rocky slopes** was calculated as -0.25 which is marginally below the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be improving due to CFP stock reductions but the negative influence of invasive non-native species remains. The future prospects for this habitat were however assessed as Favourable.

8220 Siliceous rocky slopes

Area

3.147 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

3.148 Eight monitoring stops were recorded within **8220 Siliceous rocky slopes** in Mweelrea / Sheeffry / Erriff Complex cSAC (Table 36). In the assessment of structure and functions, two monitoring stops failed one criterion. Following a review of the ecological condition of those monitoring stops, expert judgement determined that one should pass, resulting in an overall failure rate of 12.5%. The structure and functions of **8220 Siliceous rocky slopes** were therefore assessed as Unfavourable – Inadequate.

3.149 The vegetation composition of **8220 Siliceous rocky slopes** was poor in some cases, with two monitoring stops (25.0%) failing due to excessive cover of the non-native *Epilobium brunnescens*. The vegetation structure of **8220 Siliceous rocky slopes** was good with no failures being recorded under the relevant criteria.

Future prospects

3.150 The only impact recorded within this habitat was invasive non-native species (Table 37).

Table 36: Monitoring criteria and failure rates for 8220 Siliceous rocky slopes (n = 8).

Criteria	Scale of assessment	Number of assessments	Number of failures	Failure rate (%)	
Vegetation composition					
1	Number of positive indicator species present ≥ 1	Local vicinity	8	0	0
2	Proportion of vegetation composed of non-native species < 1%	Local vicinity	8	2	25.0
3	Cover of <i>Pteridium aquilinum</i> , native trees and scrub collectively < 25%	Local vicinity	8	0	0
Vegetation structure					
4	Live leaves of forbs and shoots of dwarf shrubs showing signs of <u>grazing</u> or <u>browsing</u> collectively < 50%	Local vicinity	8	0	0

Invasive non-native species (I01)

3.151 *Epilobium brunnescens* is a species of damp, stony places, especially in the mountains, which is localised but spreading in Ireland (Parnell & Curtis, 2012). During the present survey, *E. brunnescens* was recorded within three **8220 Siliceous rocky slopes** monitoring stops, giving it a frequency of 37.5% within this habitat at this site, with cover scores of 0.3, 0.5 and 0.7%. Two monitoring stops failed due to excessive cover of the species. During vegetation mapping, non-native *Cotoneaster* sp. was also noted on **8220 Siliceous rocky slopes**.

3.152 The intensity of this impact on **8220 Siliceous rocky slopes** has been assessed as low, since *Epilobium brunnescens* does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative (Table 37). The area affected has been estimated to be 0.2%, based on the mean cover of *Epilobium brunnescens* within **8220 Siliceous rocky slopes** monitoring stops.

Table 37: Assessment of impacts for the 8220 Siliceous rocky slopes. Under trend, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Source	Score	Trend
I01	Invasive non-native species	Low	Negative	0.2%	Inside	-0.25	Ins
Overall score						-0.25	

3.153 The overall impacts score for the **8220 Siliceous rocky slopes** was calculated as -0.25 which is marginally below the nominal Favourable Reference Value. The combined future trend for area and structure and functions was not assessed due to insufficient data. The future prospects for this habitat were however assessed as Favourable.

Summary of conservation assessment

3.154 The summary results for the conservation assessment of Annex I habitats in Mweelrea / Sheeffry / Erriff Complex cSAC are presented in Table 38. Of the eleven habitats assessed, one was assessed as Favourable, two as Unfavourable – Inadequate and eight as Unfavourable – Bad.

3.155 Generally, habitats performed well in the area assessments with no major losses of habitat being readily apparent. There is a general trend for peatland, grassland and scree habitats to perform poorly in the assessments of structure and functions, while rocky slope habitats perform better. Habitats tended to perform better under future prospects than under structure and function as it is predicted that habitats will gradually recover from previously higher stocking levels.

Table 38: Summary of conservation status assessments for Annex I habitats the Mweelrea / Sheeffry / Erriff Complex cSAC.

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

4. DISCUSSION

Natura 2000 assessment

- 4.1 Twelve Annex I habitats were recorded in the cSAC that are currently not listed for the site in the Natura 2000 assessment, habitats 1130, 1140, *2130, 2190, 6150, 6210, *6230, 6430, *7210, 8110, 8120 and 91A0. The upper reaches of Killary Harbour were recorded as **1130 Estuaries** and the three sandy beaches along the coast were recorded as **1140 Tidal mudflats and sandflats**. Small areas of **6210 Calcareous grassland**, ***7210 Cladium fen** and **91A0 Old oak woodlands** were recorded from lowland areas of the site. Small patches of ***6230 Species-rich *Nardus* grassland** were recorded, although the vast majority of *Nardus* grassland in the cSAC is species-poor and non-Annex in nature. There are substantial areas of **8110 Siliceous scree** within the site particularly along the ridgeline of the Sheeffry Hills and in corries. A very much smaller area of habitat referable to **8120 Calcareous scree** occurs in areas of geological banding. **6150 Siliceous alpine and boreal grasslands** were frequently recorded on the ridge of the Mweelrea Mountains. The upland ledge aspects of **6430 Hydrophilous tall herb communities** were recorded from several corrie walls.
- 4.2 Four Annex I habitats currently listed in the Natura 2000 assessment were not recorded during survey work, habitats 2150, 2170, 5130 and *7220. Neither **2150 Decalcified dune heath** nor **2170 Dunes with creeping willow** were recorded. The Natura 2000 notes for this site that *Salix repens* was far less abundant in the 1990s than in the 1970s and this species may have been subsequently eliminated. Habitat 2170 may have therefore been replaced by **2190 Humid dune slacks**, a habitat not currently listed for the site. Similarly, habitat 2150 may have been replaced by **2130 Fixed dunes**, possibly due to grazing pressure. It is recommended that further survey work is conducted to elucidate the situation.
- 4.3 *Juniper communis* ssp. *nana* was recorded on Mweelrea and Ben Gorm. This was recorded as **4060 Alpine and boreal heath** rather than **5130 *Juniperus communis* formations** following the guidance in Perrin *et al.* (2014). Hence, no vegetation conforming to habitat 5130 was recorded. The site is not mentioned in the recent juniper survey commissioned by NPWS (Cooper *et al.* 2012). No ***7220 Petrifying springs** were found; the Natura 2000 notes state that these had only been found amongst the dunes at Dooaghtry. It is recommended that further survey work is conducted to confirm the presence of habitat *7220 on the site and accurately note its location.
- 4.4 The current Natura 2000 assessment significantly underestimates the area of **4010 Wet heath** in the cSAC (5% compared with 23.2%) and overestimated the area of ***7130/7130 Blanket bog** (55% compared with 20.4%). There is also overestimation of the area of **8220 Siliceous rocky slopes**, **8210 Calcareous rocky slopes** and **4060 Alpine and Boreal heath**.
- 4.5 The Natura 2000 Standard Data Form 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 obligatory that all Annex I habitats within a cSAC are listed on this form even if they are subsequently ranked as having a non-significant presence.

Additional recommendations

- 4.6 Whilst a Conservation Plan for the site exists for Mweelrea / Sheeffry / Erriff Complex cSAC, an up-to-date version of the 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 major impacts are livestock grazing, turf-cutting by machine and peat erosion.
- 4.7 Levels of livestock grazing are being addressed through the CFP. Whilst stock reductions appears to have resulted in some improvement to Annex I habitats, these habitats are not currently attaining Favourable status. Continued monitoring is required to establish what would be sustainable levels of livestock for this site bearing in mind that there may be a considerable delay between changes in livestock levels and a response in the vegetation. The available data do not support an increase in stocking levels.
- 4.8 Erosion of blanket peat is a major impact in ***7130/7130 Blanket bog**. Whilst some areas of eroded peat may gradually revegetate as a result of the CFP 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 status.
- 4.9 Active turf-cutting by mechanised methods is occurring at several locations within the site and having a major localised impact on ***7130/7130 Blanket bog**. Appropriate regulation of machine cutting is required.
- 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.
- 4.11 Monitoring criteria should be developed for habitats **6150 Siliceous alpine and boreal grasslands** and **6430 Hydrophilous tall herb communities**. Relevé data collected by this survey will allow these habitats to be, in part, retrospectively assessed.

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APPENDIX 1: ANNEX I HABITATS

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

Annex I code	Full name of Annex I habitat	Standard abbreviation
1130	Estuaries	1130 Estuaries
1140	Mudflats and sandflats not covered by seawater at low tide	1140 Tidal mudflats and sandflats
1150	*Coastal lagoons	*1150 Coastal lagoons
1210	Annual vegetation of drift lines	1210 Annual vegetation of drift lines
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	1330 Atlantic salt meadows
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	1410 Mediterranean salt meadows
2110	Embryonic shifting dunes	2110 Embryonic shifting dunes
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	2120 Marram Dunes (White Dunes)
2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	*2130 Fixed Dunes (Grey Dunes)
2150	* Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)	*2150 Decalcified dune heath
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenaria</i>)	2170 Dunes with creeping willow
2190	Humid dune slacks	2190 Humid dune slacks
21A0	Machairs (* in Ireland)	*21A0 Machair
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	3110 Lowland oligotrophic lakes
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	3130 Upland oligotrophic lakes
3160	Natural dystrophic lakes and ponds	3160 Dystrophic lakes
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	3260 Floating river vegetation
4010	Northern Atlantic wet heaths with <i>Erica tetralix</i>	4010 Wet heath
4030	European dry heaths	4030 Dry heath
4060	Alpine and Boreal heaths	4060 Alpine and Boreal heath
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	5130 Juniper scrub
6150	Siliceous alpine and boreal grasslands	6150 Siliceous alpine and boreal grasslands

Annex I code	Full name of Annex I habitat	Standard abbreviation
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)	*6210 Orchid-Rich Grassland/Calcareous Grassland
6230	*Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	*6230 Species-rich <i>Nardus</i> grasslands
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	6430 Hydrophilous tall herb communities
7130	Blanket bogs (* if active bog)	*7130 Active blanket bog or 7130 Inactive blanket bog or *7130/7130 Blanket bog
7140	Transition mires and quaking bogs	7140 Transition mires
7150	Depressions on peat substrates of the <i>Rhynchosporion</i>	7150 <i>Rhynchosporion</i> depressions
7210	*Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	*7210 Cladium Fens
7220	*Petrifying springs with tufa formation (<i>Cratoneurion</i>)	*7220 Petrifying springs
7230	Alkaline fens	7230 Alkaline fens
8110	Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsetalia ladani</i>)	8110 Siliceous scree
8120	Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>)	8120 Calcareous scree
8210	Calcareous rocky slopes with chasmophytic vegetation	8210 Calcareous rocky slopes
8220	Siliceous rocky slopes with chasmophytic vegetation	8220 Siliceous rocky slopes
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	91A0 Old oak woodlands

APPENDIX 2: PHOTOGRAPHS



Plate A1. *Hammarbya paludosa* growing in a base-rich flush, Mweelrea Mountain (Photo: BEC Consultants).



Plate A2. *Diphasiastrum alpinum*, near summit of Ben Gorm (Photo: BEC Consultants).



Plate A3. Siliceous scree slopes on the northern side of the Sheeffry Hills overlooking Lough Tarriff (Photo: BEC Consultants).



Plate A4. Sparse montane vegetation on the ridgeline of the Sheeffry Hills (Photo: BEC Consultants).



Plate A5. Large expanse of intact blanket bog at Laghta, looking south to the Sheeffry Hills (Photo: BEC Consultants).



Plate A6. View east down the Glenlaur valley, the slopes are dominated by non-Annex grassland (Photo: BEC Consultants).



Plate A7. View south from the Lough Brawn corrie, siliceous rocky slopes on the left and oligotrophic lake centre (Photo: BEC Consultants).



Plate A8. View west of the Glenawough corrie in the Partry Mountains, blanket bog to the right of the lake, montane heath occurs above the cliffs on the left (Photo: BEC Consultants).



Plate A9. *Schoenus* wet heath on the lower southern slopes of Tawny Rower, Sheeffry Hills (Photo: BEC Consultants).



Plate A10. Rocky cleft in siliceous rocky slope with *Saxifraga spathularis*, Mweelrea Mountains (Photo: BEC Consultants).



Plate A11. Hydrophilous tall herb community with *Filipendula ulmaria*, *Ranunculus acris*, *Sedum rosea* and *Succisa pratensis*, Mweelrea Mountains (Photo: BEC Consultants).



Plate A12. North Atlantic hepatic mat community with *Herbertus aduncus*, *Scapania gracilis* and *Pleurozia purpurea*, Ben Gorm (Photo: BEC Consultants).



Plate A13. Eroding *Schoenus* blanket bog (Photo: BEC Consultants).



Plate A14. Degradation of blanket bog due to livestock, Lugaloughan. In the middle distance the bog to the left of the fenceline that meets the edge of the forestry is visibly more damaged than the land to the east of the fence. Species-poor *Nardus* grassland occurs in the foreground (Photo: BEC Consultants).

APPENDIX 3: PLANT SPECIES LIST

All species recorded from relevés, waypoints and polygons during the NSUH survey and the pilot survey at Mweelrea / Sheeffry / Erriff Complex cSAC are listed.

VASCULAR SPECIES

Species name	Common name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis canina</i>	Velvet Bent
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Agrostis vinealis</i>	Brown Bent
<i>Alchemilla filicaulis</i>	Lady's-mantle
<i>Anagallis tenella</i>	Bog Pimpernel
<i>Angelica sylvestris</i>	Wild Angelica
<i>Antennaria dioica</i>	Mountain Everlasting
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Armeria maritima</i>	Thrift
<i>Asplenium adiantum-nigrum</i>	Black Spleenwort
<i>Athyrium filix-femina</i>	Lady-fern
<i>Bellis perennis</i>	Daisy
<i>Betula</i> sp.	a Birch
<i>Blechnum spicant</i>	Hard-fern
<i>Calluna vulgaris</i>	Heather
<i>Caltha palustris</i>	Marsh-marigold
<i>Campanula rotundifolia</i>	Harebell
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex bigelowii</i>	Stiff Sedge
<i>Carex binervis</i>	Green-ribbed Sedge
<i>Carex caryophyllea</i>	Spring-sedge
<i>Carex dioica</i>	Dioecious Sedge
<i>Carex echinata</i>	Star Sedge
<i>Carex flacca</i>	Glaucous Sedge
<i>Carex lasiocarpa</i>	Slender Sedge
<i>Carex limosa</i>	Bog-sedge
<i>Carex nigra</i>	Common Sedge
<i>Carex panicea</i>	Carnation Sedge
<i>Carex paniculata</i>	Greater Tussock-sedge
<i>Carex pilulifera</i>	Pill Sedge
<i>Carex pulicaris</i>	Flea Sedge
<i>Carex rostrata</i>	Bottle Sedge
<i>Carex viridula</i> subsp. <i>oedocarpa</i>	Yellow-sedge
<i>Centaurea nigra</i>	Common Knapweed
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage
<i>Cirsium dissectum</i>	Meadow Thistle
<i>Cirsium palustre</i>	Marsh Thistle

VASCULAR SPECIES

Species name	Common name
<i>Cladium mariscus</i>	Great Fen-sedge
<i>Conopodium majus</i>	Pignut
<i>Cotoneaster</i> sp.	a Cotoneaster
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis paludosa</i>	Marsh Hawk's-beard
<i>Cynosurus cristatus</i>	Crested Dog's-tail
<i>Daboecia cantabrica</i>	St Dabeoc's Heath
<i>Dactylis glomerata</i>	Cock's-foot
<i>Danthonia decumbens</i>	Heath-grass
<i>Deschampsia flexuosa</i>	Tufted Hair-grass
<i>Diphasiastrum alpinum</i>	Alpine Clubmoss
<i>Drosera anglica</i>	Great Sundew
<i>Drosera intermedia</i>	Oblong-leaved Sundew
<i>Drosera rotundifolia</i>	Round-leaved Sundew
<i>Dryopteris aemula</i>	Hay-scented Buckler-fern
<i>Dryopteris affinis</i>	Scaly Male-fern
<i>Dryopteris dilatata</i>	Broad Buckler-fern
<i>Eleocharis multicaulis</i>	Many-stalked Spike-rush
<i>Eleocharis palustris</i>	Common Spike-rush
<i>Eleocharis quinqueflora</i>	Few-flowered Spike-rush
<i>Empetrum nigrum</i>	Crowberry
<i>Epilobium brunnescens</i>	New Zealand Willowherb
<i>Equisetum sylvaticum</i>	Wood Horsetail
<i>Erica cinerea</i>	Bell Heather
<i>Erica tetralix</i>	Cross-leaved Heath
<i>Eriocaulon aquaticum</i>	Pipewort
<i>Eriophorum angustifolium</i>	Common Cottongrass
<i>Eriophorum vaginatum</i>	Hare's-tail Cottongrass
<i>Euphrasia officinalis</i> agg.	Eyebrights
<i>Festuca ovina</i>	Sheep's-fescue
<i>Festuca rubra</i>	Red Fescues
<i>Festuca vivipara</i>	Viviparous Sheep's-fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fuchsia magellanica</i>	Fuchsia
<i>Galium boreale</i>	Northern Bedstraw
<i>Galium saxatile</i>	Heath Bedstraw
<i>Geum rivale</i>	Water Avens
<i>Glyceria</i> sp.	a Sweet-grass
<i>Gunnera tinctoria</i>	Giant Rhubarb
<i>Hammarbya paludosa</i>	Bog Orchid
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Huperzia selago</i>	Fir Clubmoss
<i>Hypericum elodes</i>	Marsh St John's-wort
<i>Hypericum pulchrum</i>	Slender St John's-wort
<i>Hypochaeris radicata</i>	Cat's-ear

VASCULAR SPECIES

Species name	Common name
<i>Ilex aquifolium</i>	Holly
<i>Jasione montana</i>	Sheep's-bit
<i>Juncus acutiflorus</i>	Sharp-flowered Rush
<i>Juncus bulbosus</i>	Bulbous Rush
<i>Juncus conglomeratus</i>	Compact Rush
<i>Juncus effusus</i>	Soft-rush
<i>Juncus squarrosus</i>	Heath Rush
<i>Juniperus communis</i> subsp. <i>nana</i>	Common Juniper
<i>Lathyrus linifolia</i>	Bitter-vetch
<i>Leontodon autumnalis</i>	Autumn Hawkbit
<i>Linum catharticum</i>	Fairy Flax
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil
<i>Luzula campestris</i>	Field Wood-rush
<i>Luzula multiflora</i>	Heath Wood-rush
<i>Luzula sylvatica</i>	Great Wood-rush
<i>Lysimachia nemorum</i>	Yellow Pimpernel
<i>Menyanthes trifoliata</i>	Bogbean
<i>Moehringia trinervia</i>	Three-nerved Sandwort
<i>Molinia caerulea</i>	Purple Moor-grass
<i>Montia fontana</i>	Blinks
<i>Myrica gale</i>	Bog Myrtle
<i>Nardus stricta</i>	Mat-grass
<i>Narthecium ossifragum</i>	Bog Asphodel
<i>Nymphaea alba</i>	White Water-lily
<i>Orchis mascula</i>	Early-purple Orchid
<i>Osmunda regalis</i>	Royal Fern
<i>Oxalis acetosella</i>	Wood-sorrel
<i>Oxyria digyna</i>	Mountain Sorrel
<i>Pedicularis palustris</i>	Marsh Lousewort
<i>Pedicularis sylvatica</i>	Lousewort
<i>Phegopteris connectilis</i>	Beech Fern
<i>Phragmites australis</i>	Common Reed
<i>Pinguicula lusitanica</i>	Pale Butterwort
<i>Pinguicula vulgaris</i>	Common Butterwort
<i>Pinus contorta</i>	Lodgepole Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Plantago maritima</i>	Sea Plantain
<i>Poa pratensis</i>	Smooth Meadow-grass
<i>Polygala serpyllifolia</i>	Heath Milkwort
<i>Polystichum aculeatum</i>	Hard Shield-fern
<i>Populus tremula</i>	Aspen
<i>Potamogeton polygonifolius</i>	Bog Pondweed
<i>Potentilla erecta</i>	Tormentil
<i>Potentilla palustris</i>	Marsh Cinquefoil
<i>Primula vulgaris</i>	Primrose

VASCULAR SPECIES

Species name	Common name
<i>Prunella vulgaris</i>	Selfheal
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus</i> sp.	an Oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Rhinanthus minor</i>	Yellow-rattle
<i>Rhynchospora alba</i>	White Beak-sedge
<i>Rumex acetosa</i>	Common Sorrel
<i>Rumex acetosella</i>	Sheep's Sorrel
<i>Salix aurita</i>	Eared Willow
<i>Salix herbacea</i>	Dwarf Willow
<i>Saussurea alpina</i>	Alpine Saw-wort
<i>Saxifraga oppositifolia</i>	Purple Saxifrage
<i>Saxifraga spathularis</i>	St Patrick's-cabbage
<i>Saxifraga stellaris</i>	Starry Saxifrage
<i>Schoenus nigricans</i>	Black Bog-rush
<i>Sedum rosea</i>	Roseroot
<i>Selaginella selaginoides</i>	Lesser Clubmoss
<i>Solidago virgaurea</i>	Goldenrod
<i>Sorbus aucuparia</i>	Rowan
<i>Stellaria uliginosa</i>	Bog Stitchwort
<i>Succisa pratensis</i>	Devil's-bit Scabious
<i>Taraxacum officinale</i> agg.	Dandelion
<i>Teucrium scorodonia</i>	Wood Sage
<i>Thalictrum alpinum</i>	Alpine Meadow-rue
<i>Thalictrum minus</i>	Lesser Meadow-rue
<i>Thymus polytrichus</i>	Wild Thyme
<i>Trichophorum germanicum</i>	Deergrass
<i>Trifolium repens</i>	White Clover
<i>Triglochin</i> sp.	an Arrowgrass
<i>Utricularia intermedia</i>	Intermediate Bladderwort
<i>Utricularia minor</i>	Lesser Bladderwort
<i>Vaccinium myrtillus</i>	Bilberry
<i>Valeriana officinalis</i>	Common Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Veronica officinalis</i>	Heath Speedwell
<i>Viola palustris</i>	Marsh Violet
<i>Viola riviniana</i>	Common Dog-violet

BRYOPHYTES

Species name	Common name
<i>Amphidium lapponicum</i>	a Yoke-moss
<i>Amphidium mougeotii</i>	Mougeot's Yoke-moss
<i>Andreaea rothii</i>	Hunt's/Dusky Rock-moss
<i>Andreaea rupestris</i> var. <i>rupestris</i>	Black Rock-moss
<i>Aneura pinguis</i>	Greasewort
<i>Anomobryum julaceum</i>	Slender Silver-moss
<i>Anthelia julacea</i>	Alpine Silverwort
<i>Aulacomnium palustre</i>	Bog Bead-moss
<i>Bazzania pearsonii</i>	Pearson's Whipwort
<i>Bazzania tricrenata</i>	Lesser Whipwort
<i>Blindia acuta</i>	Sharp-leaved Blindia
<i>Brachythecium plumosum</i>	Rusty Feather-moss
<i>Brachythecium rivulare</i>	River Feather-moss
<i>Brachythecium rutabulum</i>	Rough-stalked Feather-moss
<i>Breutelia chrysocoma</i>	Golden-head Moss
<i>Bryum alpinum</i>	Alpine Thread-moss
<i>Bryum pseudotriquetrum</i>	Marsh Bryum
<i>Calliergon sarmentosum</i>	Twiggy Spear-moss
<i>Calliergonella cuspidata</i>	Pointed Spear-moss
<i>Calypogeia arguta</i>	Notched Pouchwort
<i>Calypogeia fissa</i>	Common Pouchwort
<i>Calypogeia muelleriana</i>	Mueller's Pouchwort
<i>Campylium stellatum</i>	Yellow Starry Feather-moss
<i>Campylium stellatum</i> var. <i>stellatum</i>	Yellow Starry Feather-moss
<i>Campylopus atrovirens</i> var. <i>atrovirens</i>	Bristly Swan-neck Moss
<i>Campylopus flexuosus</i>	Rusty Swan-neck Moss
<i>Campylopus gracilis</i>	Schwarz's Swan-neck Moss
<i>Campylopus introflexus</i>	Heath Star-moss
<i>Campylopus pyriformis</i>	Dwarf Swan-neck Moss
<i>Campylopus setifolius</i>	Silky Swan-neck Moss
<i>Cephalozia bicuspidata</i>	Two-horned Pincerwort
<i>Cephalozia connivens</i>	Forcipated Pincerwort
<i>Cephalozia leucantha</i>	a Pincerwort
<i>Cephalozia lunulifolia</i>	Moon-leaved Pincerwort
<i>Cephalozia macrostachya</i>	a Pincerwort
<i>Chiloscyphus polyanthos</i>	St Winifred's Moss
<i>Cladopodiella fluitans</i>	Bog Notchwort
<i>Ctenidium molluscum</i>	Comb-moss
<i>Cystopteris fragilis</i>	Brittle Bladder-fern
<i>Dicranella heteromalla</i>	Silky Forklet-moss
<i>Dicranella palustris</i>	Marsh Forklet-moss
<i>Dicranum fuscescens</i>	Dusky Fork-moss
<i>Dicranum majus</i>	Greater Fork-moss
<i>Dicranum scoparium</i>	Broom Fork-moss
<i>Diplophyllum albicans</i>	White Earwort
<i>Drepanocladus revolvens</i>	Rust Hook-moss

BRYOPHYTES

Species name	Common name
<i>Entosthodon attenuatus</i>	Thin Cord-moss
<i>Eurhynchium hians</i>	Swartz's Feather-moss
<i>Fissidens dubius</i>	Rock Pocket-moss
<i>Frullania tamarisci</i>	Tamarisk Scalewort
<i>Frullania teneriffae</i>	Sea Scalewort
<i>Grimmia donniana</i>	Donn's Grimmia
<i>Gymnomitrium crenulatum</i>	Western Frostwort
<i>Heterocladium heteropterum</i>	Wry-leaved Tamarisk-moss
<i>Herbertus aduncus</i> subsp. <i>hutchinsiae</i>	Juniper Prongwort
<i>Homalothecium</i> sp.	a Feather-moss
<i>Hookeria lucens</i>	Shining Hookeria
<i>Hylocomium splendens</i>	Glittering Wood-moss
<i>Hymenophyllum tunbrigense</i>	Tunbridge Filmy-Fern
<i>Hymenophyllum wilsonii</i>	Wilson's Filmy-Fern
<i>Hyocomium armoricum</i>	Flagellate Feather-moss
<i>Hypnum jutlandicum</i>	Heath Plait-moss
<i>Hypnum lacunosum</i>	Great/Roof Plait-moss
<i>Isothecium myosuroides</i> var. <i>brachythecioides</i>	Mouse-tail Moss
<i>Isothecium myosuroides</i> var. <i>myosuroides</i>	Mouse-tail Moss
<i>Jungermannia</i> sp.	a Flapwort
<i>Kindbergia praelonga</i>	Common Feather-moss
<i>Kurzia pauciflora</i>	Bristly Fingerwort
<i>Kurzia trichoclados</i>	Heath Fingerwort
<i>Lejeunea patens</i>	Pearl Pouncewort
<i>Lejeunea species</i>	Pounceworts
<i>Lepidozia reptans</i>	Creeping Fingerwort
<i>Leucobryum glaucum</i>	Large White-moss
<i>Lophocolea bidentata</i>	Bifid Crestwort
<i>Lophozia incisa</i>	Jagged Notchwort
<i>Lophozia ventricosa</i>	Tumid Notchwort
<i>Marsupella emarginata</i>	Notched Rustwort
<i>Mastigophora woodsii</i>	Wood's Whipwort
<i>Mnium hornum</i>	Swan's-neck Thyme-moss
<i>Mylia taylorii</i>	Taylor's Flapwort
<i>Nardia compressa</i>	Compressed Flapwort
<i>Nardia scalaris</i>	Ladder Flapwort
<i>Neckera crispa</i>	Crisped Neckera
<i>Nowellia curvifolia</i>	Rustwort
<i>Odontoschisma elongatum</i>	a Flapwort
<i>Odontoschisma sphagni</i>	Bog-moss Flapwort
<i>Oligotrichum hercynicum</i>	Hercynian Haircap
<i>Palustriella commutata</i>	Curled Hook-moss
<i>Pellia epiphylla</i>	Overleaf Pellia
<i>Philonotis fontana</i>	Fountain Apple-moss
<i>Plagiochila bifaria</i>	Killarney Featherwort
<i>Plagiochila spinulosa</i>	Prickly Featherwort

BRYOPHYTES

Species name	Common name
<i>Plagiothecium denticulatum</i>	Dentated/Donnian Silk-moss
<i>Plagiothecium undulatum</i>	Waved Silk-moss
<i>Pleurozia purpurea</i>	Purple Spoonwort
<i>Pleurozium schreberi</i>	Red-stemmed Feather-moss
<i>Pogonatum urnigerum</i>	Urn Haircap
<i>Pohlia nutans</i>	Nodding Thread-moss
<i>Polytrichum alpinum</i>	Alpine Haircap
<i>Polytrichum commune</i>	Common/Dense Haircap
<i>Polytrichum formosum</i>	Bank Haircap
<i>Polytrichum piliferum</i>	Bristly Haircap
<i>Porella</i> sp.	a Scalewort
<i>Preissia quadrata</i>	Narrow Mushroom-headed Liverwort
<i>Pseudotaxiphyllum elegans</i>	Elegant Silk-moss
<i>Ptilidium ciliare</i>	Ciliated Fringewort
<i>Racomitrium aciculare</i>	Yellow Fringe-moss
<i>Racomitrium affine</i>	Lesser Fringe-moss
<i>Racomitrium aquaticum</i>	Narrow-leaved Fringe-moss
<i>Racomitrium ellipticum</i>	Oval-fruited Fringe-moss
<i>Racomitrium fasciculare</i>	Green Mountain Fringe-moss
<i>Racomitrium heterostichum</i>	Bristly Fringe-moss
<i>Racomitrium lanuginosum</i>	Wooly Fringe-moss
<i>Rhizomnium punctatum</i>	Dotted Thyme-moss
<i>Rhytidiadelphus loreus</i>	Little Shaggy-moss
<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss
<i>Rhytidiadelphus triquetrus</i>	Big Shaggy-moss
<i>Riccardia chamedryfolia</i>	Jagged Germanderwort
<i>Riccardia palmate</i>	Palmate Germanderwort
<i>Saccogyna viticulosa</i>	Stragglng Pouchwort
<i>Scapania gracilis</i>	Western Earwort
<i>Scapania nemorea</i>	Grove Earwort
<i>Scapania ornithopodioides</i>	Bird's-foot Earwort
<i>Scapania uliginosa</i>	Marsh Earwort
<i>Scapania undulate</i>	Water Earwort
<i>Scleropodium purum</i>	Neat Feather-moss
<i>Scorpidium scorpioides</i>	Hooked Scorpion-moss
<i>Sphagnum austinii</i>	Austin's Bog-moss
<i>Sphagnum capillifolium</i>	Acute-leaved/Red Bog-moss
<i>Sphagnum compactum</i>	Compact Bog-moss
<i>Sphagnum contortum</i>	Twisted Bog-moss
<i>Sphagnum cuspidatum</i>	Feathery Bog-moss
<i>Sphagnum denticulatum</i>	Cow-horn Bog-moss
<i>Sphagnum fallax</i>	Flat-topped Bog-moss
<i>Sphagnum inundatum</i>	Lesser Cow-horn Bog-moss
<i>Sphagnum magellanicum</i>	Magellanic Bog-moss
<i>Sphagnum palustre</i>	Blunt-leaved Bog-moss
<i>Sphagnum papillosum</i>	Papillose Bog-moss

BRYOPHYTES

Species name	Common name
<i>Sphagnum pulchrum</i>	Golden Bog-moss
<i>Sphagnum quinquefarium</i>	Five-ranked Bog-moss
<i>Sphagnum russowii</i>	Russow's Bog-moss
<i>Sphagnum strictum</i>	Pale Bog-moss
<i>Sphagnum subnitens</i>	Lustrous Bog-moss
<i>Sphagnum subsecundum</i>	Slender Cow-horn Bog-moss
<i>Sphagnum tenellum</i>	Soft Bog-moss
<i>Thuidium tamariscinum</i>	Common Tamarisk-moss
<i>Tortella tortuosa</i>	Fizzled Crisp-moss
<i>Trichostomum brachydontium</i>	Variable Crisp-moss
<i>Trichostomum crispulum</i>	Curly Crisp-moss
<i>Trichostomum hibernicum</i>	Irish Crisp-moss
<i>Trichostomum tenuirostre</i>	Narrow-fruited Crisp-moss
<i>Tritomaria quinquedentata</i>	Lyon-s Notchwort

LICHENS

Species name	Species name
<i>Bunodophoron melanocarpum</i>	<i>Cladonia portentosa</i>
<i>Cetraria aculeata</i>	<i>Cladonia rangiferina</i>
<i>Cladonia arbuscula</i>	<i>Cladonia squamosa</i> var. <i>subsquamosa</i>
<i>Cladonia cervicornis</i>	<i>Cladonia strepsilis</i>
<i>Cladonia cervicornis</i> subsp. <i>verticillata</i>	<i>Cladonia subcervicornis</i>
<i>Cladonia coccifera</i>	<i>Cladonia uncialis</i>
<i>Cladonia floerkeana</i>	<i>Parmelia saxatilis</i>
<i>Cladonia furcata</i>	<i>Peltigera membranacea</i>

Figure 1. Survey area / boundary of Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

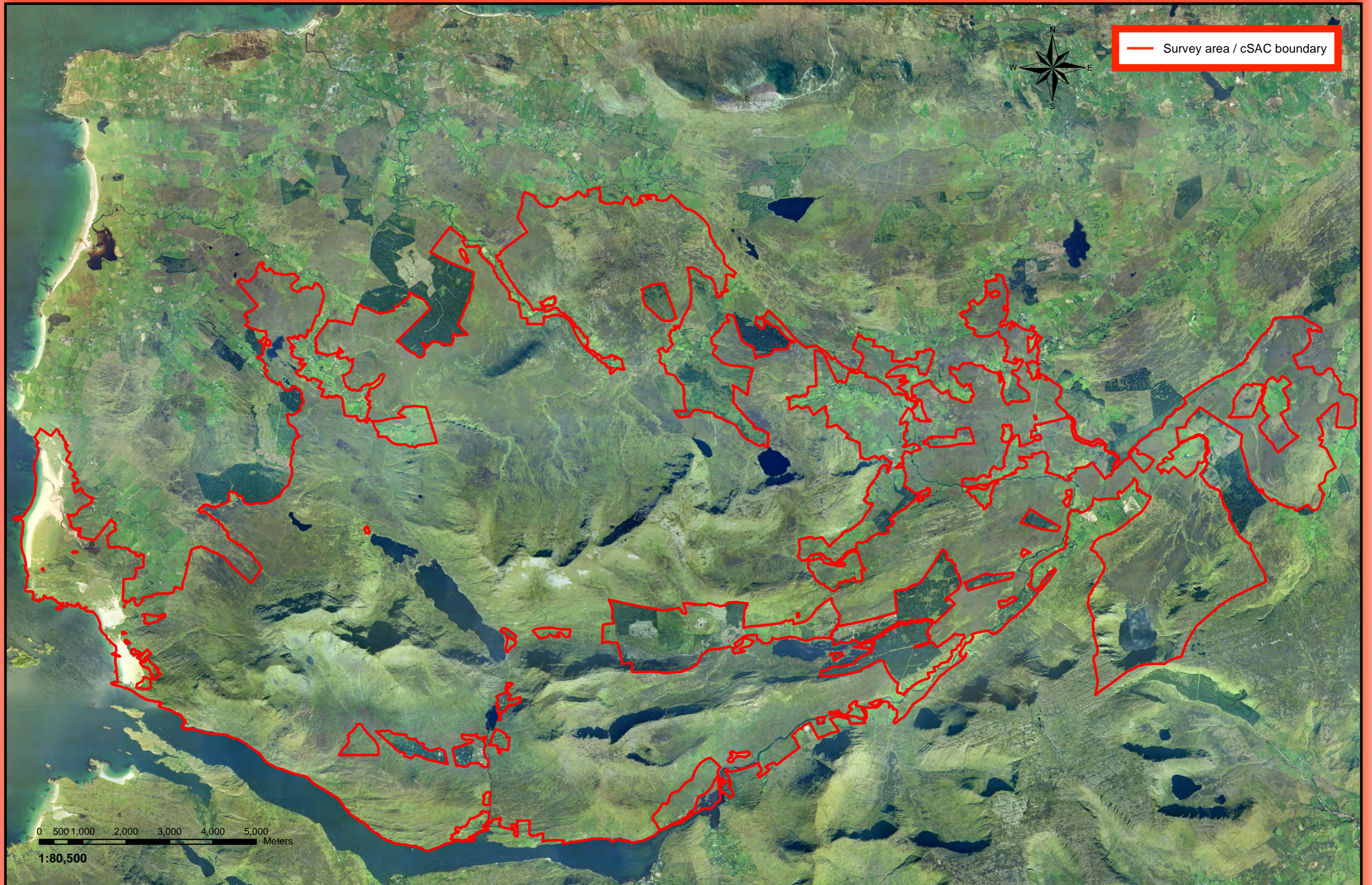


Figure 2. Primary Fossitt habitats within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

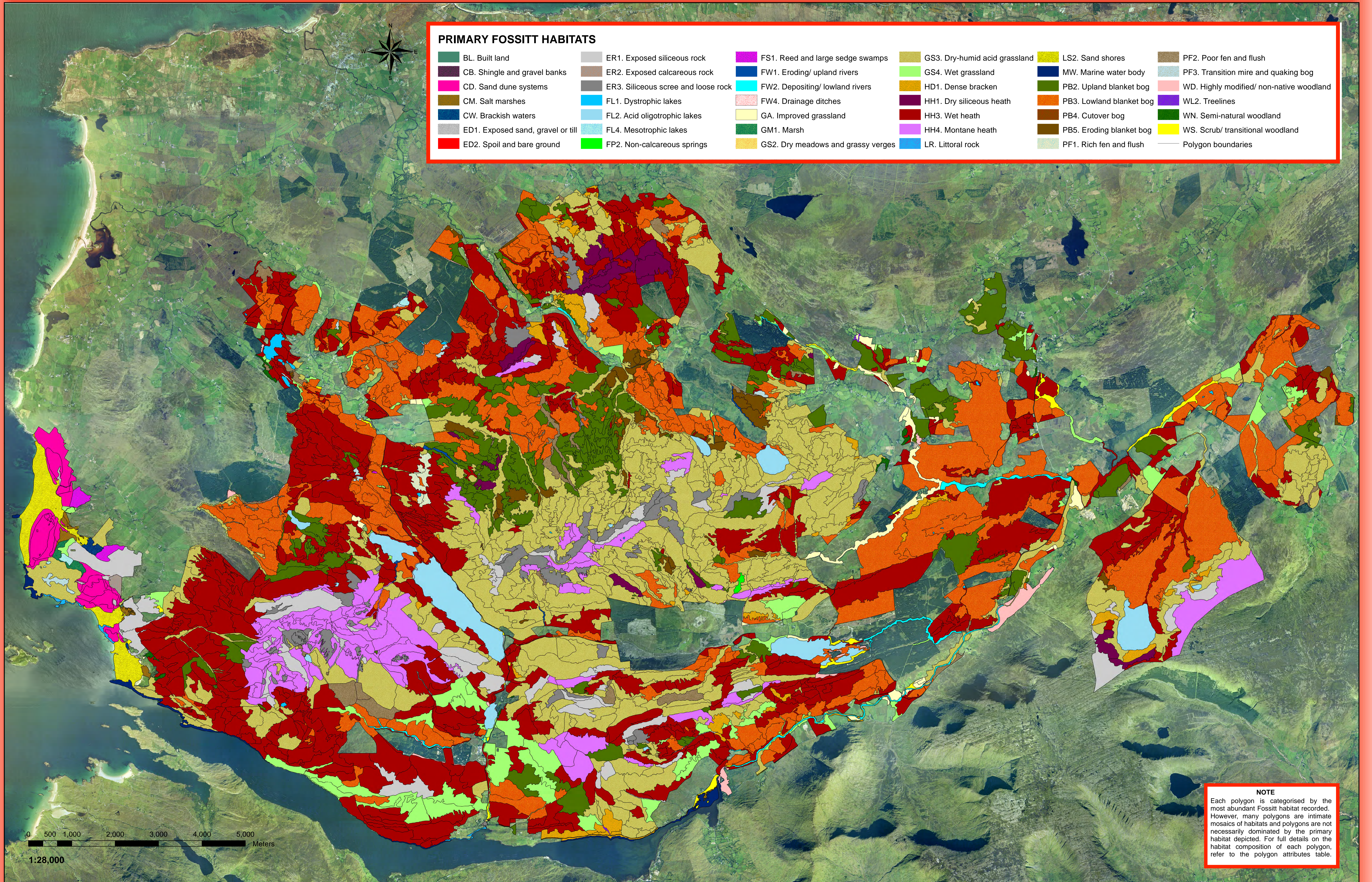


Figure 3. Primary Annex I habitats within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

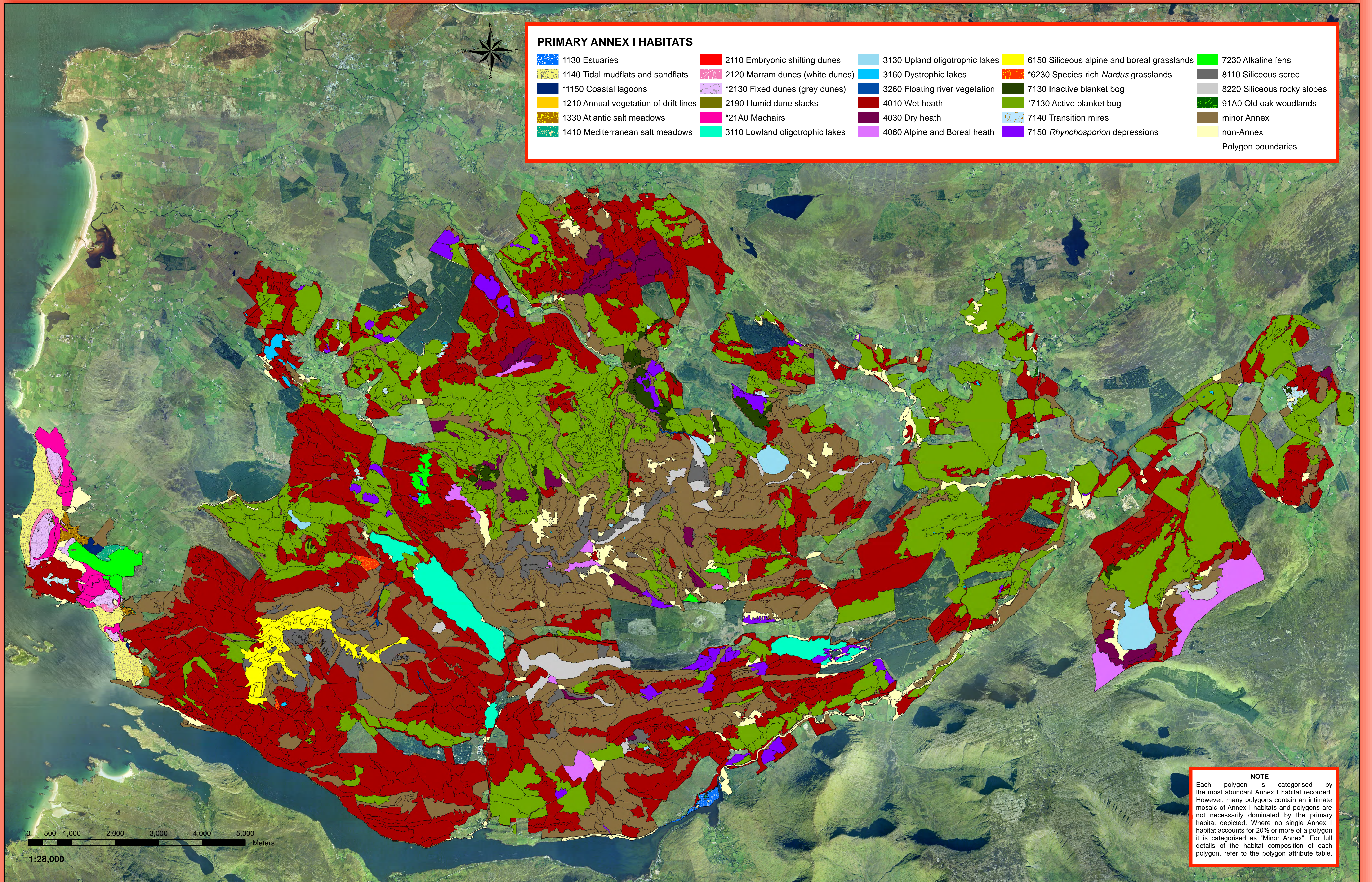


Figure 4a. Cover of 4010 WET HEATH within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

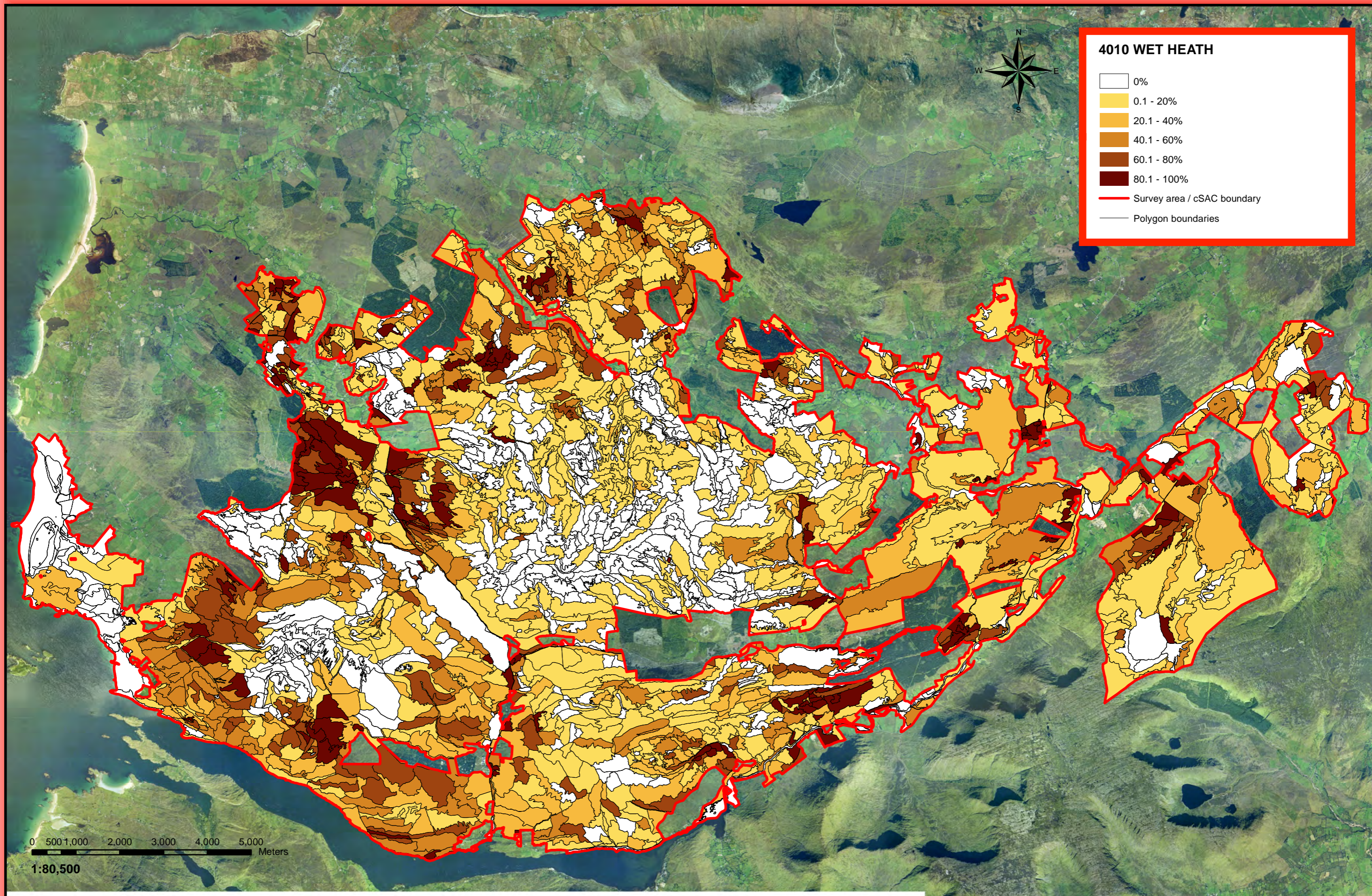


Figure 4b. Cover of 4030 DRY HEATH within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

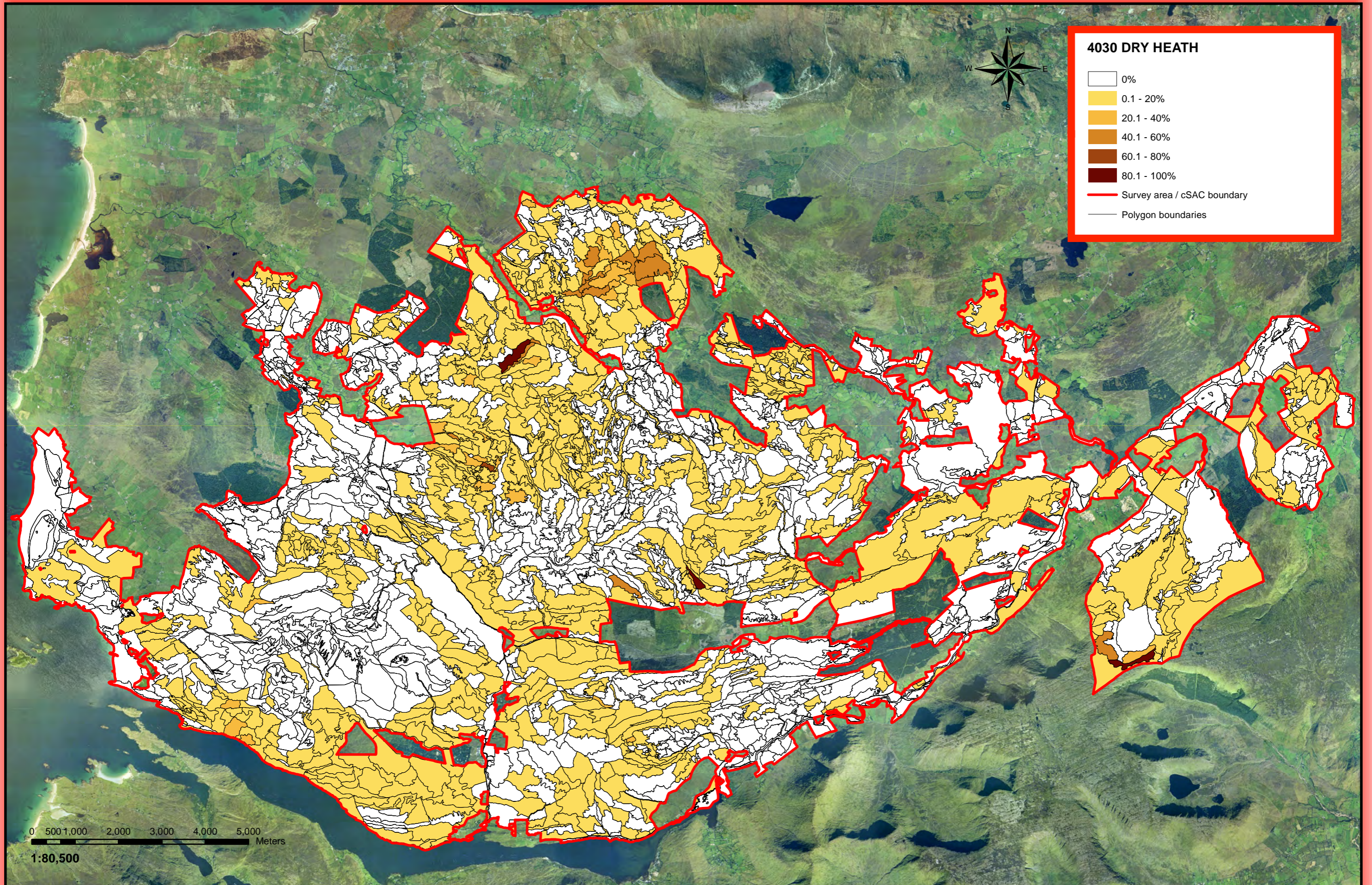


Figure 4c. Cover of 4060 ALPINE AND BOREAL HEATH within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

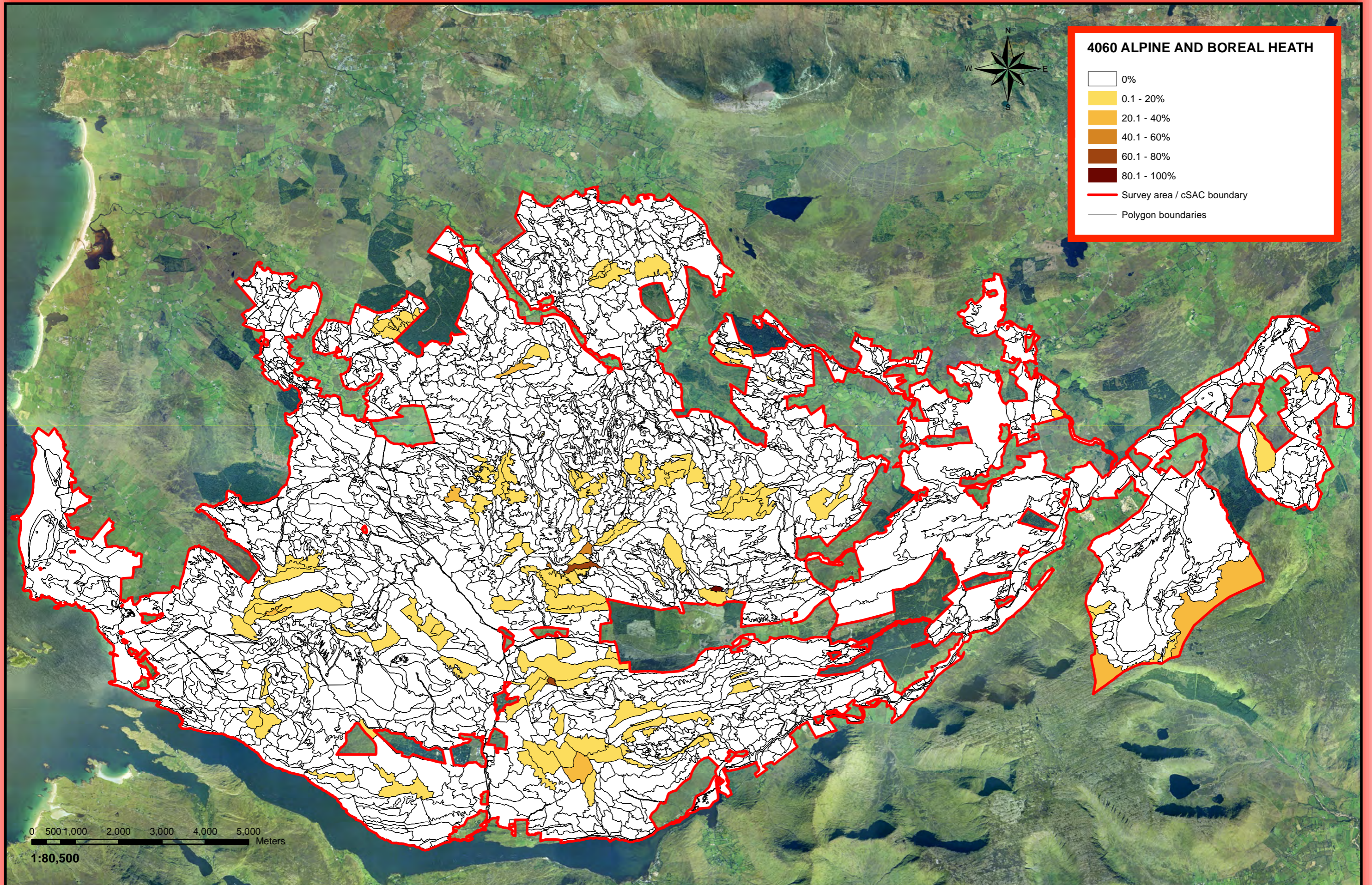


Figure 4d. Cover of 6150 SILICEOUS ALPINE AND BOREAL GRASSLANDS within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

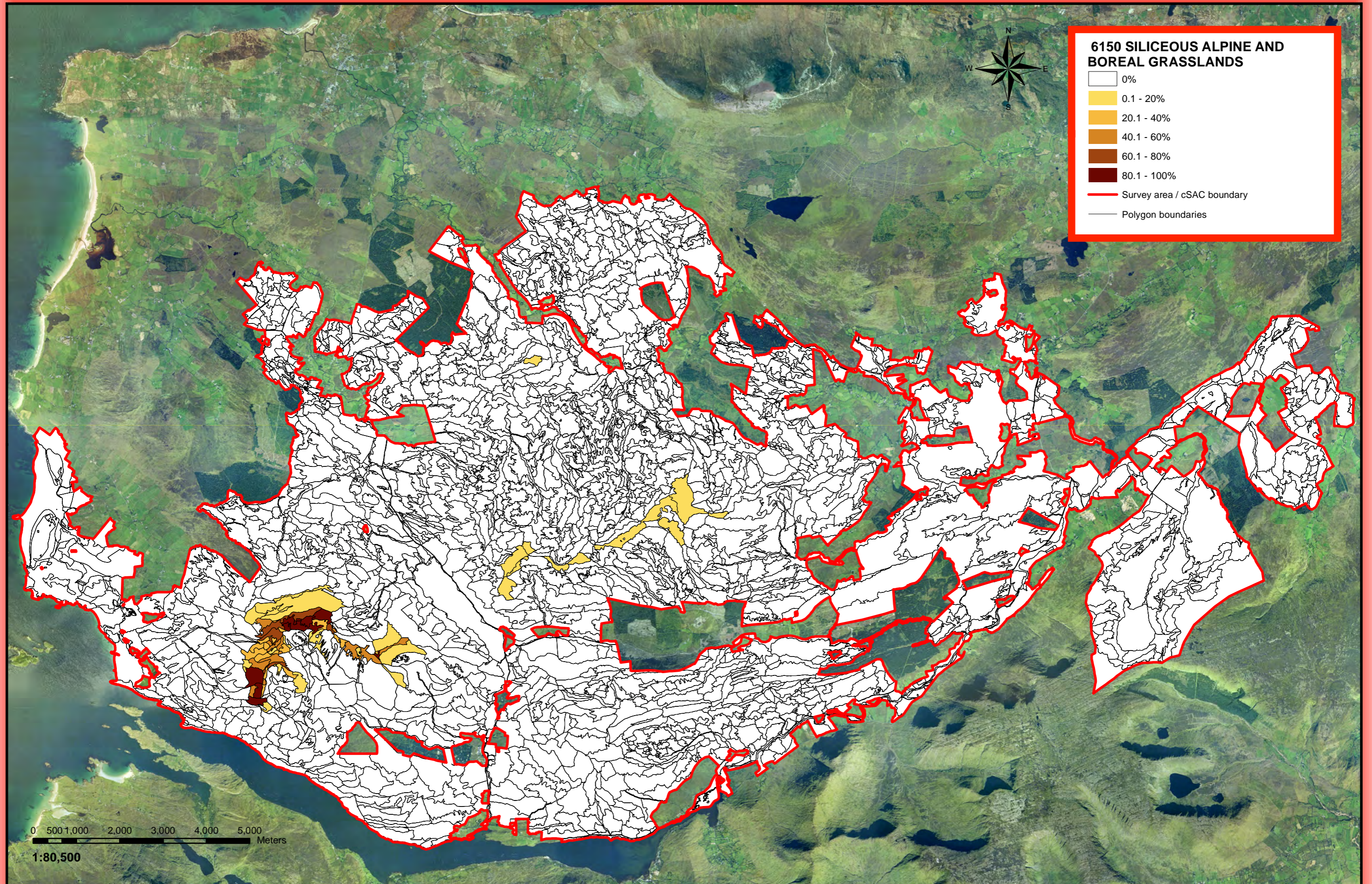


Figure 4e. Cover of *6230 SPECIES-RICH NARDUS GRASSLANDS within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

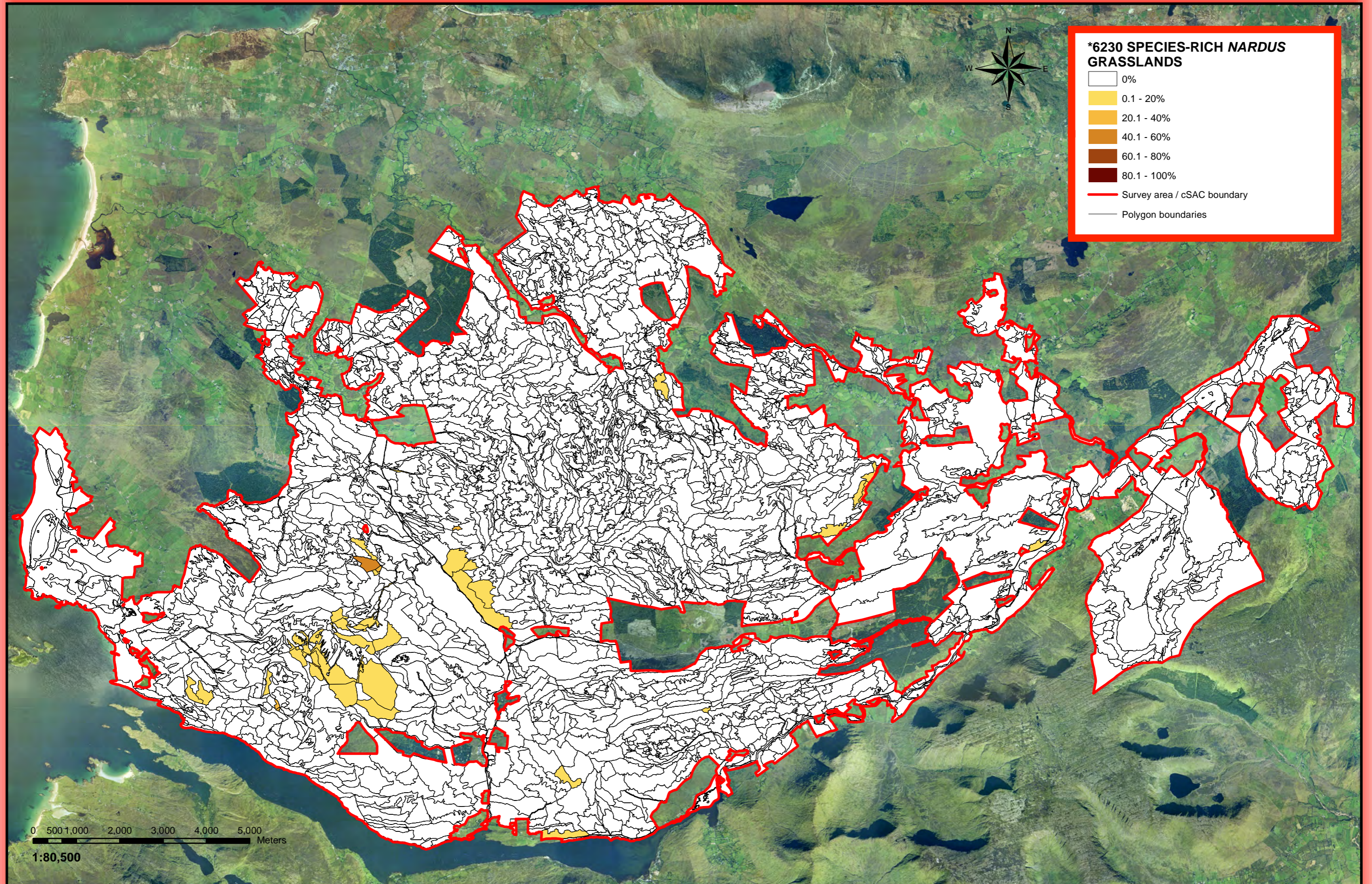


Figure 4f. Cover of 6430 HYDROPHILOUS TALL HERB COMMUNITIES within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

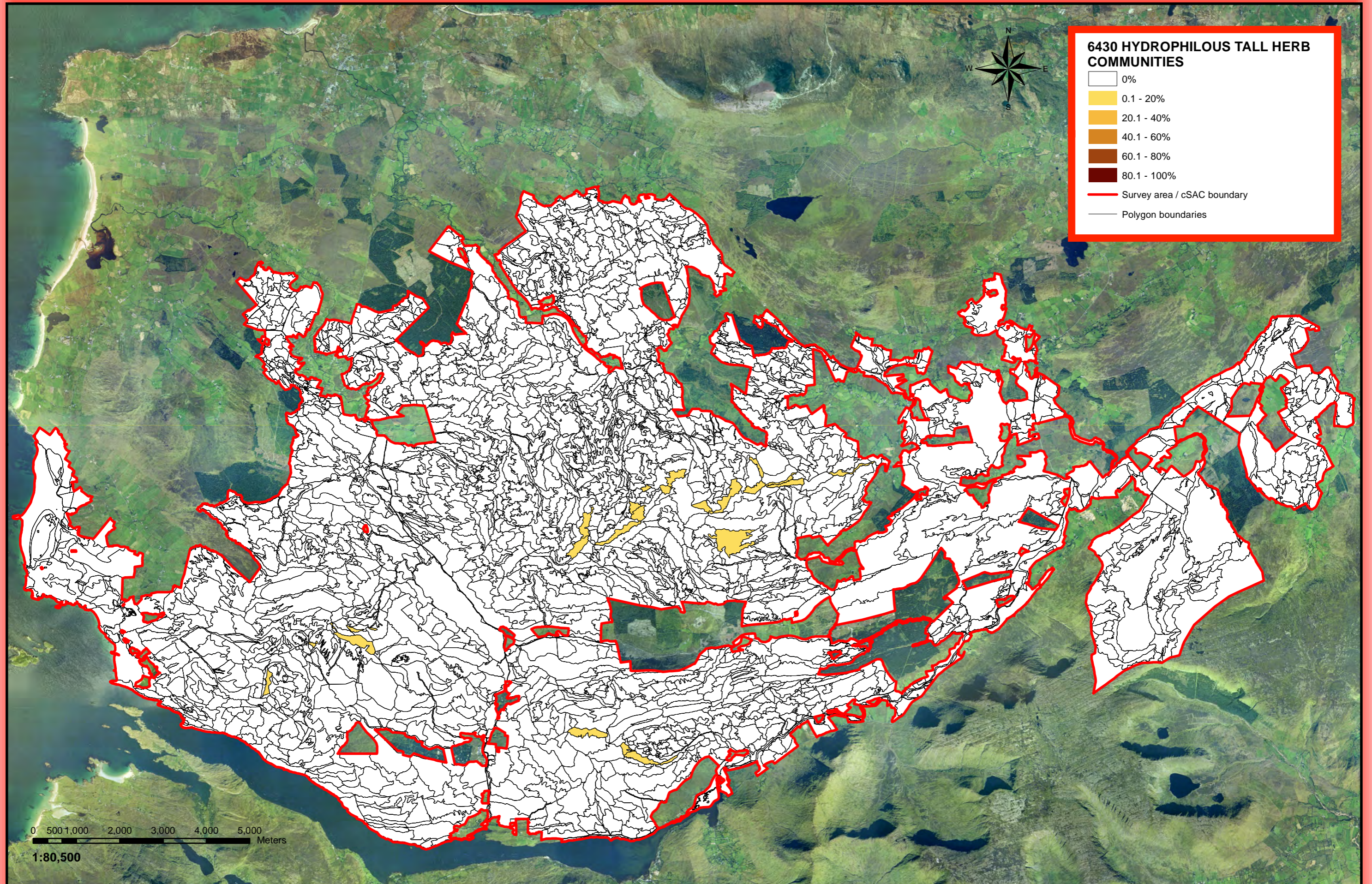


Figure 4g. Cover of *7130 ACTIVE BLANKET BOG within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

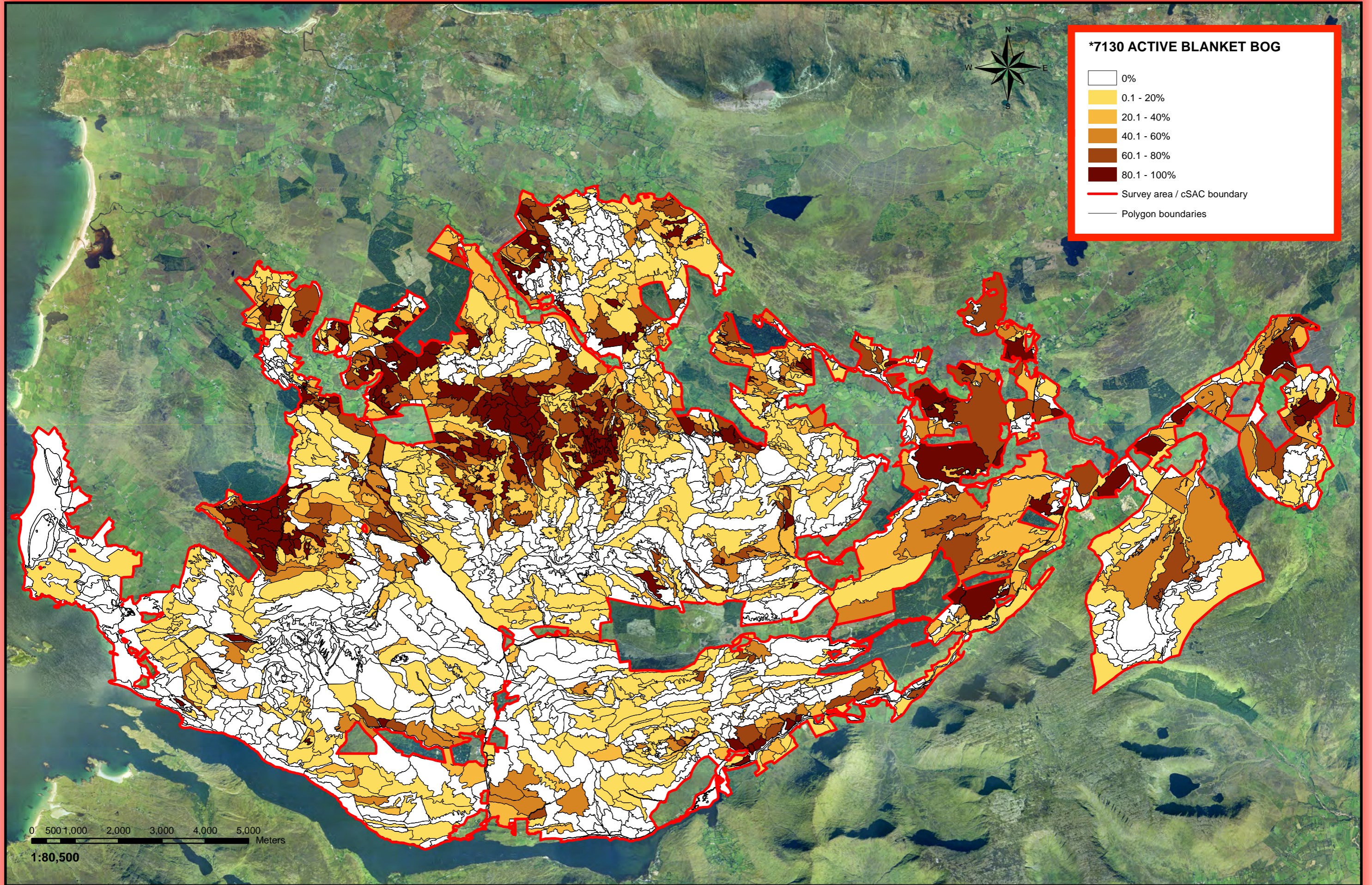


Figure 4h. Cover of 7130 INACTIVE BLANKET BOG within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

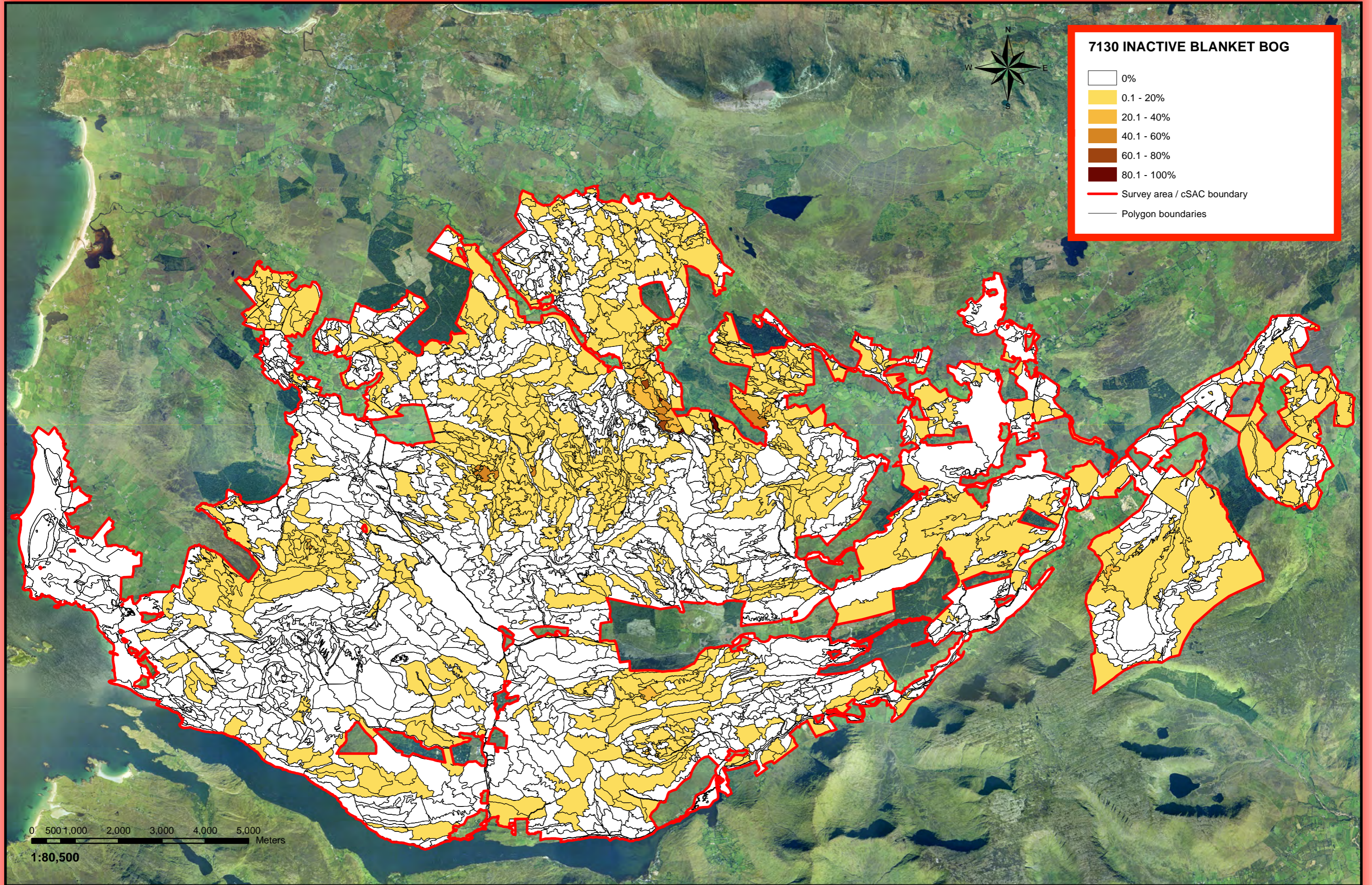


Figure 4i. Cover of 7140 TRANSITION MIRES within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

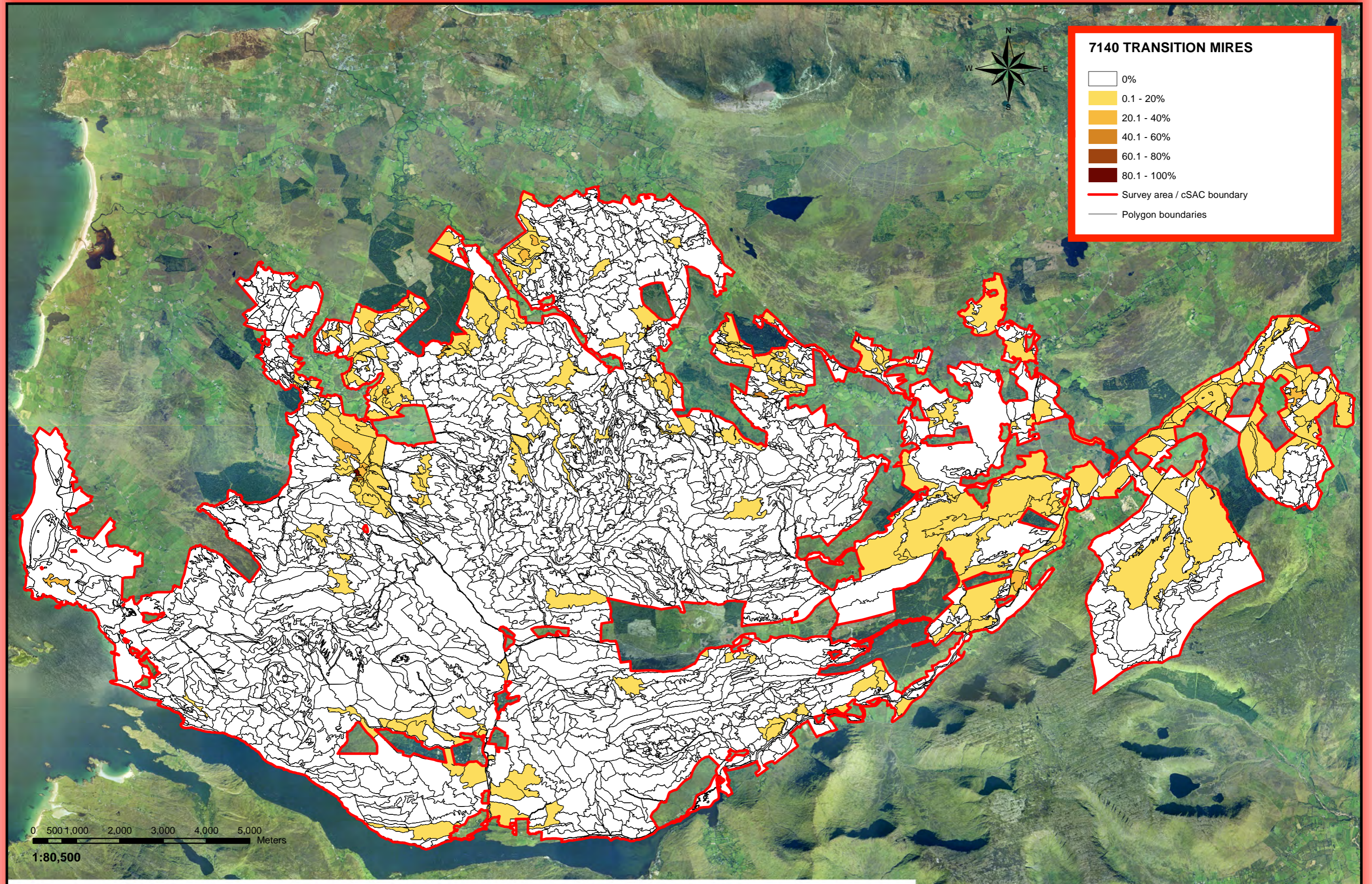


Figure 4j. Cover of 7150 *RHYNCHOSPORION* DEPRESSIONS within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

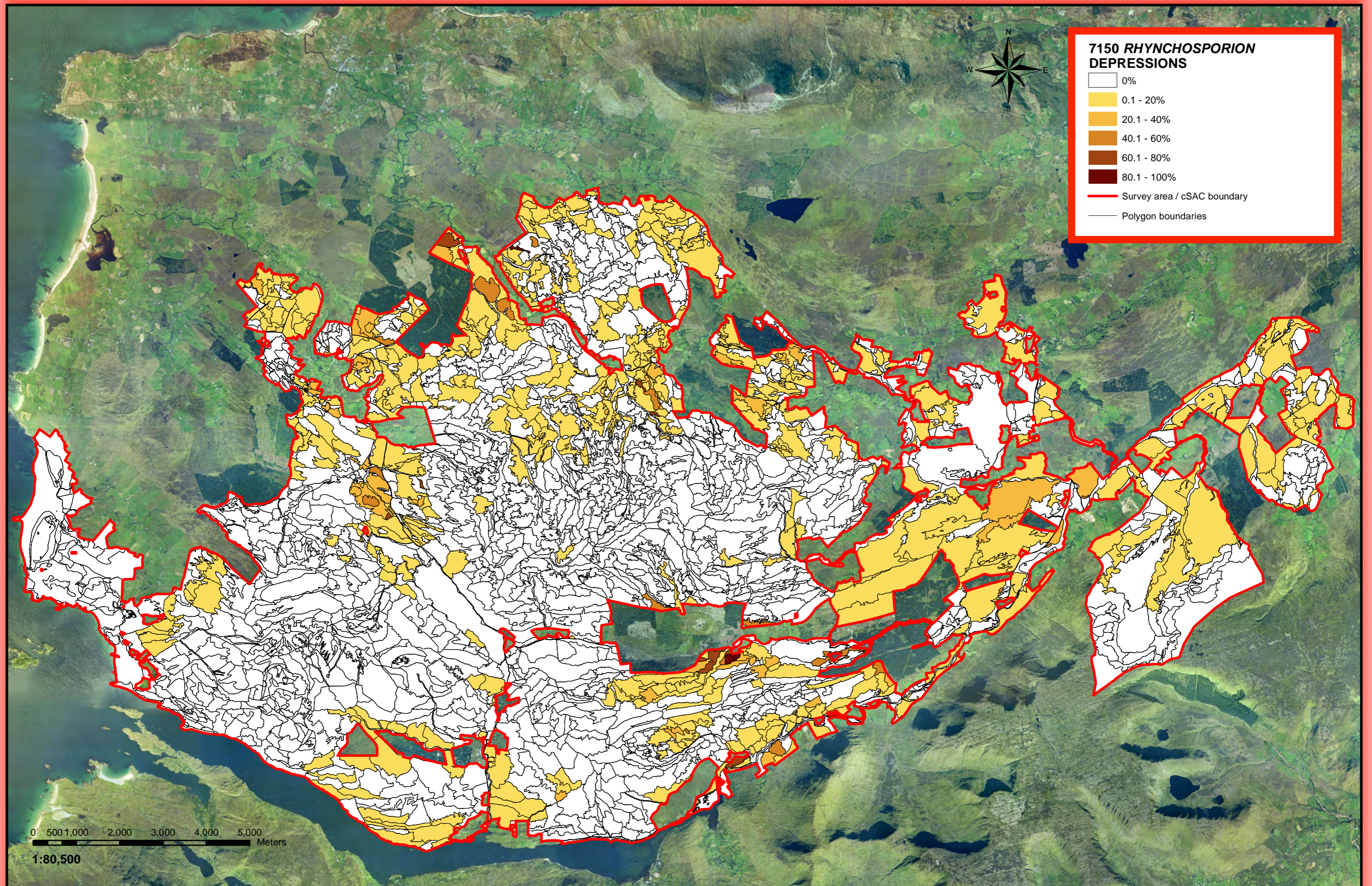


Figure 4k. Cover of 7230 ALKALINE FENS within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

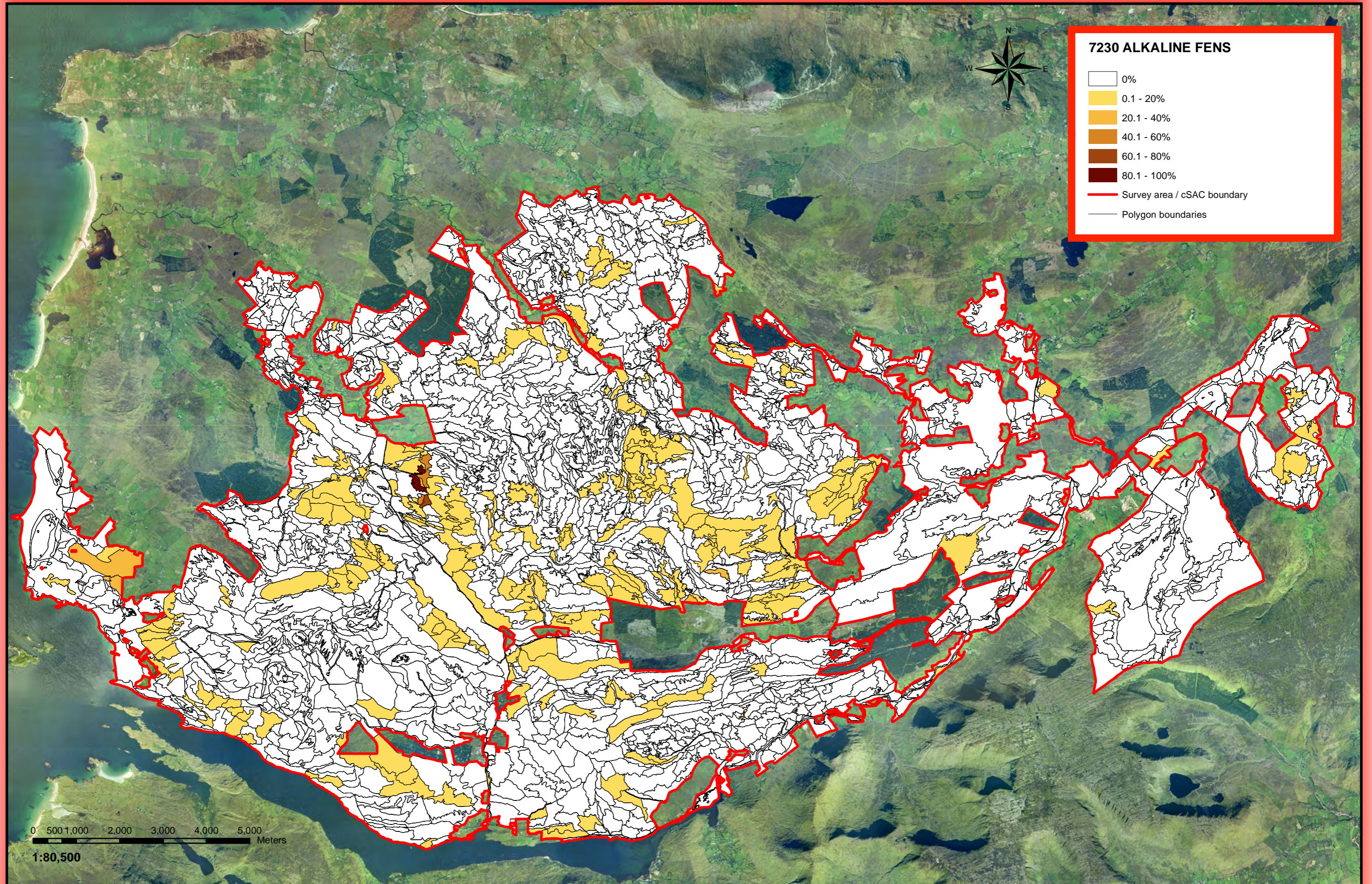


Figure 4I. Cover of 8110 SILICEOUS SCREE within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

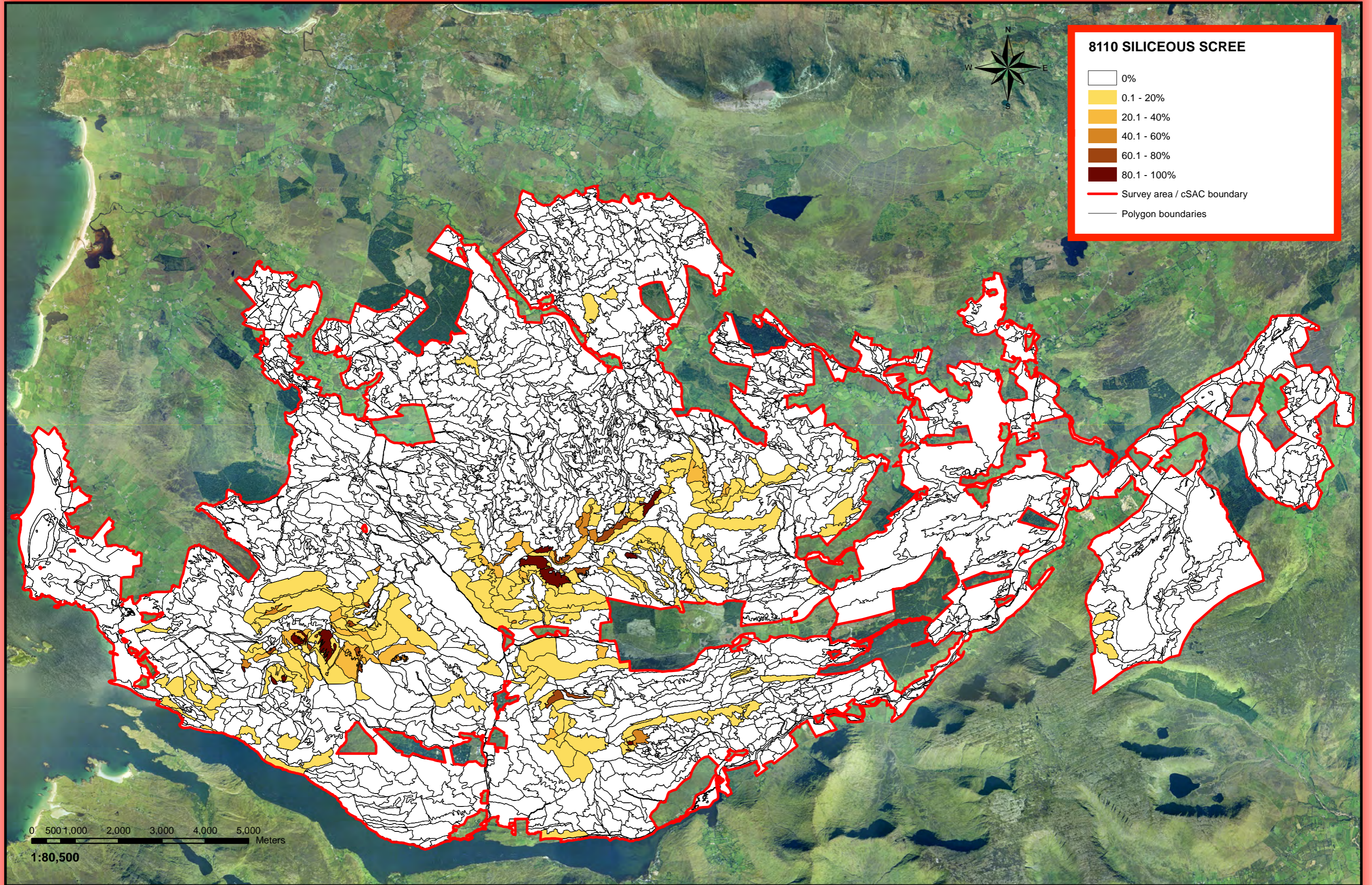


Figure 4m. Cover of 8120 CALCAREOUS SCREE within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

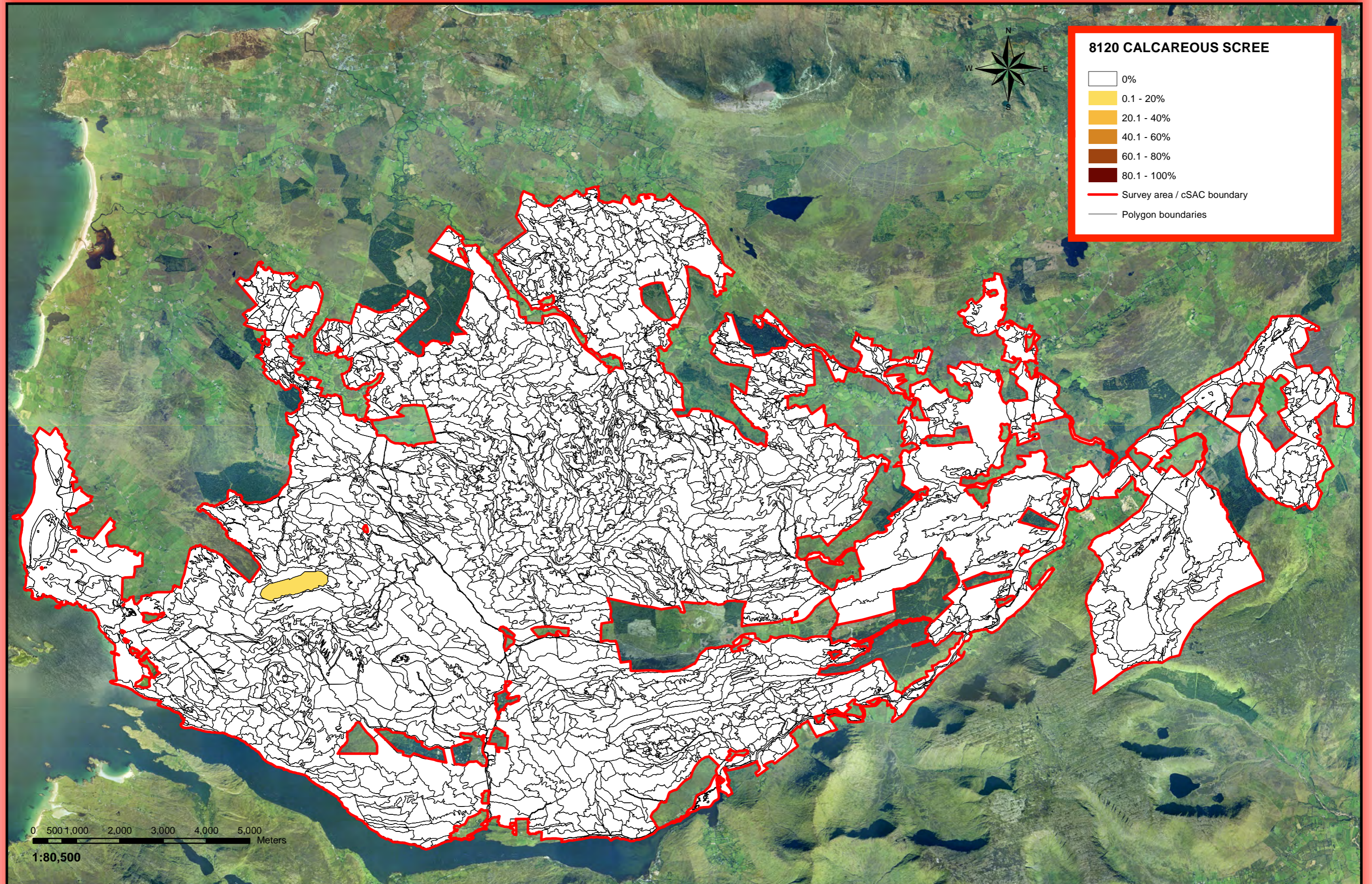


Figure 4n. Cover of 8210 CALCAREOUS ROCKY SLOPES within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

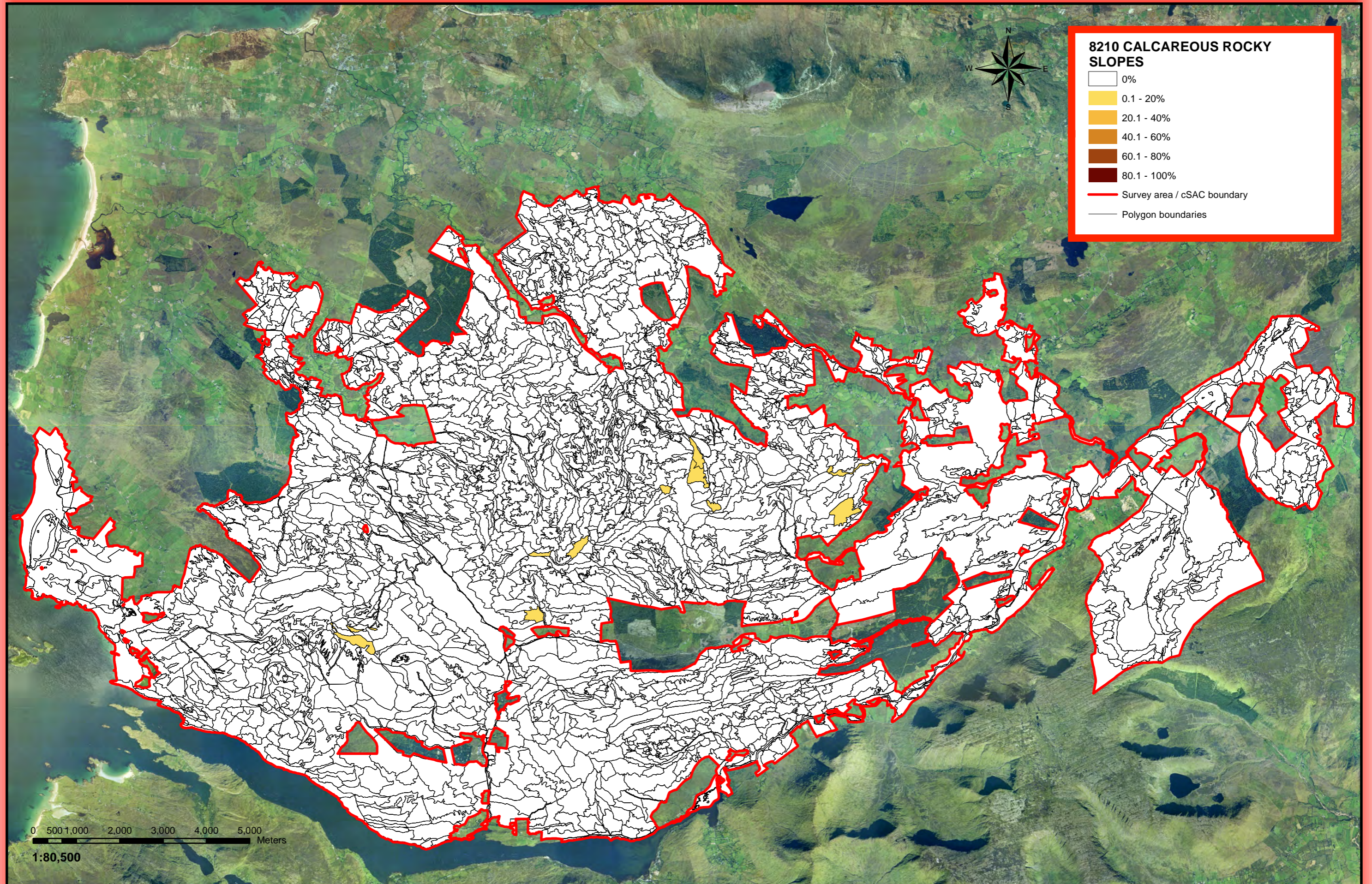


Figure 4o. Cover of 8220 SILICEOUS ROCKY SLOPES within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

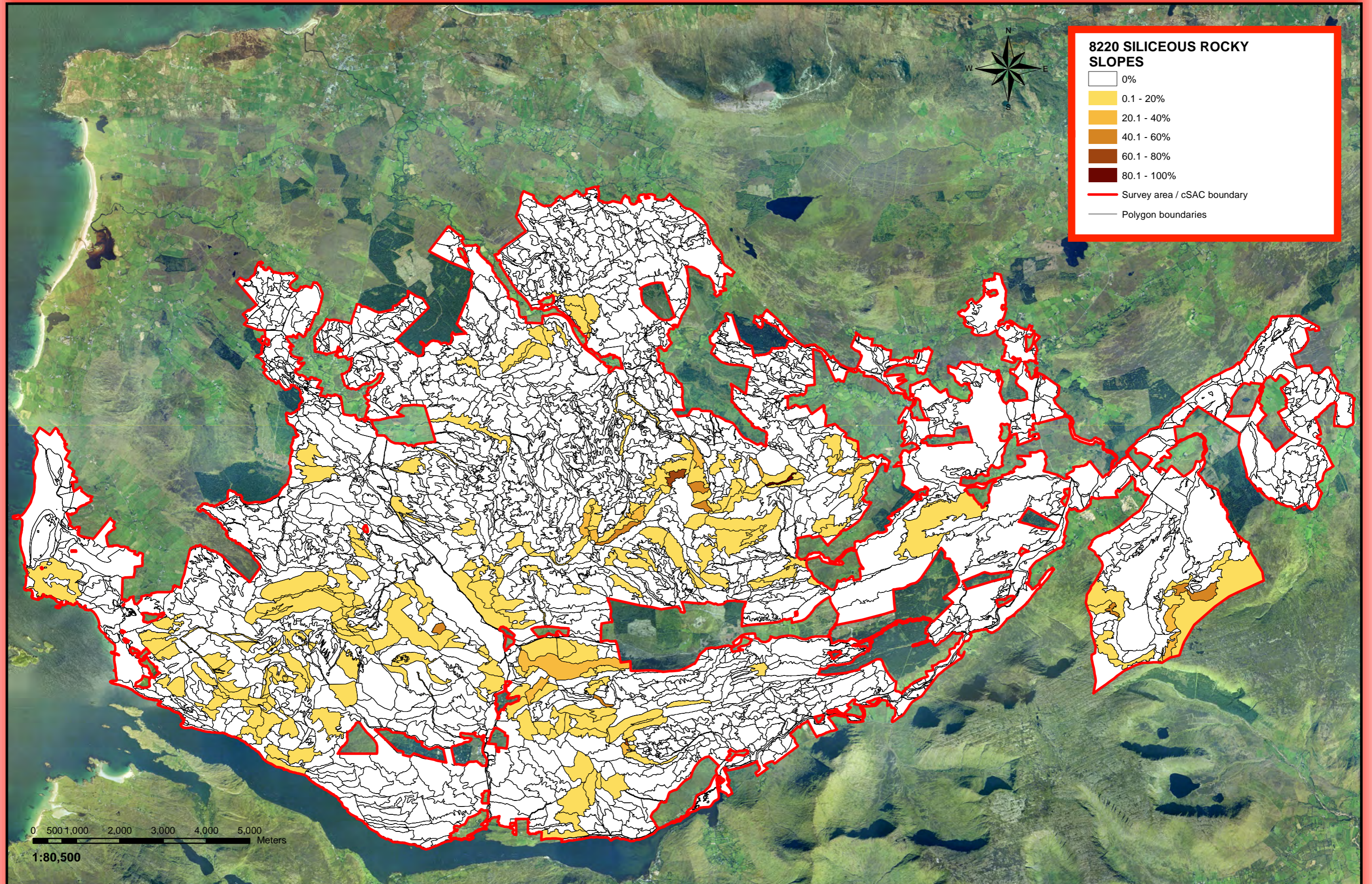


Figure 5a. Location of rare and notable vascular plant records within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

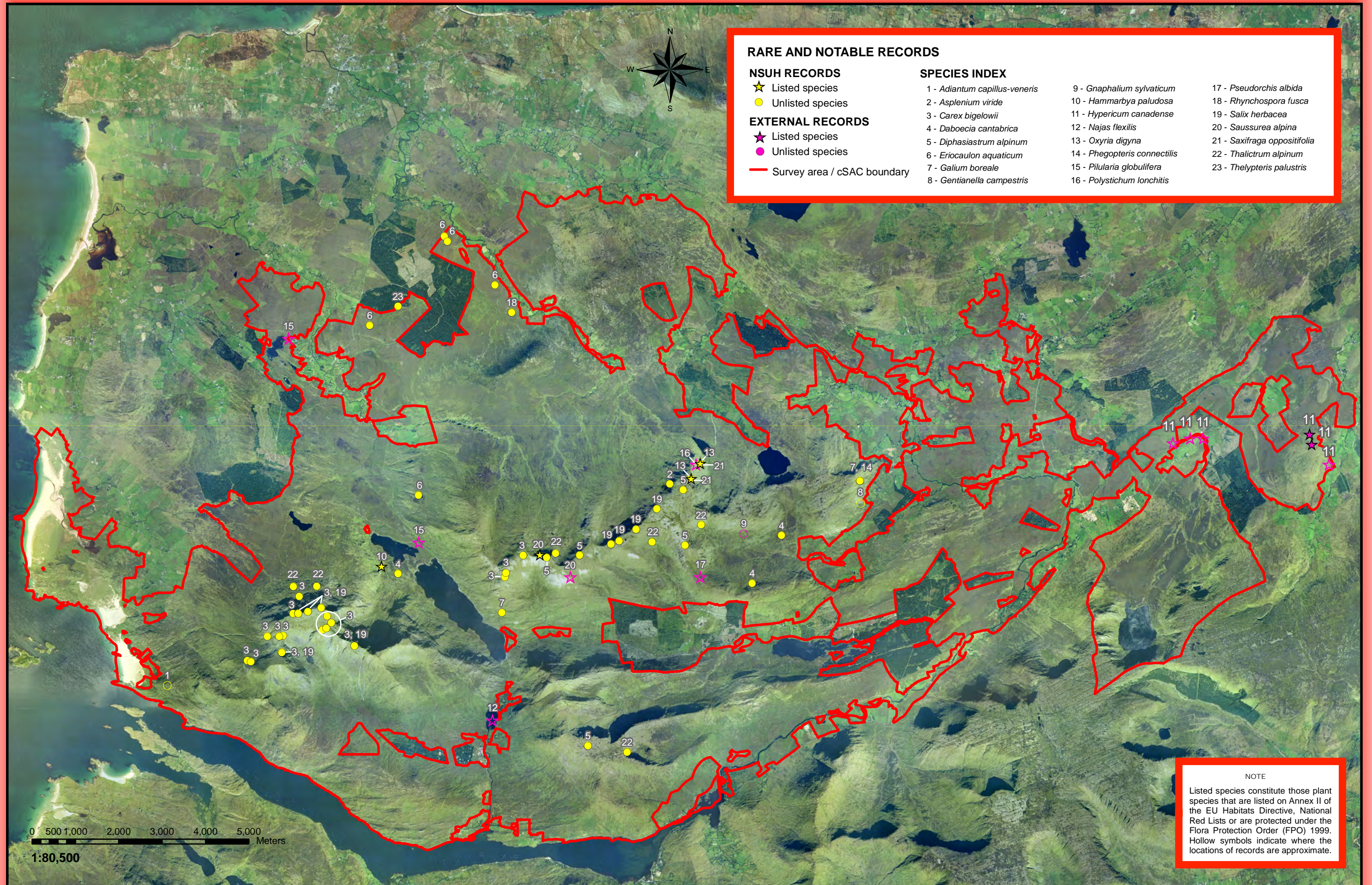


Figure 5b. Location of rare and notable bryophyte and lichen records within and surrounding Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

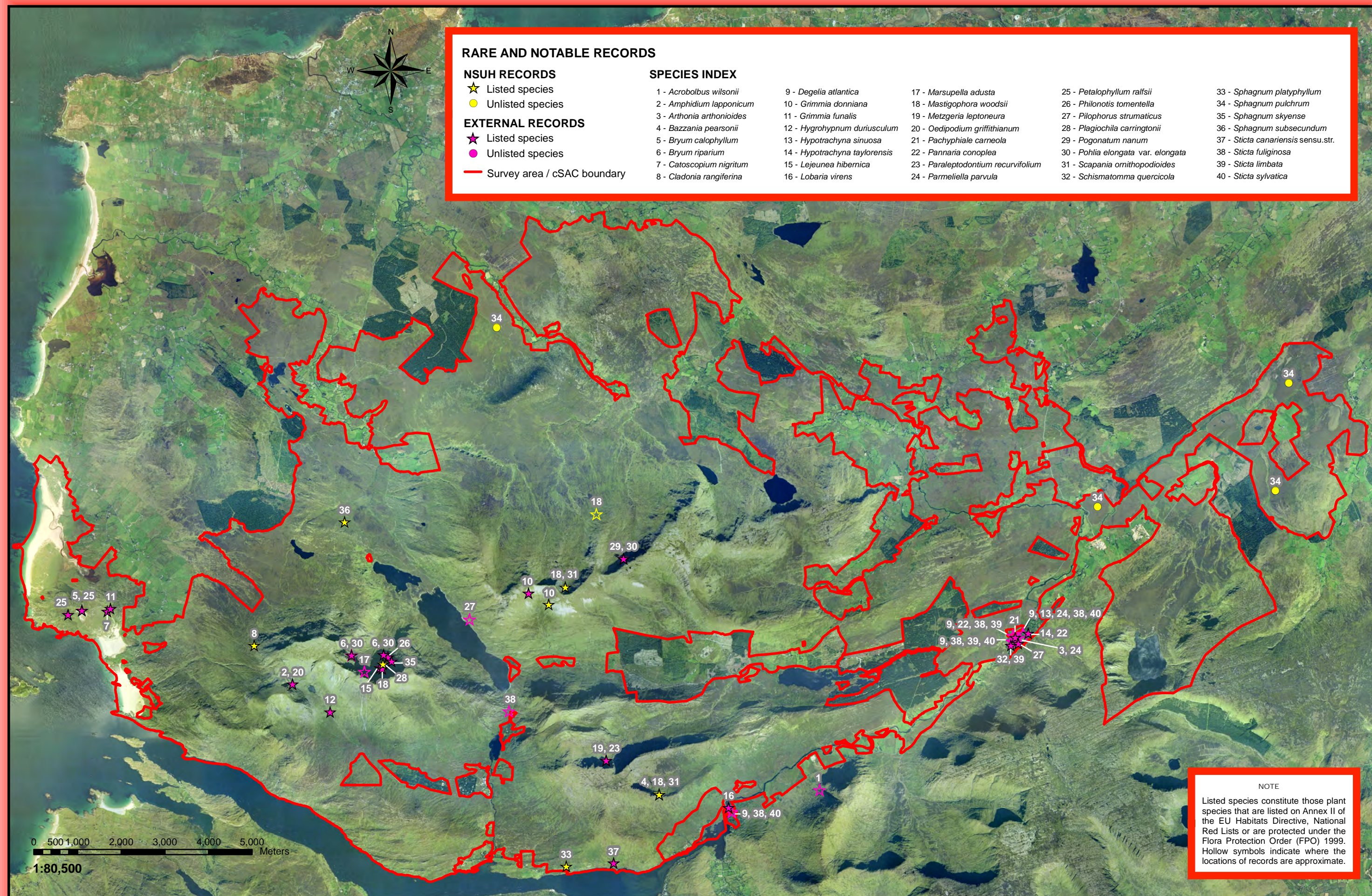


Figure 6. Location and results of conservation assessment monitoring stops and other relevés within Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

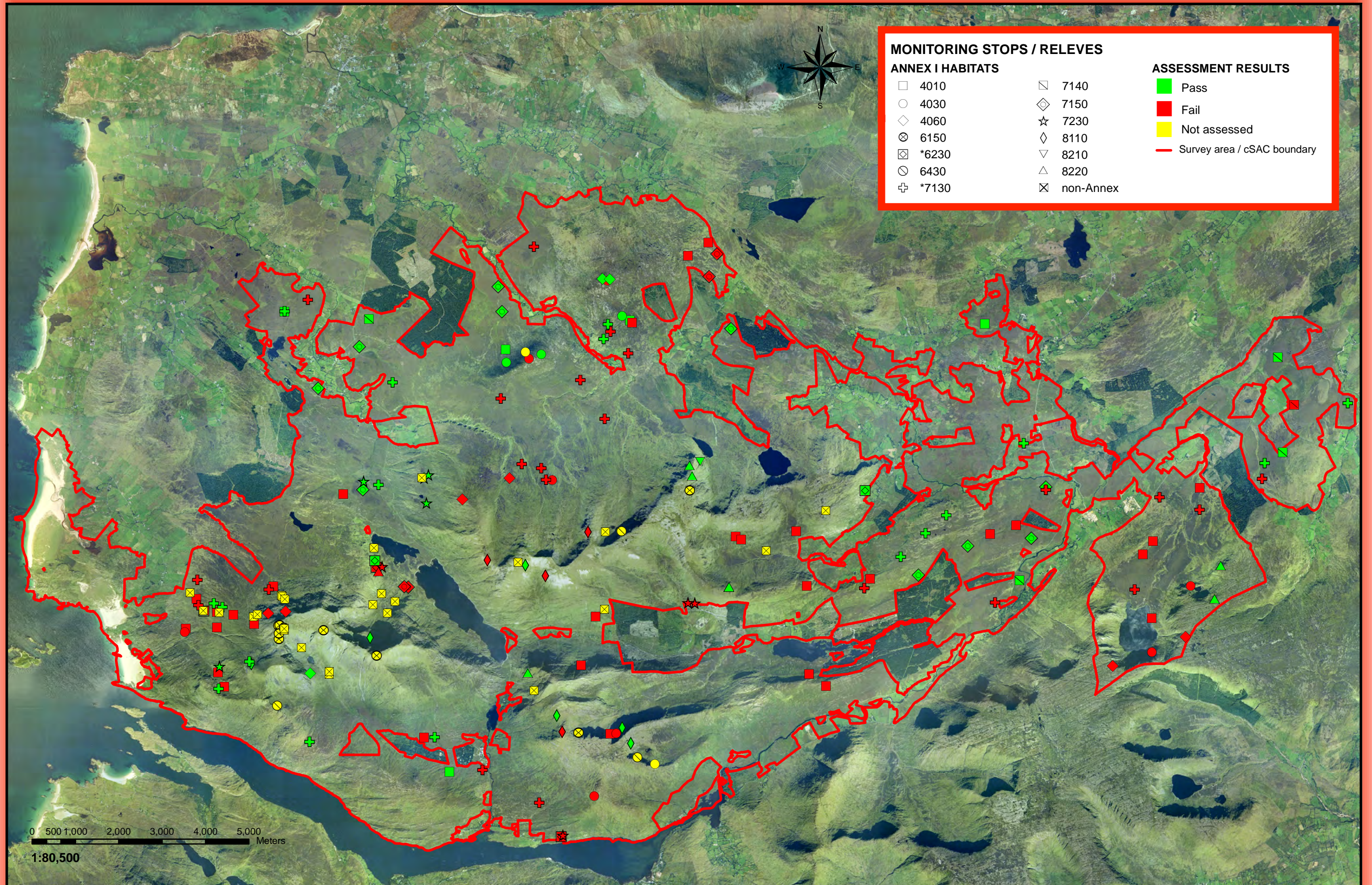


Figure 7a. Commonage Framework Plan damage assessment (1999-2004) within and surrounding Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

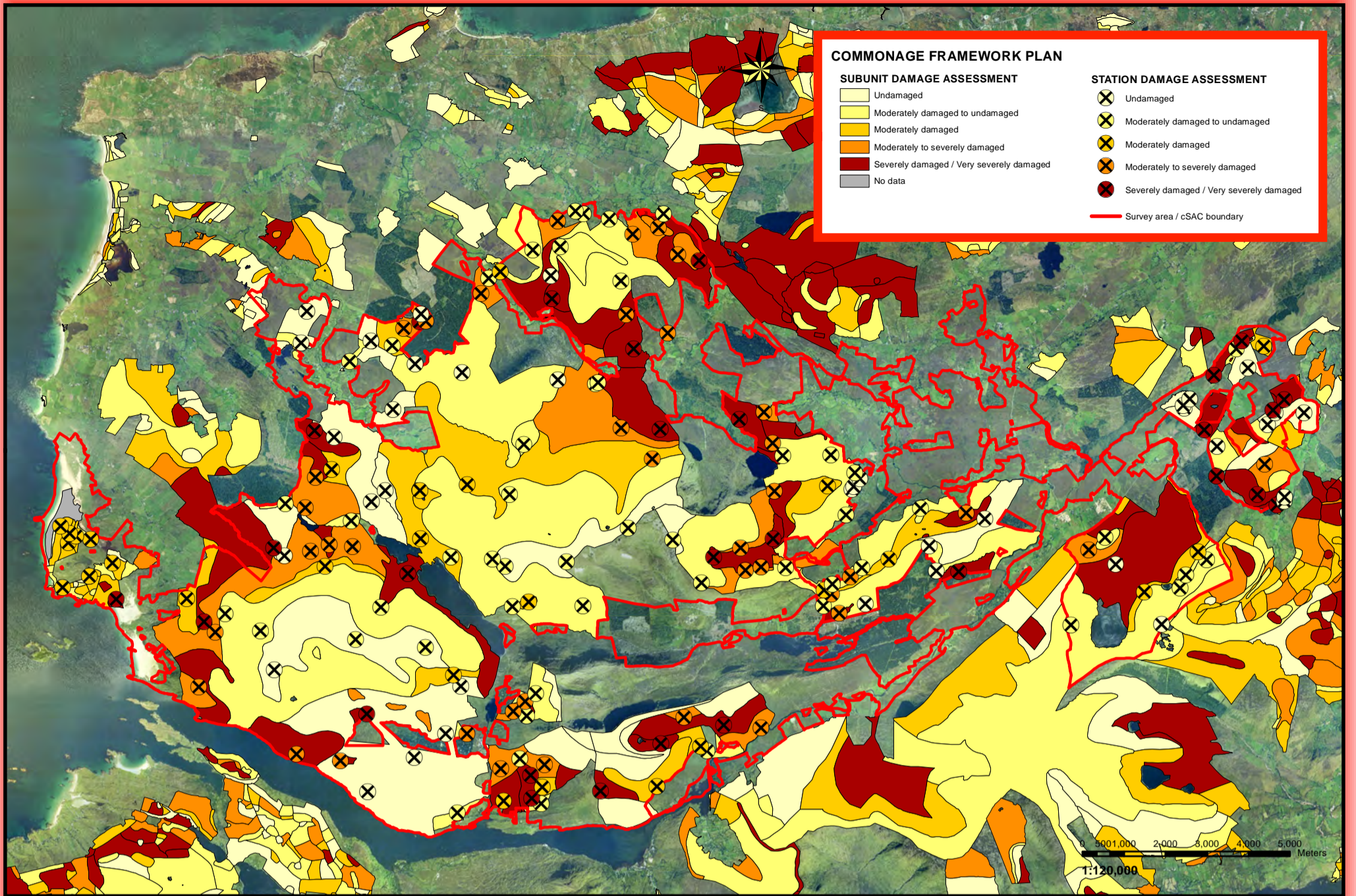


Figure 7b. Commonage Framework Plan damage assessment (2006-2008) within and surrounding Mweelrea / Sheeffry / Erriff Complex cSAC (001932), Co. Mayo

