National Survey of Upland Habitats

(Pilot Survey Phase, 2009-2010)

Site Report No. 3:

Comeragh Mountains cSAC (001952), Co. Waterford

(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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Cover photo: Lough Coumfea after a late snowfall, Fiona Devaney

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Department of Environment, Heritage and Local Government, Ireland

EXECUTIVE SUMMARY

- Comeragh Mountains cSAC (001952), Co. Waterford was surveyed between March and May 2010 as part of the National Survey of Upland Habitats (NSUH). This report supersedes an original site report, produced in 2010 by the same authors, by updating the format and assessment procedures to those finalised during Phase 3 of the NSUH (2012-2013).
- The area of the site is 62.9 km^2. Using GIS and aerial photograph interpretation, the site was divided 1000 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 13 Annex I habitats, 32 Fossitt habitats and 46 provisional upland vegetation communities were recorded. Annex I habitats comprise 59.1% of the site. The Annex I upland habitats present which are primary focus habitats for the NSUH are 4030 Dry heath (33.3%), *7130 Active blanket bog (13.3%), 4010 Wet heath (8.4%), 7130 Inactive blanket bog (1.1%), 8110 Siliceous scree (0.7%), 8220 Siliceous rocky slopes (1.2%) 4060 Alpine and Boreal heath (0.5%), *6230 Species-rich *Nardus* grasslands (0.04%), 7230 Alkaline fens (0.01%) and 8210 Calcareous rocky slopes (0.0003%).
- Rare and notable species recorded during the survey comprise the rare moss species *Andreaea megistospora*, *Cynodontium bruntonii* and *Hedwigia integrifolia.* The finding of the rare clubmoss *Diphasiastrum alpinum* represents a new county record and an important new station for the species.
- The main area of botanical interest within the site is the rocky slopes of Coumshingaun corrie, which supports a rich bryophyte flora.
- The conservation status of the upland Annex I habitats that form the primary focus of the NSUH was assessed. A total of 37 monitoring stops were recorded in eight habitats. The conservation status of all eight habitats was assessed as Unfavourable – Bad.
- The main impacts/activities affecting the site are grazing by sheep, burning and peat erosion.
- It is recommended that:

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

  Whilst burning can be an important tool in heathland management, uncontrolled, high-frequency burning can damage the long-term viability of heaths and bogs. Burning should be regulated at a site level to ensure compliance with a maximum area of 5 ha and maximum frequency of once every 15 years for any area.

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

* Priority Annex I habitat

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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 and notable species data

Microsoft Excel format polygon attributes table

Microsoft Excel format image databank

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 the Comeragh Mountains cSAC (001952) for the NSUH (Pilot Survey Phase, 2009-10). It revises an original report, produced in 2010 by the same authors, by updating the format and assessment procedures to those finalised during Phase 3 of the NSUH.

1.4 Section 2 of this report presents a detailed description of the habitats within the site, which should be read in conjunction with the relevant O.S. Discovery Series map and the figures associated with the report. It also contains summary statistics on the extent of each habitat type recorded and a compilation of rare and notable floral records for the site.

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

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

1.7 NSUH fieldwork was conducted in the Comeragh Mountains cSAC between late March and mid-May 2010. The boundary of the cSAC as used in this survey is the version that was provided by NPWS in September 2010.

Background site information

1.8 The Comeragh Mountains cSAC (Fig. 1) is a medium sized site, being 62.9 km^2 in extent and is located in Co. Waterford between the towns of Clonmel in the north and Dungarvan in the south (O.S. Discovery Series map 75). The central feature is a high plateau of Old Red

Sandstone that rises to a maximum height of 792 m, although the most obvious summit is that of Knockaunapeebra (alt. 726 m) with its twin cairns. The plateau is skirted by several deep corries in many of which are to be found high altitude lakes namely Coumshingaun Lough, Lough Coumfea, Coumalocha, the Sgilloge Loughs, Coumtay, the Coum Iarthar Loughs and Crotty's Lough. On the south-eastern side of the site is the valley of Coummahon where the River Mahon spills down from the high plateau at Mahon Falls. To the southwest of the plateau are the peaks of Seefin (alt. 726 m) and Farbreaga (alt. 617 m), connected by a narrow ridge; this area is sometimes referred to as the Monavullagh Mountains. In the north of the site is the broad valley of The Gap that separates the central plateau from the ridge of Knockanaffrin where Coumduala Lough is to be found. The actual peak of Knockanaffrin (alt. 755 m) lies just outside the cSAC and several other peaks in the mountain range are not included in the site; these are Knocksheegowna and Lachtnafrankee in the north, Crohaun in the south and Milk Hill in the west.

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

Table 1: Qualifying interests of the Comeragh Mountains cSAC. Rep. = Representativity, Cons. = Conservation status, Surf. = Relative Surface, Glob. = Global Assessment. Data retrieved from http://natura2000.eea.europa.eu 20th January 2011.

Annex I Code	Habitat	Area (%)	Rep.	Surf.	Cons.	Glob.
3130	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	1	B	B	A	B
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	1	C	C	A	C
4010	Northern Atlantic wet heaths with *Erica tetralix*	21	C	B	C	C
4030	European dry heaths	24	B	B	C	B
4060	Alpine and Boreal heaths	3	B	C	A	B
8210	Calcareous rocky slopes with chasmophytic vegetation	1	C	C	A	C
8220	Siliceous rocky slopes with chasmophytic vegetation	4	C	B	A	C

2. FIELD SURVEY

Description of habitats

Central plateau

2.1 The central plateau is dominated by large expanses of relatively dry **PB2 Upland blanket bog** composed chiefly of *Calluna vulgaris* and *Eriophorum vaginatum* with little *Sphagnum* cover. In some areas the bog has eroded away producing complex mosaics of peat haggs, bare peat (**PB5 Eroding blanket bog**), gravel (**ED1 Exposed sand, gravel and till**) and loose rock (**ER3 Siliceous scree and loose rock**). These mosaics also contain extensive areas of eroded peat that have been recolonised by *Eriophorum angustifolium* (classified as **PB2 Upland blanket bog**). Where the bog has eroded down to gravel and loose rock, a species-poor variant of **HH1 Dry siliceous heath** has established in many areas typically dominated by *C. vulgaris* and *Juncus squarrosus*.

2.2 Above the corries of Coumfea and Coum Iarthar, a type of **HH4 Montane heath** has developed on the gravel, formed of *Calluna vulgaris*, *Juncus squarrosus* and *Racomitrium lanuginosum*. *Huperzia selago* is relatively frequent in this montane heath and *Diphasiastrum alpinum* was also recorded from this habitat (Roche, 2011; Roche & Perrin, 2010).

2.3 On steeper ground on the plateau, **HH1 Dry siliceous heath** is found and numerous streams (**FW1 Eroding/upland rivers**) are to be found, typically forming narrow rocky gullies through the bog.

The Gap and Knockanaffrin

2.4 The ridge of Knockanaffrin supports **HH1 Dry siliceous heath** typically dominated by *Calluna vulgaris* with frequent *Erica cinerea* on the steeper slopes, giving way to **GS3 Dry-humid acid grassland** and **HD1 Dense bracken** lower down. Substantial areas of heath have been burned in this section of the site. On the lower eastern slopes are areas dominated by tussocky *Molinia caerulea* flushes (**PF2 Poor fen and flush**).

2.5 The broad valley floor west of The Gap is dominated by **HH3 Wet heath** with *Trichophorum germanicum*, *Eriophorum angustifolium*, *Molinia caerulea* and *Calluna vulgaris* and **PB2 Upland blanket bog.** The bog here is rather degraded, being rushy in nature and there are extensive areas of poor flush (**PF2 Poor fen and flush**) to the southwest.

Western side of the Monavullagh Mountains

2.6 The area around Lyremountain in the north of this section is dominated by **GS3 Dry-humid acid grassland** composed of *Nardus stricta* and *Agrostis capillaris*. Further south, below the peak of Seefin, this area is covered by **HH1 Dry siliceous heath,** with **HH3 Wet heath** characterised by *Trichophorum germanicum* occurring along the ridge.

2.7 **PB2 Upland blanket bog** occurs near the peak of Seefin. Between Seefin and Farbreaga, the dry heath gives way on the slopes to expanses of **GS3 Dry-humid acid grassland** with more **HH3**

Wet heath, this time dominated by either *Trichophorum germanicum* or *Molinia caerulea*. In the lower-lying southwest corner of the site are expanses of **HD1 Dense bracken**.

Eastern side of the Monavullagh Mountains

2.8 Most of this section is again dominated by **HH1 Dry siliceous heath** formed of *Calluna vulgaris* with expanses of **GS3 Dry-humid acid grassland**. **PB2 Upland blanket bog**, composed of *Calluna vulgaris* and *Eriophorum vaginatum*, occurs on the summit of Farbreaga.

2.9 On the lower slopes **HD1 Dense bracken** becomes prevalent especially in the area below Coumtay, where it occurs with large tracts of a *Trichophorum germanicum* variant of **HH3 Wet heath**.

Coummahon and the eastern slopes

2.10 There are significant areas of **HD1 Dense bracken** on the lower slopes along the eastern boundary of the site in this section. Above these are a series of high escarpments chiefly comprising **ER1 Exposed siliceous rock**.

2.11 The higher slopes are again covered in **HH1 Dry siliceous heath** and there has been some heavy burning of this habitat here. In Coummahon, there are large areas of flush (**PF2 Poor fen and flush)** largely dominated by *Juncus effusus* with *Sphagnum palustre* or *Polytrichum commune* and **HH3 Wet heath** with *Trichophorum germanicum.*

Corries

2.12 Several of the Comeragh Mountains' well-developed corries contain **FL2 Acid oligotrophic lakes** such as Lough Coumshingaun, the Sgilloge Loughs, Lough Coumfea, Coumalocha, Coumtay, Coumduala Lough, the Coum Iarthar Loughs and Crotty's Lough.

2.13 The remainder of the corrie floors are typically covered by **HH1 Dry siliceous heath**, which is dominated by *Calluna vulgaris* with frequent *Erica cinerea* or *Vaccinium myrtillus*. The corrie walls are partly composed of **ER1 Exposed siliceous rock,** where *Saxifraga spathularis* is locally frequent, with **ER3 Siliceous scree and loose rock** accumulating below, as seen at Coumshingaun and Crotty's Rock.

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

Habitat statistics

2.15 The NSUH maps habitats and vegetation communities on a polygon basis. Following aerial photograph interpretation, a survey site is divided into numerous polygons based on areas of homogeneous patternation and topography. The majority of these polygons represent mosaics of habitats rather than single habitats. Each polygon is surveyed on the ground and the habitats and vegetation communities present in each are listed and their percentage cover estimated.

For further details see Perrin *et al.* (2009; 2014). The field maps for this site, which present the amended and numbered polygons, accompany this report (Field maps 1-12).

Table 2: Extent of Fossitt habitats within the Comeragh Mountains cSAC

Fossitt Code	Habitat	Total Area (ha)	% of Site
BL1	Stone walls and other stonework	1.2	0.02
BL3	Buildings and artificial surfaces	7.4	0.12
ED1	Exposed sand, gravel or till	50.2	0.80
ED2	Spoil and bare ground	12.4	0.20
ED3	Recolonising bare ground	10.7	0.17
ER1	Exposed siliceous rock	118.1	1.88
ER2	Exposed calcareous rock	0.02	0.0003
ER3	Siliceous scree and loose rock	342.1	5.44
FL1	Dystrophic lakes	1.2	0.02
FL2	Acid oligotrophic lakes	32.9	0.52
FL4	Mesotrophic lakes	0.3	0.01
FP2	Non-calcareous springs	9.2	0.15
FS1	Reed and large sedge swamps	2.1	0.03
FW1	Eroding/upland rivers	34.2	0.54
GA1	Improved agricultural grassland	1.0	0.02
GS3	Dry-humid acid grassland	1041.6	16.55
GS4	Wet grassland	87.5	1.39
HD1	Dense bracken	530.4	8.43
HH1	Dry siliceous heath	2099.1	33.36
HH3	Wet heath	527.9	8.39
HH4	Montane heath	34.2	0.54
PB2	Upland blanket bog	907.2	14.42
PB5	Eroding blanket bog	42.6	0.68
PF1	Rich fen and flush	14.7	0.23
PF2	Poor fen and flush	322.2	5.12
WD4	Conifer plantation	6.2	0.10
WD5	Scattered trees and parkland	2.3	0.04
WL2	Treelines	0.1	0.001
WN1	Oak-birch-holly woodland	1.2	0.02
WN5	Riparian woodland	0.1	0.001
WN6	Wet willow-alder-ash woodland	0.3	0.004
WS1	Scrub	52.6	0.84
	Total Site Area	6293.2	

2.16 The most abundant habitat within a polygon is termed the primary habitat. The primary Fossitt habitat types for Comeragh Mountains 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.

2.17 A total of 32 Fossitt (2000) habitats were recorded within the Comeragh Mountains cSAC and details of their coverage are presented in Table 2. **Dry heath (HH1)** was the most extensive, covering 33.4% of the site, followed by **Upland blanket bog (PB2)**, **Dry-humid acid grassland (GS3)** and **Dense bracken (HD1)**.

2.18 A total of 13 Annex I habitats were recorded within the Comeragh Mountains cSAC, covering 59.1% of the site (Table 3). The dominant Annex I habitat was **4030 Dry heath**, which covered 33.3% of the site. The next most extensive Annex I habitat was ***7130 Active blanket bog**, followed by **4010 Wet heath**. Note that significant areas of non-Annex habitats may occur within an SAC. These may occur in intimate mosaic with Annex I habitats. They may have an important protective or support function in relation to associated Annex habitats, be the target of restoration objectives or improve the coherence and connectivity between fragmented areas of Annex I habitat.

2.19 A total of 46 provisional upland vegetation communities and sub-communities (Perrin *et al.*, 2014) were recorded within Comeragh Mountains cSAC. Details of their coverage are presented in Table 4.

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

Table 3: Extent of Annex I habitats within the Comeragh Mountains cSAC. Asterisk denotes priority habitat.

Annex I Code	Habitat	Total Area (ha)	% of Site
3130	Upland oligotrophic lakes	32.9	0.52
3160	Dystrophic lakes	0.4	0.01
3260	Floating river vegetation	4.7	0.07
4010	Wet heath	527.9	8.39
4030	Dry heath	2094.6	33.28
4060	Alpine and Boreal heath	32.3	0.51
*6230	Species-rich *Nardus* grasslands	2.8	0.04
*7130	Active blanket bog	838.0	13.32
7130	Inactive blanket bog	69.2	1.10
7230	Alkaline fens	0.4	0.01
8110	Siliceous scree	44.1	0.70
8210	Calcareous rocky slopes	0.02	0.0003
8220	Siliceous rocky slopes	72.3	1.15
-	non-Annex I habitats	2573.7	40.90
	Total site area	6293.2	
	Total area of Annex I habitats	3719.5	59.10

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

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
SW1	*Potamogeton polygonifolius* soakway	0.5	0.01	100.0
SPG1	*Philonotis fontana - Saxifraga stellaris* spring			
SPG1a	typical sub-community	3.9	0.06	42.7
SPG1b	species-poor *Sphagnum denticulatum* sub-community	5.3	0.08	57.3
PFLU1	*Carex nigra/echinata – Sphagnum denticulatum* flush	0.1	0.001	0.02
PFLU2	*Juncus effusus - Sphagnum cuspidatum/palustre* flush	296.2	4.71	72.6
PFLU3	*Juncus acutiflorus/effusus - Calliergonella cuspidata* flush	86.4	1.37	21.2
PFLU4	*Molinia caerulea - Sphagnum palustre* flush			
PFLU4a	typical sub-community	25.5	0.41	6.2
RFLU1	*Carex viridula oedocarpa - Pinguicula vulgaris - Juncus bulbosus* flush			
RFLU1a	brown moss sub-community	0.4	0.01	3.0
RFLU1b	species-poor sub-community	14.3	0.23	97.1
UG1	*Agrostis capillaris - Festuca ovina* upland grassland			
UG1a	typical sub-community	607.1	9.65	58.3
UG1b	*Sphagnum* spp. sub-community	15.0	0.24	1.4
UG1c	species-rich calcareous sub-community	2.2	0.04	0.2
UG1d	*Juncus squarrosus* sub-community	111.8	1.78	10.7
UG2	*Nardus stricta - Galium saxatile* upland grassland			
UG2a	typical sub-community	160.6	2.55	15.4
UG2b	*Sphagnum* spp. sub-community	28.6	0.45	2.7
UG2c	species-rich sub-community	0.5	0.01	0.1
UG2d	*Juncus squarrosus* sub-community	115.8	1.84	11.1
BK1	*Pteridium aquilinum* community	530.4	8.43	100.0
DH1	*Ulex gallii – Erica cinerea* dry heath	9.9	0.16	0.5
DH3	*Calluna vulgaris - Erica cinerea* dry heath	1676.1	26.63	80.1
DH4	*Calluna vulgaris - Sphagnum capillifolium* dry/damp heath	28.5	0.45	1.4
DH6	*Calluna vulgaris -Vaccinium myrtillus* dry heath	377.8	6.00	18.1
WH2	*Trichophorum germanicum – Cladonia* spp. *– Racomitrium lanuginosum* wet heath	6.0	0.10	1.1
WH3	*Calluna vulgaris - Molinia caerulea - Sphagnum capillifolium* wet/damp heath	104.2	1.66	19.8
WH4	*Trichophorum germanicum- Eriophorum angustifolium* wet heath			
WH4a	typical sub-community	162.7	2.59	30.8
WH4b	*Calluna vulgaris* sub-community	159.8	2.54	30.3
WH4c	*Juncus squarrosus* sub-community	91.1	1.45	17.3
WH5	*Trichophorum germanicum - Nardus stricta - Racomitrium lanuginosum* montane wet heath	4.1	0.07	0.8
MH1	*Calluna vulgaris - Racomitrium lanuginosum* montane heath			
MH1a	typical sub-community	14.1	0.23	41.3
MH1b	*Juncus squarrosus* sub-community	13.4	0.21	39.1
MH3	*Vaccinium myrtillus – Rhytidiadelphus loreus – Anthoxanthum odoratum* montane heath	4.8	0.08	13.9
MH5	*Nardus stricta - Carex binervis - Racomitrium lanuginosum* montane grass-heath	1.9	0.03	5.6

Table 4: continued.

Code	Provisional communities and sub-communities	Area (ha)	% of site	% of habitat
BB3	*Eriophorum vaginatum – Sphagnum papillosum* bog	7.3	0.12	0.9
BB4	*Trichophorum germanicum – Eriophorum angustifolium* bog	90.8	1.44	10.9
BB5	*Calluna vulgaris - Eriophorum* spp. bog			
BB5a	typical sub-community	643.7	10.23	77.2
BB5b	*Juncus squarrosus* sub-community	90.8	1.44	10.9
BB6	*Eriophorum angustifolium – Juncus squarrosus* bog			
BB6a	typical sub-community	1.5	0.02	0.2
HW1	*Sphagnum denticulatum/cuspidatum* hollow			
HW1i	upland variant	4.0	0.06	5.5
HW2	*Eriophorum angustifolium - Sphagnum fallax* hollow			
HW2i	upland variant	69.2	1.10	94.5
DP1	*Campylopus introflexus - Polytrichum* spp. degraded peat community	9.3	0.15	100.0
TH1	*Luzula sylvatica - Vaccinium myrtillus* tall herb vegetation			
TH1i	rock face variant	20.0	0.32	81.5
TH1ii	dry heath variant	4.5	0.07	18.5
SC1	Siliceous scree community	1.9	0.03	100.0
RS1	*Saxifraga spathularis - Asplenium adiantum-nigrum* rock cleft community	1.9	0.03	99.5
RS2	*Saxifraga aizoides – Asplenium* spp. – *Orthothecium rufescens* rock cleft community	0.01	0.0002	0.5
HM1	*Calluna vulgaris – Scapania gracilis* hepatic mat			
HM1iii	dry heath variant	2.4	0.04	100.0
	Total area of vegetation communities	5606.1	89.08	
	Not covered	68.6	1.09	
	Non-vegetation cover types	618.5	9.83	
	Total site area	6293.2		

Rare and notable flora

2.21 Rare and notable plant records for the site are listed in Table 5 and their locations, where accurately known, are presented in Fig. 5. The list is compiled from records made during the present survey and from existing records. For each species it is indicated whether it is listed on the Flora Protection Order, 1999 and/or the relevant Red Data List. For vascular plants this is Curtis & McGough (1988) and for bryophytes it is Lockhart *et al*. (2012). Notable records comprise plants which are not rare but are of particular interest in an upland context.

2.22 During the NSUH the clubmoss *Diphasiastrum alpinum* was recorded from **4060 Alpine and Boreal heath** at the head of Coumlara (Roche, 2011; Roche & Perrin, 2010). This find represents a new county record and an important new station for the species, which, prior to the NSUH, was known only from Wicklow and Galway northwards, excepting an apparently extinct population in Kerry (Parnell & Curtis, 2012).

Table 5: Records of rare and notable plant species from Comeragh Mountains cSAC.

Species	Red Data List	FPO	Annex II	Year of record (s)	NSUH	Previous records
Vascular plants						
Carex bigelowii	-	-	-	1934	-	4, 6
Cystopteris fragilis	-	-	-	?	-	3, 4
*Diphasiastrum alpinum**	-	-	-	2010	•	3
Pseudorchis albida	VU	•	-	1896	-	1
Salix herbacea	-	-	-	?	-	3, 4
Saxifraga hypnoides	-	-	-	?	-	3, 4
Vaccinium vitis-idaea	-	-	-	?	-	3, 4
Bryophytes						
*Andreaea megistopora**	VU	-	-	2010	•	5
Antitrichia curtipendula	NT	-	-	?	-	2, 4, 5
Barbilophozia atlantica	EN	-	-	1999, 2007	-	1, 5
Bartramia halleriana	RE	-	-	1902	-	2, 4, 5
Bartramia ithyphylla	VU	-	-	?	-	5
Bryum riparium	EN	-	-	1966	-	2, 4
Dumortiera hirsuta	NT	-	-	1961-1966	-	2, 4, 5
Grimmia decipiens	NT	-	-	2007	-	1, 5
Grimmia funalis	NT	-	-	?	-	5
Grimmia muehlenbeckii	DD	-	-	?	-	5
Grimmia ramondii	NT	-	-	?	-	5
Grimmia torquata	NT	-	-	?	-	2, 4, 5
Hamatocaulis vernicosus	NT	-	•	2007	-	1, 2, 3, 4, 5
Hedwigia ciliata var. *ciliata*	VU	-	-	1966, 2007	-	5
Hedwigia integrifolia†	VU	-	-	2010	•	2, 4, 5
Heterocladium wulfsbergii	NT	-	-	2007	-	1, 5
Hygroamblystegium fluviatile	NT	-	-	?	-	2, 4
Lejeunea eckloniana	NT	-	-	?	-	2, 4
Marsupella sphacelata	VU	-	-	?	-	5
Plagiothecium platyphyllum	VU	-	-	?	-	5
Platyhypnidium lusitanicum	NT	-	-	?	-	2, 4
Porella cordaeana	NT	-	-	2007	-	1
Rhabdoweisia fugax	VU	-	-	?	-	2, 4
Rhizomnium pseudopunctatum	NT	-	-	2007	-	1, 2, 4
Schistidium strictum	NT	-	-	2007	-	1, 5
Solenostoma paroicum	NT	-	-	?	-	5
Sphenolobopsis pearsonii	NT	-	-	1966	-	4
Sphagnum girgensohnii	NT	-	-	2007	-	1, 5
Sphagnum skyense	DD	-	-	2007	-	1, 5
Sphagnum teres	NT	-	-	2007	-	1, 5

* Denotes new vice county record from NSUH fieldwork

† One record erroneously omitted from Fig. 5

Previous records:
1, NPWS Recorder database and associated data
2, Natura 2000 Standard Data Form
3, cSAC site synopsis
4, Dúchas Conservation Plan
5, Lockhart *et al.* (2012)
6, Praeger (1934)

Red Data List:
RE, Regionally Extinct
CR, Critically Endangered
EN, Endangered
VU, Vulnerable
RA, Rare
NT, Near Threatened
DD, Data Deficient

2.23 Previous rare and notable plant records for *Saxifraga hypnoides, Salix herbacea, Vaccinium vitis-idaea* and *Cystopteris fragilis* exist for the Coumshingaun area. *Carex bigelowii* was recorded from the site by Praeger (1934), while old records for *Pseudorchis albida* also exist.

2.24 The bryophytes *Andreaea megistospora* and *Hedwigia integrifolia* were recorded from rocky habitats in Coumshingaun corrie during the survey. The presence of *A. megistospora* represents another new county record.

2.25 Previous records include many rare and threatened bryophytes including a large population of the EU Habitats Directive Annex II listed species *Hamatocaulis vernicosus*, which occurs in flushes at the site (Lockhart *et al*., 2012). The Comeragh Mountains cSAC is the only known site for *Hedwigia ciliata* var. *ciliata* which can be found at five locations around Sgilloge Loughs (Lockhart *et al*., 2012). *Heterocladium wulfsbergii* is also known to occur around Sgilloge Loughs and further north from the Knockanaffrin area along with *Sphagnum girgensohnii*. The Lough Coumfea area is the only known extant location for *Barbilophozia atlantica* (Lockhart *et al*., 2012). Other species recorded from this general area include *Schistidium strictum*, *Sphagnum skyense*, *Sphagnum teres* and *Rhizomnium pseudopunctatum*. *Grimmia decipiens* and *Porella cordaeana* were recorded close to Farbreaga. A 1902 record for *Bartramia halleriana* exists at Coumshingaun. This species has shown a long-term decline in Ireland and is now considered extinct (Lockhart *et al*., 2012).

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

2.27 A list of the scientific and common names of all vascular plants, bryophytes and lichens recorded during the survey of this site are presented in Appendix 3.

Fauna

2.28 A reintroduced White-tailed Eagle (*Haliaeetus albicilla*) was observed landing for a brief period near the highest point of the plateau during this survey. Other EU Birds Directive Annex I listed species observed include a Merlin (*Falco columbarius*) near Crotty's Lough and a Hen Harrier (*Circus cyaneus*) near Farbreaga. One pair and two separate individuals of Red Grouse were recorded in bog in various parts of the site. An Irish Hare (*Lepus timidus hibernicus*) was observed among peat haggs on the plateau. The abundance of frogspawn in wetter areas on the lower slopes reflects the presence of the Common Frog (*Rana temporaria*).

2.29 Previous faunal records for Comeragh Mountains cSAC include the Annex I listed bird species the Peregrine (*Falco peregrinus*) and the Chough (*Pyrrhocorax pyrrhocorax*). Additional species include Ring Ouzel (*Turdus torquatus*), Raven (*Corvus corax*), Kestrel (*Falco tinnunculus*), Dipper (*Cinclus cinclus*), Snipe (*Gallinago gallinago*), Otter (*Lutra lutra*), Brown trout (*Salmo trutta*) and a pre-1930 record of Arctic Charr (*Salvelinus alpinus*) for the "Comeragh Lakes".

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 37 monitoring stops were recorded within the Comeragh Mountains cSAC for this purpose (Fig. 6 and Table 6). The future prospects parameter examines the current impacts/activities on the site that are affecting area and structure and functions, and predicts the future status of the habitat based on future trends where there is sufficient data. The future prospects parameter can also be informed by available data from the Commonage Framework Plan project (CFP).

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

Annex I code	Habitat	Number of stops
4010	Wet heath	4
4030	Dry heath	9
4060	Alpine and boreal heath	4
*6230	Species-rich *Nardus* upland grassland	1
*7130/7130	Blanket bog (*active)	10
8110	Siliceous scree	4
8210	Calcareous rocky slopes	1
8220	Siliceous rocky slopes	4

Commonage Framework Plan

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

3.3 The Comeragh Mountains cSAC contains significant areas of commonage with these areas comprising 25.5 km^2 or 40.5% of the site. A baseline CFP survey of these areas occurred in 2000 with reduction in stock numbers resulting from these assessments occurring *c.*2002. Results from these surveys are shown in Fig. 7.

3.4 The CFP baseline survey recorded 44 subunits within or partially within the Comeragh Mountains cSAC (Table 7). These indicate that commonage within the site was in reasonably good condition at this time with 60.4% of the area of subunits being assessed as undamaged (U) and only 1.5% of the area of subunits being assessed as moderately to severely damaged (MS) or worse.

Table 7: Frequency of CFP subunit damage levels in the Comeragh Mountains cSAC baseline surveys.

Damage level	**Frequency (*n* = 44)**	**Area %**
U	28 (63.6%)	60.4
MU	11 (25.0%)	32.8
MM	3 (6.8%)	5.3
MS	2 (4.5%)	1.5
S/S*	0 (0.0%)	0.0

3.5 The CFP baseline survey recorded 57 stations within the Comeragh Mountains cSAC (Table 8). These also indicate commonage within the site was in reasonable condition at this time with 80.7% of stations being undamaged (U) and only 1.8% of stations being moderately to severely damaged (MS) or worse.

Table 8: Frequency of CFP station damage levels in the Comeragh Mountains cSAC, baseline surveys. Percentages indicate proportion of stations within each column.

Damage level	**Wet heath/Dry heath/ Blanket bog (*n* = 41)**	**Upland grassland (*n* = 16)**	**All habitats (*n* = 57)**
U	35 (85.4%)	11 (68.8%)	46 (80.7%)
MU	5 (12.2%)	5 (31.3%)	10 (17.5%)
MM	0 (0.0%)	0 (0.0%)	0 (0.0%)
MS	0 (0.0%)	0 (0.0%)	0 (0.0%)
S/S*	1 (2.4%)	0 (0.0%)	1 (1.8%)

3.6 Summary data for some of the key indicators recorded at CFP stations are compared with NSUH data in Table 9. There appears to have been no significant change in *Calluna* height since the baseline survey, but some indication that bare peat cover has increased and sward height has declined. There has also apparently been a decline in *Calluna* cover.

3.7 With no substantial CFP resurvey since the baseline survey it is difficult to draw many conclusions on trends. Also, commonage represents only 40.5% of the site. There are some very tentative indications from the key indicator analysis of a negative trend. However, the fact that a reduction of stock levels occurred in 39.6% of the commonage may in itself be seen as a

positive trend for **4010 Wet heath**, **4030 Dry heath** and ***7130/7130 Blanket bog** and other habitats where grazing has been recorded as an impact.

Table 9: Mean values for key indicators from CFP stations in the Comeragh Mountains cSAC, baseline survey (2000) with related data from the NSUH survey (2010).

	Wet heath/Dry heath/ Blanket bog		**Upland grassland**
	CFP	**NSUH**	**CFP**
	(*n* = 41)	**(*n* = 27)**	**(*n* = 16)**
Bare peat cover (%)	0.2	0.6	0.1
Sward height (cm)	30.9	20.9	28.0
Calluna height (cm)	23.0	22.8†	-
Calluna cover			
D (>50%)	20 (48.8%)	13 (48.1%)	-
A (26-50%)	16 (39.0%)	7 (25.9%)	-
F (5-25%)	5 (12.2%)	4 (14.8%)	-
O (<5%)	0 (0.0%)	2 (7.4%)	-
Absent	0 (0.0%)	1 (3.7%)	-

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

4010 Wet heath

Area

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

Structure and functions

3.9 Four monitoring stops were recorded in **4010 Wet heath** within the Comeragh Mountains cSAC (Table 11). In the assessment of structure and functions, three monitoring stops failed one criterion or more. Following a review of the ecological condition of these stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 75.0%. The structure and functions of **4010 Wet heath** were therefore assessed as Unfavourable – Bad.

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

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
D01.01	Paths, tracks and cycle tracks	0.24	0.00	0.00	0.24
D01.03	Car parks and parking areas	0.01	0.00	0.00	0.01
B01.02	Artificial planting on open ground (non-native)	0.16	0.00	0.00	0.16
All impacts		0.41	0.00	0.00	0.41
% of habitat		0.08	0.00	0.00	0.08
% loss per year		0.02	0.00	0.00	0.005

3.10 The vegetation composition of **4010 Wet heath** was poor, with two monitoring stops (50.0%) failing due to an absence of *Erica tetralix* within a 20 m radius. One of these monitoring stops also failed due to inadequate cover of *Cladonia* spp., *Sphagnum* spp., *Racomitrium lanuginosum* and pleurocarpous mosses. Another monitoring stop failed due to inadequate cover of ericoid species and *Empetrum nigrum*.

3.11 The vegetation structure of **4010 Wet heath** was poor in the case of one monitoring stop, which failed due to burning in the bryophyte or lichen layer or exposure of the peat surface due to burning and also due to burning in sensitive areas. The physical structure of **4010 Wet heath** was good, with no failures being recorded under the relevant criteria.

Future prospects

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

Non-intensive sheep grazing (A04.02.02)

3.13 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes than on the mountain plateau. The topiary/drumstick growth form of the heather in places indicated that livestock densities were high throughout the site at that time.

3.14 During the assessment of structure and functions, no **4010 Wet heath** monitoring stops failed due to excessive grazing or excessive cover of disturbed bare ground, indicating that the level of grazing within this habitat was low. The intensity of the impact has been assessed as low and its influence as positive. The trend has been assessed as improving due to the CFP reductions in stock numbers.

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

3.15 Relatively recently-established conifer plantations were situated at Cutteen and to the south-east of Coummahon, adjacent to the River Mahon. The assessment of area estimated that 0.16 ha of **4010 Wet heath** had been lost between 1995 and 2000 (0.03% of the habitat area) due to

afforestation with non-native conifers. The intensity of this impact has been assessed as high and its influence as negative.

Table 11: Monitoring criteria and failure rates for 4010 Wet heath (n = 4).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	*Erica tetralix* present	20m radius	4	2	50.0
2	Cover of positive indicator species ≥ 50%	Relevé	4	0	0
3	Total cover of *Cladonia* species, *Sphagnum* species, *Racomitrium lanuginosum* and pleurocarpous mosses ≥ 10%	Relevé	4	1	25.0
4	Cover of ericoid species and *Empetrum nigrum* ≥ 15%	Relevé	4	1	25.0
5	Cover of dwarf shrub species < 75%	Relevé	4	0	0
6	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Ranunculus repens* collectively < 1%	Relevé	4	0	0
7	Cover of non-native species < 1%	Relevé	4	0	0
8	Cover of non-native species < 1%	Local vicinity	4	0	0
9	Cover of scattered native trees and scrub < 20%	Local vicinity	4	0	0
10	Cover of *Pteridium aquilinum* < 10%	Local vicinity	4	0	0
11	Cover of *Juncus effusus* < 10%	Local vicinity	4	0	0
Vegetation structure					
12	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	4	0	0
13	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	4	0	0
14	No signs of burning into the moss, liverwort or lichen layer, or exposure of peat surface due to burning	Local vicinity	4	1	25.0
15	No signs of burning inside boundaries of sensitive areas*	Local vicinity	4	1	25.0
Physical structure					
16	Cover of disturbed bare ground < 10%	Relevé	4	0	0
17	Cover of disturbed bare ground < 10%	Local vicinity	4	0	0
18	Area showing signs of drainage resulting from heavy trampling or tracking or ditches < 10%	Local vicinity	4	0	0

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

Paths, tracks, cycle tracks (D01.01)

3.16 The assessment of area estimated that 0.24 ha of **4010 Wet heath** had been lost due to track development between 1995 and 2000 (0.05% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.

Car parks and parking areas (D01.03)

3.17 The assessment of area estimated that 0.01 ha of **4010 Wet heath** had been lost due to the development of a car parking area between 1995 and 2000 (0.002% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.

Table 12: Assessment of future prospects for 4010 Wet heath. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Low	Positive	100%	Imp	Inside	+1.5
B01.02	Artificial planting on open ground (non-native)	High	Negative	0.03%	Ins	Inside	-0.75
D01.01	Paths, tracks, cycle tracks	High	Negative	0.05%	Ins	Inside	-0.75
D01.03	Car parks and parking areas	High	Negative	0.002%	Ins	Inside	-0.75
G01.02	Walking, horseriding and non-motorised vehicles	Medium	Negative	<1%	Ins	Inside	-0.5
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Ins	Inside	-0.5
I01	Invasive non-native species	Low	Negative	0.1%	Ins	Inside	-0.25
J01.01	Burning down	High	Negative	25%	Ins	Inside	-1.5
K02.01	Species composition change (succession)	High	Positive	5%	Imp	Inside	+1.5
	Overall score						**-2.0**

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

3.18 Hill walking is a common activity within the site. A waymarked path runs through The Gap and a car park has been provided at its western end. There are localised signs of erosion where the path leads upslope from the car park. A signpost at the car park also directs walkers towards the Nire Lakes. At Coummahon, a gravel path runs from the road to Mahon Falls. Some hill walking also occurs on the plateau. The intensity of this impact within **4010 Wet heath** has been assessed as medium and its influence as negative. The area affected has been estimated to be less than 1% due to the localised nature of the impact.

Off-road motorised driving (G01.03.02)

3.19 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that the localised erosion near the car park at The Gap may have been exacerbated by the use of scrambler bikes. The intensity of this impact within **4010 Wet heath** has been assessed as medium and its influence as negative. The area affected has been estimated to be less than 1% due to the localised nature of the impact.

Invasive non-native species (I01)

3.20 *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.

3.21 *Campylopus introflexus* was recorded within one monitoring stop but was not sufficiently abundant to cause the stop to fail. The mean cover of *C. introflexus* within **4010 Wet heath** monitoring stops was 0.1% (Table 12). The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within seven polygons dominated by **4010 Wet heath** during vegetation mapping, with cover scores of up to 7%. As *Campylopus introflexus* was recorded as forming extensive carpets, the intensity of this impact was assessed as low and its influence as negative.

Burning down (J01.01)

3.22 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that burning was regularly carried out within the site to encourage grass growth for improved sheep grazing. Burning was regularly carried out outside of the legal burning season and was usually unsupervised, with large tracts of land being burned each time a fire was started.

3.23 During the present survey, this impact was observed to be ongoing. In the assessment of structure and functions, one monitoring stop (25.0%) failed due to burning in the bryophyte or lichen layer or exposure of the peat surface due to burning and also due to burning in sensitive areas. The intensity of this impact has been assessed as high and its influence as negative.

Species composition change (succession) (K02.01)

3.24 The blanket peats within the Comeragh Mountains cSAC have undergone extensive erosion. According to the Comeragh Mountains cSAC Conservation Plan (Dúchas, 1999), most of the **4010 Wet heath** within the site has developed on eroded former ***7130/7130 Blanket bog** and in areas where eroded peat has been redeposited. In relation to **4010 Wet heath**, the intensity of this impact has been assessed as high and its influence as positive. The area of habitat affected and the timing of the succession are difficult to accurately quantify; the area of **4010 Wet heath** affected is tentatively given a nominal estimate of 5% over an unknown time period. Severe erosion of blanket peat is widespread, particularly on the plateau, resulting in the loss of ***7130/7130 Blanket bogs**, and is likely to continue unless restoration measures are undertaken. In relation to **4010 Wet heath**, the trend for this impact is deemed to be improving in the absence of planned restoration measures.

3.25 The overall impacts score for **4010 Wet heath** has been calculated as -2.0. This is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to the CFP reduction in stock numbers and

succession and some other impacts were not recorded in recent years. However, due to ongoing impacts such as burning, walking and motorised vehicles, the future prospects for this habitat were assessed as Unfavourable – Inadequate.

4030 Dry heath

Area

3.26 Changes in the area of **4030 Dry heath** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 13). Both losses and gains in habitat area were found. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. The gain in area of **4030 Dry heath** was due to succession where a strip adjacent to a forestry plantation had been cleared and since re-vegetated. The loss in area of **4030 Dry heath** was due to the development of tracks. These impacts and trends are discussed later under future prospects. The overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate.

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

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
D01.01	Paths, tracks and cycle tracks	-0.85	-0.37	0.00	-1.22
K02.01	Species composition change (succession)	0.00	+0.09	+0.29	+0.38
All impacts		-0.85	-0.28	+0.29	-0.84
% of habitat		-0.04	-0.01	0.01	-0.04
% loss per year		-0.01	-0.003	0.003	-0.002

Structure and functions

3.27 Nine monitoring stops were recorded in **4030 Dry heath** within the Comeragh Mountains cSAC (Table 14). In the assessment of structure and functions, five monitoring stops failed one criterion or more. Following a review of the ecological condition of these stops, expert judgement determined that no changes should be made, resulting in an overall failure rate of 55.5%. The structure and functions of **4030 Dry heath** were therefore assessed as Unfavourable – Bad.

3.28 The vegetation structure of **4030 Dry heath** was good, with no failures being recorded under the relevant criteria. The vegetation structure of **4030 Dry heath** was poor, with 44.4% of monitoring stops failing due to excessive grazing and 22.2% failing due to burning in sensitive

areas. One monitoring stop (14.3%) failed due to poor structural diversity of *Calluna vulgaris*, with a lack of mature phase growth. The physical structure of **4030 Dry heath** was good, with no failures being recorded under the relevant criteria.

Table 14: Monitoring criteria and failure rates for 4030 Dry 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, excluding *Campylopus* spp. and *Polytrichum* spp. ≥ 3	Relevé	9	0	0
2	Number of positive indicator species present ≥ 2	Relevé	9	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%		9	0	0
4	Proportion of dwarf shrub cover composed of *Myrica gale, Salix repens, Ulex gallii* collectively < 50%	Relevé	9	0	0
5	Cover of the following weedy negative indicator species: *Cirsium arvense, C. vulgare, Ranunculus repens,* large *Rumex* species (except *R. acetosa*), *Senecio jacobaea, Urtica dioica* collectively < 1%	Relevé	9	0	0
6	Cover of non-native species < 1%	Relevé	9	0	0
7	Cover of non-native species < 1%	Local vicinity	9	0	0
8	Cover of scattered native trees and scrub < 20%	Local vicinity	9	0	0
9	Cover of *Pteridium aquilinum* < 10%	Local vicinity	9	0	0
10	Cover of *Juncus effusus* < 10%	Local vicinity	9	0	0
Vegetation structure					
11	Senescent proportion of *Calluna vulgaris* cover < 50%	Relevé	9	0	0
12	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	9	4	44.4
13	No signs of burning inside boundaries of sensitive areas*	Local vicinity	9	2	22.2
14	Outside boundaries of sensitive areas, all growth phases of *Calluna vulgaris* should occur throughout, with ≥ 10% of cover in mature phase	Local vicinity	7	1	14.3
Physical structure					
15	Cover of disturbed bare ground < 10%	Relevé	9	0	0
16	Cover of disturbed bare ground < 10%	Local vicinity	9	0	0

*Sensitive areas

(a) Areas where soils are thin and less than 5 cm deep.

(b) Hill slopes greater than 1 in 2 (26°), and all the sides of gullies.

(c) Ground with abundant, and/or an almost continuous carpet of *Sphagnum,* liverworts and/or lichens.

(d) Areas of H21 and H22 heath as defined by the NVC (Rodwell 1991). These are heaths primarily composed of mixtures of *Calluna vulgaris* and *Vaccinium myrtillus* over a moist carpet of bryophytes that often has a high *Sphagnum* content. Within the provisional classification, these communities are comparable to DH4 and damper elements of DH6 respectively.

(e) Areas with noticeably uneven structure, at a spatial scale of around 1 m² or less. The unevenness (e.g. more commonly found in very old heather stands) will relate to distinct, often large, spreading dwarf-shrub bushes. The dwarf-shrub canopy will not be completely continuous, and some of its upper surface may be twice as high as other parts. Layering is likely to be present and may be common.
(f) Pools, wet hollows, haggs and erosion gullies, and within 5 – 10 m of the edge of watercourses.

Future prospects

3.29 Nine impacts were recorded within **4030 Dry heath** (Table 15).

Non-intensive sheep grazing (A04.02.02)

3.30 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes, where **4030 Dry heath** are most frequent (see Fig. 4b), than on the mountain plateau. The topiary/drumstick growth form of the heather in places indicated that livestock densities were high throughout the site at that time.

3.31 During the assessment of structure and functions, 44.4% of **4030 Dry heath** monitoring stops failed due to excessive grazing. Grazing intensity varied across the site, with the proportion of dwarf shrub shoots showing signs of grazing ranging from 3 to 50%. The intensity of the impact has been assessed as high overall and its influence as negative. The trend has been assessed as improving due to the CFP reductions in stock numbers.

Non-intensive goat grazing (A04.02.04)

3.32 During the present survey, a herd of feral goats was observed grazing within **4030 Dry heath**. 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 5%.

Paths, tracks, cycle tracks (D01.01)

3.33 The assessment of area estimated that 1.22 ha of **4030 Dry heath** had been lost due to track development between 1995 and 2005 (0.06% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.

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

3.34 Hill walking is a common activity within the site. A waymarked path runs through The Gap and a car park has been provided at its western end. There are localised signs of erosion where the path leads upslope from the car park. A signpost at the car park also directs walkers towards the Nire Lakes. At Coummahon, a gravel path runs from the road to Mahon Falls. Some hill walking also occurs on the plateau. The intensity of this impact within **4030 Dry heath** has been assessed as medium and its influence as negative. The area affected has been estimated to be less than 1% due to the localised nature of the impact.

Off-road motorised driving (G01.03.02)

3.35 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that the localised erosion near the car park at The Gap may have been exacerbated by the use of scrambler bikes. The intensity of this impact within **4030 Dry heath** has been assessed as

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

Table 15: Assessment of future prospects for 4030 Dry heath. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	High	Negative	100%	Imp	Inside	-4.5
A04.02.04	Non-intensive goat grazing	Low	Neutral	5%	Ins	Inside	0
D01.01	Paths, tracks, cycling tracks	High	Negative	0.06%	Ins	Inside	-0.75
G01.02	Walking, horseriding and non-motorised vehicles	Medium	Negative	<1%	Ins	Inside	-0.5
G01.03.02	Off-road motorized driving	Medium	Negative	<1%	Ins	Inside	-0.5
G05.07	Fences, fencing	Medium	Negative	<1%	Ins	Inside	-0.5
I01	Invasive non-native species	Low	Negative	0.1%	Ins	Inside	-0.25
J01.01	Burning down	High	Negative	30%	Ins	Inside	-2.25
K02.01	Species composition change (succession)	High	Positive	0.02%	Ins	Inside	+0.75
	Overall score						**-8.5**

Fences, fencing (G05.07)

3.36 Sheep fencing works have been undertaken within **4030 Dry heath**. The intensity of this impact has been assessed as medium and its influence as negative, due to the habitat damage which occurs when the fencing is erected. Subsequent changes to grazing regimes are not considered here. The area of the habitat affected has been estimated to be less than 1%.

Invasive non-native species (I01)

3.37 *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.

3.38 *Campylopus introflexus* was recorded within one monitoring stop but was not sufficiently abundant to cause the stop to fail. The mean cover of *C. introflexus* within **4030 Dry heath** monitoring stops was 0.1% (Table 15). The degraded peat vegetation community DP1 *Campylopus introflexus – Polytrichum* spp. was recorded within 23 polygons dominated by **4030 Dry heath** during vegetation mapping, with cover scores of up to 20%. As *C. introflexus* was recorded as forming extensive carpets, the intensity of this impact was assessed as low and its influence as negative.

Burning down (J01.01)

3.39 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that burning was regularly carried out within the site to encourage grass growth for improved sheep

grazing. Burning was regularly carried out outside of the legal burning season and was usually unsupervised, with large tracts of land being burned each time a fire was started.

3.40 During the present survey, this impact was observed to be ongoing. Large areas of **4030 Dry heath** have been severely damaged by both recent and previous burning (Plate 1). In some cases, the Annex I habitat has been replaced by non-Annex UG1a *Agrostis capillaris-Festuca ovina* upland grassland but most areas of burned **4030 Dry heath** appeared to be recovering reasonably well. In the assessment of structure and functions, 22.2% of monitoring stops failed due to burning in sensitive areas of the habitat. The intensity of this impact has been assessed as high and its influence as negative. The overall area of the habitat affected has been estimated to be 20%.

Plate 1: Extensive area of burnt heathland, mainly 4030 Dry heath, near The Gap (Photo: BEC Consultants).

Species composition change (succession) (K02.01)

3.41 The assessment of area estimated that 0.38 ha of **4030 Dry heath** had been gained due to succession between 2000 and 2012 (0.02% of the habitat area). A strip of **4030 Dry heath** adjacent to a forestry plantation had previously been cleared, probably to create a fire break, but the vegetation has since recovered. The intensity of this impact has been assessed as high and its influence as positive.

3.42 The overall impacts score for **4030 Dry heath** has been calculated as -8.5. This is well below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to the CFP reductions in stock numbers, recent gains in area due to succession and the fact that some of the other impacts were not recorded in recent years. However, due to ongoing significant impacts such as burning, the future prospects for this habitat were assessed as Unfavourable - Bad.

4060 Alpine and Boreal heath

Area

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

Table 16: Monitoring criteria and failure rates for 4060 Alpine and Boreal heath (n = 4).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of bryophyte or non-crustose lichen species present ≥ 3	Relevé	4	0	0
2	Cover of positive indicator species ≥ 66%	Relevé	4	1	25.0
3	Cover of dwarf shrubs ≥ 10%	Relevé	4	0	0
4	Cover of the following negative indicator species: *Agrostis capillaris, A. vinealis, Anthoxanthum odoratum, Deschampsia flexuosa, Festuca ovina, F. vivipara, Galium saxatile, Potentilla erecta* and *Poa* spp. (except *Poa alpina*) collectively < 10%	Relevé	4	4	100.0
5	Cover of non-native species < 1%	Relevé	4	0	0
Vegetation structure					
6	Live leaves of *Carex bigelowii, Deschampsia flexuosa, Festuca ovina, F. vivipara* showing signs of grazing collectively < 10%	Relevé	4	1	25.0
7	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33%	Relevé	4	0	0
8	No signs of burning inside feature	Local vicinity	4	0	0
Physical structure					
9	Cover of disturbed bare ground < 10%	Relevé	4	0	0
10	Cover of disturbed bare ground < 10%	Local vicinity	4	0	0

Structure and functions

3.44 Four monitoring stops were recorded in **4060 Alpine and Boreal heath** within the Comeragh Mountains cSAC (Table 16). In the assessment of structure and functions, all 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 100.0%. The structure and functions of **4060 Alpine and Boreal heath** were therefore assessed as Unfavourable – Bad.

3.45 The vegetation composition of **4060 Alpine and Boreal heath** was poor in all cases, with 100% of monitoring stops failing due to excessive cover of negative indicator species, particularly *Agrostis capillaris*, *Deschampsia flexuosa* and *Festuca ovina*. One monitoring stop (25.0%) also failed due to inadequate cover of positive indicator species.

3.46 The vegetation structure of **4060 Alpine and Boreal heath** was poor in one case, with one monitoring stop (25.0%) failing due to excessive grazing. The physical structure of **4060 Alpine and Boreal heath** was good, with no failures being recorded under the relevant criteria.

Future prospects

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

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

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Medium	Negative	100%	Imp	Inside	-3.0
G01.02	Walking, horseriding and non-motorised vehicles	Low	Neutral	5%	Ins	Inside	0
K02.01	Species composition change (succession)	High	Positive	5%	Imp	Inside	+1.5
	Overall score						**-1.5**

Non-intensive sheep grazing (A04.02.02)

3.48 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes than on the mountain plateau, where **4060 Alpine and Boreal heath** occur most frequently (Fig. 4c).

3.49 During the assessment of structure and functions, 25.0% of **4060 Alpine and Boreal heath** monitoring stops failed due to excessive grazing. Grazing intensity varied, with the proportion of indicative graminoids showing signs of grazing ranging from 1 to 17%. The intensity of the impact has been assessed as medium overall and its influence as negative. The trend has been assessed as improving due to the CFP reduction in stock numbers.

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

3.50 Hill walking is a common activity within the site, but is mostly confined to marked paths at The Gap and Coummahon. Some hill walking also occurs on the plateau, where **4060 Alpine and Boreal heath** occur most frequently (Fig. 4c), but no resultant damage was recorded within this habitat. The intensity of this impact within **4060 Alpine and Boreal heath** has been

assessed as low and its influence as neutral. The area of the habitat affected has been estimated to be 5%.

Species composition change (succession) (K02.01)

3.51 Although blanket peat once covered most of the Comeragh Mountains plateau, much of it has been eroded and is now only a few centimetres in depth (Dúchas, 1999). During the present survey, **4060 Alpine and Boreal heath** with *Diphasiastrum alpinum* was observed to have developed where blanket peat had been eroded down to siliceous bedrock and gravel (Roche, 2011; Roche & Perrin, 2010). In relation to **4060 Alpine and Boreal heath**, the intensity of this impact has been assessed as high and its influence as positive. The area of habitat affected and the timing of the succession are difficult to accurately quantify; the area of **4060 Alpine and Boreal heath** affected is tentatively given a nominal estimate of 5% over an unknown time period. Severe erosion of blanket peat is widespread on the plateau, resulting in the loss of ***7130/7130 Blanket bogs**, and is likely to continue unless restoration measures are undertaken. In relation to **4060 Alpine and Boreal heath**, the trend for this impact is deemed to be improving in the absence of planned restoration measures.

3.52 The overall impacts score for **4060 Alpine and Boreal heath** has been calculated as -1.5. 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 the CFP reduction in stock numbers and succession. The future prospects for this habitat were assessed as Favourable in the absence of planned restoration measures for ***7130/7130 Blanket bogs**.

***6230 Species-rich *Nardus* grassland**

Area

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

Structure and functions

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

3.55 The vegetation composition of ***6230 Species-rich *Nardus* grasslands** was poor. Criterion 4 stipulates that the cover of non-native species within the monitoring stop should be no greater than 1%. A cover score of 3% was recorded for the non-native species *Epilobium brunnescens*, which exceed the threshold and caused the monitoring stop to fail. The vegetation structure and physical structure of ***6230 Species-rich *Nardus* grasslands** were good, with no failures being recorded under the relevant criteria.

3.56 The small sample size of one monitoring stop reflects the relative rarity of this habitat within the Comeragh Mountains cSAC, where only 2.7 ha of ***6230 Species-rich *Nardus* grasslands** were recorded, comprising 0.04% of the site.

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

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of high quality and general indicator species ≥ 7	Relevé	1	0	0
2a	UG1c/UG2c: Number of high quality species present ≥ 2	Relevé	1	0	0
2b	UG1e/UG2e: Number of high quality species present ≥ 1	Relevé	0	n/a	n/a
3	Species richness ≥ 25 species	Relevé	1	0	0
4	Cover of non-native species ≤ 1%	Relevé	1	1	100.0
5	Cover of the following negative indicator species: *Arrhenatherum elatius, Bellis perennis, Cirsium arvense, Cirsium vulgare, Dactylis glomerata, Eriophorum angustifolium, Eriophorum vaginatum, Holcus lanatus, Juncus effusus, Lolium perenne, Narthecium ossifragum, Ranunculus repens, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Trifolium repens, Urtica dioica*, individually ≤ 10%	Relevé	1	0	0
6	Cover of the above negative indicator species collectively ≤ 20%	Relevé	1	0	0
7	Cover of *Sphagnum* species ≤ 10%,	Relevé	1	0	0
8	Cover of *Polytrichum* species ≤ 25%		1	0	0
9	Cover of scrub, bracken and heath ≤ 5%	Relevé	1	0	0
Vegetation structure					
10	Forb component of forb : graminoid ratio 20-90%	Relevé	1	0	0
11	Proportion of the sward between 5-50 cm tall ≥ 25%	Relevé	1	0	0
12	Litter cover ≤ 20%	Relevé	1	0	0
Physical structure					
13	Cover of <u>disturbed</u> bare ground ≤ 10%	Relevé	1	0	0
14	Area of the habitat showing signs of serious <u>grazing</u> or <u>disturbance</u> <20m²	Local vicinity	1	0	0

Future prospects

3.57 Two impacts were recorded within ***6230 Species-rich *Nardus* grasslands** (Table 19).

<u>Non-intensive sheep grazing (A04.02.02)</u>

3.58 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes than on the mountain plateau. During the assessment of structure and functions,

no failures associated with grazing impacts were recorded. The intensity of this impact was assessed as medium and its influence as positive. The trend was assessed as improving due to the CFP reduction in stock numbers.

Table 19: Assessment of future prospects for *6230 Species rich *Nardus* grassland. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Medium	Positive	100%	Imp	Inside	+1.5
I01	Invasive non-native species	Low	Negative	3%	Ins	Inside	-0.5
	Overall score						**+1.0**

Invasive non-native species (I01)

3.59 *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 ***6230 Species-rich *Nardus* grasslands** monitoring stop with a cover score of 3%. The intensity of this impact is assessed as low, since this species does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative.

3.60 The overall impacts score for ***6230 Species-rich *Nardus* grasslands** has been calculated as +1.0. This is above the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to the CFP reduction in stock numbers. The future prospects for this habitat were therefore assessed as Favourable.

***7130/7130 Blanket bogs**

Area

3.61 Changes in the area of ***7130/7130 Blanket bog** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 20). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. The loss in area of ***7130/7130 Blanket bog** was due to the development of car parks. Erosion has unquestionably resulted in loss of habitat, but due to the gradual and diffuse nature of this impact it was impractical to measure the area lost. Even when including the loss due to erosion it is estimated that the overall change in habitat area was a loss of less than 1% per year resulting in a status of Unfavourable – Inadequate. These impacts and trends are discussed later under future prospects.

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

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
D01.03	Car parks and parking areas	0.04	0.00	0.00	0.04
K01.01	Erosion	n.m.	n.m.	n.m.	n.m.
All impacts		0.04	0.00	0.00	0.04
% of habitat			0.00	0.00	
% loss per year			0.00	0.00	

Structure and functions

3.62 Ten monitoring stops were recorded in ***7130/7130 Blanket bog** within the Comeragh Mountains cSAC (Table 21). The monitoring stops were located within ***7130 Active blanket bog**. In the assessment of structure and functions, all ten 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 100.0%. The structure and functions of ***7130/7130 Blanket bog** were therefore assessed as Unfavourable – Bad. Vegetation mapping indicated that the proportion of inactive and eroding bog within the total area of bog was 11.8% (Tables 2 and 3). These findings provide further support for the Unfavourable – Bad assessment result.

3.63 The vegetation composition of ***7130/7130 Blanket bog** was poor with 50.0% of monitoring stops failing due to inadequate cover of bryophyte or lichen species, 30.0% failing due to an inadequate number of positive indicator species and 10.0% due to excessive cover of *Calluna vulgaris*.

3.64 The vegetation structure of ***7130/7130 Blanket bog** was poor in some cases, with 30.0% of monitoring stops failing due to burning in sensitive areas and 10.0% failing due to burning in the bryophyte or lichen layer or peat exposure due to burning. The physical structure of ***7130/7130 Blanket bog** was poor with 50.0% of monitoring stops failing due to erosion.

3.65 The Comeragh Mountains cSAC Conservation Plan (Dúchas, 1999) stated that the ***7130/7130 Blanket bog** within the site were not significant in terms of quality and were rather fragmented. While the structure and functions assessment has shown that the habitat is in poor condition and is undergoing high levels of erosion, vegetation mapping has shown that large expanses of ***7130/7130 Blanket bog** occur on the mountain plateau.

Table 21. Monitoring criteria and failure rates for *7130/7130 Blanket bog (n = 10).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 7	Relevé	10	3	30.0
2	Cover of bryophyte or lichen species, excluding *Sphagnum fallax* ≥ 10%	Relevé	10	5	50.0
3	Cover of each of the following species: *Calluna vulgaris, Eleocharis multicaulis, Eriophorum vaginatum, Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually < 75%	Relevé	10	1	10.0
4	Cover of the following negative indicator species: *Agrostis capillaris, Holcus lanatus, Phragmites australis, Pteridium aquilinum, Ranunculus repens* collectively < 1%	Relevé	10	0	0
5	Cover of non-native species < 1%	Relevé	10	0	0
6	Cover of non-native species < 1%	Local vicinity	10	0	0
7	Cover of scattered native trees and scrub < 10%	Local vicinity	10	0	0
Vegetation structure					
8	Crushed, broken and/or pulled up *Sphagnum* species < 10% of *Sphagnum* cover	Relevé	10	0	0
9	Last complete growing season's shoots of ericoids, *Empetrum nigrum* and *Myrica gale* showing signs of browsing collectively < 33%	Relevé	9	0	0
10	No signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Local vicinity	10	1	10.0
11	No signs of burning inside boundaries of sensitive areas*	Local vicinity	10	3	30.0
Physical structure					
12	Cover of disturbed bare ground < 10%	Relevé	10	0	0
13	Cover of disturbed bare ground < 10%	Local vicinity	10	0	0
14	Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting < 10%	Local vicinity	10	0	0
15	Cover of erosion gullies and eroded areas within the greater bog mosaic < 5%	Local vicinity	10	5	50.0

*Sensitive areas

(a) Slopes greater than 1 in 3 (18°), and all the sides of gullies.

(b) Ground with abundant and/or an almost continuous carpet of *Sphagnum*, other mosses, liverworts and/or lichens.

(c) Patterned areas i.e. with pools, wet hollows, haggs and erosion gullies.

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

(e) Areas above 400 m in altitude.

(f) Areas within 50 m of functioning drains.

Future prospects

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

Non-intensive sheep grazing (A04.02.02)

3.67 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes than on the mountain plateau. The topiary/drumstick growth form of the heather in places indicated that livestock densities were high throughout the site at that time.

3.68 During the assessment of structure and functions, no ***7130/7130 Blanket bog** monitoring stops failed due to excessive grazing. Grazing intensity was low overall, with the proportion of dwarf shrub shoots showing signs of grazing ranging from 1 to 18%. The influence of this impact was assessed as neutral and the trend as improving due to the CFP reduction in stock numbers.

Car parks and parking areas (D01.03)

3.69 The assessment of area estimated that 0.04 ha of ***7130/7130 Blanket bog** had been lost due to the development of a car parking area between 1995 and 2000 (0.004% of the habitat area). The intensity of this impact has been assessed as high and its influence as negative.

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

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Low	Neutral	100%	Imp	Inside	0
D01.03	Car parks and parking areas	High	Negative	0.004%	Ins	Inside	-0.75
C01.03.01	Hand cutting of peat	High	Negative	<1%	Ins	Inside	-0.75
G01.02	Walking, horseriding and non-motorised vehicles	Medium	Negative	<1%	Ins	Inside	-0.5
G01.03.02	Off-road motorised driving	Medium	Negative	<1%	Ins	Inside	-0.5
G05.07	Fences, fencing	Medium	Negative	<1%	Ins	Inside	-0.5
J01.01	Burning down	High	Negative	30%	Ins	Inside	-2.25
K01.01	Erosion	High	Negative	16.9%	Ins	Inside	-1.5
	Overall score						**-6.75**

Hand cutting of peat (C01.03.01)

3.70 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that turf cutting had taken place at Coummahon in the past and small-scale turf cutting by hand was ongoing in ***7130/7130 Blanket bog** to the north of Coumfea. Ongoing turf cutting was not recorded during the present survey so this impact may have ceased. 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 the impact.

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

3.71 Hill walking is a common activity within the site. A waymarked path runs through The Gap and a car park has been provided at its western end. There are localised signs of erosion where the path leads upslope from the car park. A signpost at the car park also directs walkers towards the Nire Lakes. At Coummahon, a gravel path runs from the road to Mahon Falls.

Some hill walking also occurs on the plateau. The intensity of this impact within ***7130/7130 Blanket bog** has been assessed as medium and its influence as negative. The area affected has been estimated to be less than 1% due to the localised nature of the impact.

Off-road motorised driving (G01.03.02)

3.72 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that the localised erosion near the car park at The Gap may have been exacerbated by the use of scrambler bikes. The intensity of this impact within ***7130/7130 Blanket bog** has been assessed as medium and its influence as negative. The area affected has been estimated to be less than 1% due to the localised nature of the impact.

Fences, fencing (G05.07)

3.73 Sheep fencing works have been undertaken within ***7130/7130 Blanket bog**. The intensity of this impact has been assessed as medium and its influence as negative, due to the habitat damage which occurs when the fencing is erected. Subsequent changes to grazing regimes are not considered here. The area of the habitat affected has been estimated to be less than 1%.

Burning down (J01.01)

3.74 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that burning was regularly carried out within the site to encourage grass growth for improved sheep grazing. Burning was regularly carried out outside of the legal burning season and was usually unsupervised, with large tracts of land being burned each time a fire was started.

3.75 During the present survey, this impact was observed to be ongoing. In the assessment of structure and functions, 10.0% of monitoring stops failed due to burning in the bryophyte or lichen layer or exposure of the peat surface due to burning and 30.0% due to burning in sensitive areas. The intensity of this impact has been assessed as high and its influence as negative.

Erosion (K01.01)

3.76 The Conservation Plan for the Comeragh Mountains cSAC (Dúchas, 1999) stated that blanket peat once covered much of the mountain plateau, with peat depths reaching almost 2 m. However, much of it had been eroded down to only a few centimetres in depth and dissection of ***7130/7130 Blanket bog** by active erosion gullies was prevalent. Furthermore, the Site Synopsis (Dúchas, 2001) stated that the ***7130/7130 Blanket bog** north of Coummahon, in particular, have undergone erosion, in many places down to the underlying bedrock, with flats of loose peat being present.

3.77 During vegetation mapping, very severe erosion was observed within large areas of ***7130/7130 Blanket bog** on the plateau of the Comeragh Mountains. Bare peat, erosion gullies and peat haggs were widespread. In some areas, ***7130/7130 Blanket bog** had been completely eroded away, exposing the gravel substrate and, in one area, eroding peat had liquefied, forming a slow-flowing peat 'slurry' (Plate 2). This was indicative of the extreme severity of peat erosion in the area and also presented a danger to hill walkers as it was unsafe to walk across. 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 plateau was within the range of 1600-2400 mm per year for 1981-2010 (Met Éireann, 2014). Therefore unless restoration measures are undertaken in badly eroded areas, erosion is likely to continue. The intensity of this impact is assessed as high and its influence as negative. It was assessed that there is insufficient data to determine the trend for this impact. The area of ***7130/7130 Blanket bog** estimated to be under threat from erosion is 16.9%; this is the proportion of the habitat occurring in polygons with at least 5% **PB5 Eroding blanket bog**.

3.78 The overall impacts score for ***7130/7130 Blanket bog** has been calculated as -6.75. This is below the nominal Favourable Reference Value of zero. The combined future trend for area and structure and functions is deemed to be improving due to the CFP reduction in stock numbers. However, due to ongoing significant impacts such as burning and erosion, the future prospects for this habitat were assessed as Unfavourable - Bad.

Plate 2: Extremely severely eroded blanket bog on the plateau of the Comeragh Mountains. In the foreground is a monospecific sward of *Eriophorum angustifolium* and in the middle ground is bare peat with ripples caused by wash off (Photo: BEC Consultants).

8110 Siliceous scree

Area

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

Structure and functions

3.80 Four monitoring stops were recorded in **8110 Siliceous scree** within the Comeragh Mountains cSAC (Table 23). In the assessment of structure and functions, three monitoring stops failed one criterion each. Following a review of the ecological condition of these stops, expert judgement determined that one should pass as the failure was marginal. This resulted in an overall failure rate of 50.0%. The structure and functions of **8110 Siliceous scree** were therefore assessed as Unfavourable – Bad.

3.81 The vegetation composition of **8110 Siliceous scree** was poor with 25.0% of stops failing due to inadequate cover of bryophytes and lichens, a further 25.0% failing due to excessive cover of the non-native moss species *Campylopus introflexus* and a further 25.0% failing due to an inadequate number of positive indicator species. The vegetation structure and physical structure of **8110 Siliceous scree** were good with no failures being recorded under the relevant criteria.

Table 23: Monitoring criteria and failure rates for 8110 Siliceous scree (n = 4).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Cover of bryophyte and non-crustose lichen species ≥ 5%	Relevé	4	1	25.0
2	Proportion of vegetation composed of following negative indicator species: *Cirsium arvense, C. vulgare, Rubus fruticosus* agg., large *Rumex* species (except *R. acetosa*), *Senecio jacobaea, Urtica dioica* collectively < 1%	Relevé	4	0	0
3	Proportion of vegetation composed of non-native species < 1%	Relevé	4	1	25.0
4	Block scree: number of positive indicator species for 8220 present ≥ 1	Local vicinity	4	1	25.0
5	Cover of grass species and dwarf shrubs collectively < 20%	Local vicinity	4	0	0
6	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	4	0	0
Vegetation structure					
7	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Relevé	4	0	0
Physical structure					
8	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Relevé	4	0	0
9	Ground disturbed by human & animal paths, scree running, vehicles < 10%	Local vicinity	4	0	0

Future prospects

3.82 Two impacts were recorded within **8110 Siliceous scree** (Table 24).

Table 24: Assessment of future prospects for 8110 Siliceous scree. Under trend, Imp = Improving, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
A04.02.02	Non-intensive sheep grazing	Low	Neutral	25%	Imp	Inside	0
I01	Invasive non-native species	Low	Neutral	0.1%	Ins	Inside	0
	Overall score						**0**

Non-intensive sheep grazing (A04.02.02)

3.83 The Conservation Plan for the Comeragh Mountains (Dúchas, 1999) stated that sheep grazing was practised in all parts of the site, with the sheep tending to graze more frequently on the lower slopes than on the mountain plateau. The topiary/drumstick growth form of the heather in places indicated that livestock densities were high throughout the site at that time.

3.84 During the assessment of structure and functions, no **8110 Siliceous scree** monitoring stops failed due to excessive grazing. Grazing was recorded at one **8110 Siliceous scree** monitoring stop (25.0%); the proportion of live leaves of forbs and shoots of dwarf shrubs showing signs of grazing within that monitoring stop was 5%. The intensity of this impact was assessed as low and its influence as neutral. The trend was assessed as improving due to the CFP reduction in stock numbers.

Invasive non-native species (I01)

3.85 The non-native moss *Campylopus introflexus* was recorded within one **8110 Siliceous scree** monitoring stop, with a cover score of 0.3%, causing the monitoring stop to fail. *C. introflexus* is generally a pioneer species of bare peat which can become abundant after disturbance such as peat cutting, burning or drainage (Atherton *et al.,* 2010). It is therefore unlikely to spread within **8110 Siliceous scree**. The mean cover score of *C. introflexus* within **8110 Siliceous scree** monitoring stops was 0.1%. The intensity of this impact has been assessed as low and its impact as neutral.

3.86 The overall impacts score for **8110 Siliceous scree** has been calculated as zero which is equal to the nominal Favourable Reference Value. The combined future trend for area and structure and functions is deemed to be no change. The future prospects for **8110 Siliceous scree** were therefore assessed as Favourable.

8210 Calcareous rocky slopes

Area

3.87 Changes in the area of **8210 Calcareous rocky slopes** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified

by this process. No changes in area of habitat were noted; therefore the area status was assessed as Favourable.

Structure and functions

3.88 One monitoring stop was recorded in **8210 Calcareous rocky slopes** within the Comeragh Mountains cSAC (Table 25), on the back wall of Coumshingaun Corrie. In the assessment of structure and functions, the monitoring stop failed two criteria. Following a review of the ecological condition of this stop, expert judgement determined that no changes should be made, resulting in an overall failure rate of 100.0%. The structure and functions of **8210 Calcareous rocky slopes** were therefore assessed as Unfavourable – Bad.

3.89 Young (1972) stated that the cliffs of Coumshingaun Corrie were of botanical interest, particularly on the wetter, north-facing side. They supported a rich bryophyte flora and, in places, were festooned with *Saxifraga spathularis*, which is rare in the east of the country (Preston *et al.* 2002). However, the vegetation composition of the **8210 Calcareous rocky slopes** monitoring stop was poor, failing due to an inadequate number of indicative fern or *Saxifraga* species and an inadequate number of positive indicator species. The vegetation structure of **8210 Calcareous rocky slopes** was good, with no failures being recorded under the relevant criterion.

Table 25: Monitoring criteria and failure rates for 8210 Calcareous rocky slopes (n = 1).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of indicative fern or *Saxifraga* species present ≥ 1	Local vicinity	1	1	100.0
2	Number of positive indicator species present ≥ 3	Local vicinity	1	1	100.0
3	Proportion of vegetation composed of non-native species < 1%	Local vicinity	1	0	0
4	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	1	0	0
Vegetation structure					
5	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Local vicinity	1	0	0

3.90 The small sample size of one monitoring stop reflects the relative rarity of this habitat within the Comeragh Mountains cSAC, where only 0.02 ha of **8210 Calcareous rocky slopes** were recorded, comprising 0.0003% of the site.

Future prospects

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

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

8220 Siliceous rocky slopes

Area

3.93 Changes in the area of **8220 Siliceous rocky slopes** were recorded for the period 1995 to 2012 through a combination of observations in the field and analysis of aerial photographs and satellite imagery available through Google Earth (Table 26). Only losses in habitat were found, there were no gains in habitat area. These data are restricted to obvious changes in habitat; less obvious changes from one habitat type to another cannot be reliably identified by this process. The loss in area of **8220 Siliceous rocky slopes** was due to a landslide which buried an area of this habitat under loose sediment. 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 26: Impacts causing obvious losses in areas of 8220 Siliceous rocky slopes, 1995-2012.

Impact code	Impact	Area (ha) 1995-2000	Area (ha) 2000-2005	Area (ha) 2005-2012	Area (ha) 1995-2012
L05	Collapse of terrain, landslide	0.00	0.02	0.00	0.02
All impacts		0.00	0.02	0.00	0.02
% of habitat		0.00	0.03	0.00	0.03
% loss per year		0.00	0.01	0.00	0.002

Structure and functions

3.94 Four monitoring stops were recorded in **8220 Siliceous rocky slopes** within the Comeragh Mountains cSAC (Table 27). In the assessment of structure and functions, three monitoring stops failed one criterion each. 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 75.0%. The structure and functions of **8220 Siliceous rocky slopes** were therefore assessed as Unfavourable – Bad.

3.95 The vegetation composition of **8220 Siliceous rocky slopes** was poor with 50.0% of monitoring stops failing due to an inadequate number of positive indicator species and 25.0% 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 criterion.

Table 27: Monitoring criteria and failure rates for 8220 Siliceous rocky slopes (n = 4).

Criteria		Scale of assessment	Number of assessments	Number of failures	Failure rate (%)
Vegetation composition					
1	Number of positive indicator species present ≥ 1	Local vicinity	4	2	50.0
2	Proportion of vegetation composed of non-native species < 1%	Local vicinity	4	1	25.0
3	Cover of *Pteridium aquilinum*, native trees and scrub collectively < 25%	Local vicinity	3	0	0
Vegetation structure					
4	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively < 50%	Local vicinity	0	n/a	n/a

Future prospects

3.96 One impact was recorded within **8220 Siliceous rocky slopes** (Table 28). The assessment of area also recorded a loss of **8220 Siliceous rocky slopes** due to a landslide. This is considered likely to be a one-off event and has not been included in Table 28.

Table 28: Assessment of future prospects for 8220 Siliceous rocky slopes. Under trend, Ins = Insufficient data

Impact code	Impact	Intensity	Influence	Habitat area	Trend	Source	Score
I01	Invasive non-native species	Low	Negative	0.8%	Ins	Inside	-0.25
	Overall score						**-0.25**

Invasive non-native species (I01)

3.97 *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 **8220 Siliceous rocky slopes** monitoring stop with a cover score of 3%. The mean cover score of *E. brunnescens* within **8220 Siliceous rocky slopes** monitoring stops was 0.8%. The intensity of this impact is assessed as low, since this species does not tend to transform the nature of the habitats in which it becomes established but, nonetheless, its influence has been assessed as negative.

3.98 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

3.99 The summary results for the conservation assessment of Annex I habitats in the Comeragh Mountains cSAC are presented in Table 29. All eight of the habitats assessed were assessed as Unfavourable – Bad.

3.100 Habitats generally performed well in the assessment of area, with no major losses of habitat being readily apparent. All habitats performed poorly in the assessment of structure and functions, with each one being assessed as Unfavourable – Bad. Habitats generally performed better in the assessment of future prospects as it is predicted that they will gradually recover from previously high stocking levels and a number of impacts, such as afforestation and development of car parking and tracks, have not been recorded in recent years. The future prospects of **4010 Wet heath** and **4060 Alpine and Boreal heath** were positively influenced by the loss of ***7130/7130 Blanket bog**. However, the future prospects of **4030 Dry heath** and ***7130/7130 Blanket bog** were assessed as Unfavourable – Bad due to significant ongoing impacts such as burning and, in the case of ***7130/7130 Blanket bogs**, severe peat erosion.

Table 29: Summary of conservation status assessments for Annex I habitats in the Comeragh Mountains cSAC.

Annex I code	Habitat	Area	Structure and functions	Future prospects	Overall assessment
4010	Wet heath	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Inadequate	Unfavourable - Bad
4030	Dry heath	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Bad	Unfavourable - Bad
4060	Alpine and Boreal heath	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
*6230	Species-rich *Nardus* grassland	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
*7130/7130	Blanket bog	Unfavourable - Inadequate	Unfavourable - Bad	Unfavourable - Bad	Unfavourable - Bad
8110	Siliceous scree	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
8210	Calcareous rocky slopes	Favourable	Unfavourable - Bad	Favourable	Unfavourable - Bad
8220	Siliceous rocky slopes	Unfavourable - Inadequate	Unfavourable - Bad	Favourable	Unfavourable - Bad

4. DISCUSSION

Natura 2000 Standard Data Form

4.1 Six Annex I habitats were recorded in the cSAC that are currently not listed for the site on the Natura 2000 Standard Data Form, habitats 3160, *6230, *7130, 7130, 7230 and 8110. Several small lakes on the central plateau are **3160 Dystrophic lakes**. Small areas of ***6230 Species-rich *Nardus* grasslands** were recorded on the east facing slopes at Cutteen South, on the corrie wall above Coumshingaun Lough and on the slopes above Kilclooney. ***7130 Active blanket bog** occurs throughout the site, as does **7130 Inactive blanket bog**. **7230 Alkaline fens** were recorded in the south of the site on the slopes of Monavullagh Mountain and on the lower slopes in the northeast. **8110 Siliceous scree** occurs throughout the site, being associated primarily with **4030 Dry heath habitat**.

4.2 The current Natura 2000 assessment form for this site significantly overestimates the area of **4010 Wet heath** (21% compared with 8.4%) and underestimates the area of **4030 Dry heath** (24% compared to 33.3%). There is also an overestimation of the cover of **4060 Alpine and Boreal heath**. ***7130/7130 Blanket bog** is not listed for the site despite it covering over 14% of the site. Whilst there are substantial areas of eroding peat, inactive bog dominated by *Eriophorum angustifolium* and stretches of gravel/loose rock from which the peat has been totally washed away, there are almost 800 ha of reasonably intact bog habitat at this site.

4.3 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 an SAC are listed on this form even if they are subsequently ranked as having a non-significant presence.

Additional recommendations

4.4 Whilst a Conservation Plan exists for Comeragh Mountains cSAC, an up-to-date Conservation Plan is required which should utilise the information provided by this report. Management objectives in the plan need to address the impacts highlighted in this report if progress is to be made towards attaining Favourable status for the Annex I habitats. The major impacts are livestock grazing, peat erosion and burning.

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

4.6 Erosion of upland blanket peat is a major impact in ***7130/7130 Blanket bogs.** Whilst some areas of eroded peat may gradually revegetate as a result of the CFP reduction in stock numbers, in areas of more severe erosion active restoration measures may be needed for this habitat to achieve Favourable status. These may include the damming of erosion gullies, stabilisation of bare peat with geotextiles or heather brash, the planting of *Eriophorum*

angustifolium, and seeding of bare peat with *Sphagnum* propagules. The conservation of ***7130 Active blanket bog** should be prioritised as befitting its status.

4.7 Burning has had a significant impact on ***7130/7130 Blanket bog** and on the heath habitats where intensive burning has resulted in some areas of **4030 Dry heath** being replaced by non-Annex grassland habitat. Regulation of burning at a site level is required.

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

REFERENCES

Anon. (1998) A manual for the production of grazing impact assessments in upland and peatland habitats. Version 1.2. Dúchas, the Heritage Service and Department of Agriculture and Food, Dublin.

Atherton, I., Bosanquet, S. & Lawley, M. (eds) (2010) *Mosses and liverworts of Britain and Ireland: a field guide.* British Bryological Society.

Bernth, K.K. (1998) *Campylopus introflexus* (Hedw.) Brid. Thesis, Department of Bioscience, University of Århus, Århus.

Curtis, T.G.F. & McGough, H.N. (1988) The Irish Red Data Book 1: vascular plants. The Stationery Office, Dublin.

Dúchas (1999) Conservation Plan for Comeragh Mountains. Dúchas, Department of Arts, Heritage Gaeltacht and the Islands, Dublin.

Dúchas (2001) Site Synopsis Site Name: Comeragh Mountains Site Code: 001952. Dúchas, Department of Arts, Heritage Gaeltacht and the Islands, Dublin.

Equiha, M. & Usher, M.B. (1993) Impact of carpets of the invasive moss *Campylopus introflexus* on *Calluna vulgaris* regeneration. *Journal of Ecology* **81** 359-365.

Fossitt, J. (2000) *A guide to habitats in Ireland.* The Heritage Council, Kilkenny.

Klinck, J. (2010) The alien invasive moss *Campylopus introflexus* in the Danish coastal dune system: preferences, development, effects, control. M.Sc. thesis. Copenhagen University, Copenhagen.

Lockhart, N., Hodgetts, N. & Holyoak, D. (2012) Rare and threatened bryophytes of Ireland. National Museums Northern Ireland, Holywood, Co. Down.

Met Éireann (2014) Climate of Ireland – rainfall. Met Éireann, Dublin. Online at: http://www.met.ie/climate-ireland/rainfall.asp Accessed: 13th January 2014.

Parnell, J. & Curtis, T. (2012) Webb's an Irish flora. 8th ed. Cork University Press, Cork.

Perrin, P.M. (2012) Evaluation of Commonage Framework Plan data for use in the National Survey of Upland Habitats. Unpublished report. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Government, Dublin.

Perrin, P.M., O'Hanrahan, B., Roche, J.R. & Barron, S.J. (2009) *Scoping study and pilot survey for a national survey and conservation assessment of upland habitats and vegetation in Ireland*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.

Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2010) *Guidelines for a national survey and conservation assessment of upland habitats and vegetation in Ireland. Version 1.0.* Irish Wildlife Manuals, No. 48. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.

Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014) *Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0.* Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

Praeger, R.L. (1934) A Botanist in Ireland. Hodges, Figgis and Co., Dublin.

Preston, C.D., Pearman, D.A. & Dines, T.D. (eds) (2002). The New Atlas of the British and Irish Flora. Oxford University Press, Oxford.

Roche, J.R. & Perrin, P.M. (2010) A new county record for alpine clubmoss (*Diphasiastrum alpinum*) from the Comeragh Mountains, Co. Waterford (H6). *Irish Naturalists' Journal* **31**: 149-150.

Roche, J.R. (2011) New records for *Diphasiastrum alpinum* L. (Holub) and their implications for the species' conservation status in Ireland. *Irish Botanical News* **No. 21**: 16-20.

Rodwell, J.S. (ed.) (1991). British Plant Communities Volume 2: Mires and Heaths. Cambridge University Press, Cambridge.

Ssymank, A. (2009) Report and suggestions for the use of references for pressures, threats and impacts, Sub-group for Work Package 1 (review Art 17 reporting). Expert Group on Reporting, European Commission, DG Environment.

Young, R. (1972) A report on areas of scientific interest in County Waterford. An Foras Forbartha, Dublin.

APPENDIX 1: ANNEX I HABITATS

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

Annex I code	Full name of Annex I habitat	Standard abbreviation
3130	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	3130 Upland oligotrophic lakes
3160	Natural dystrophic lakes and ponds	3160 Dystrophic lakes
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	3260 Floating river vegetation
4010	Northern Atlantic wet heaths with *Erica tetralix*	4010 Wet heath
4030	European dry heaths	4030 Dry heath
4060	Alpine and Boreal heaths	4060 Alpine and Boreal heath
6230	*Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	*6230 Species-rich *Nardus* grasslands
7130	Blanket bogs (* if active bog)	*7130 Active blanket bog or 7130 Inactive blanket bog or *7130/7130 Blanket bog
7230	Alkaline fens	7230 Alkaline fens
8110	Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsetalia ladani*)	8110 Siliceous scree
8210	Calcareous rocky slopes with chasmophytic vegetation	8210 Calcareous rocky slopes
8220	Siliceous rocky slopes with chasmophytic vegetation	8220 Siliceous rocky slopes

APPENDIX 2: PHOTOGRAPHS

Plate A1: The arctic-alpine *Diphasiastrum alpinum* growing on exposed bedrock on the northern part of the plateau (Photo: Jenni Roche).

Plate A2: 8220 Siliceous rocky slope with *Saxifraga spathularis* and cushions of *Amphidium mougeotii* (Photo: Jenni Roche).

Plate A3: *7130 Active blanket bog with *Eriophorum vaginatum* and *Calluna vulgaris*, a very common community on the plateau (Photo: Jenni Roche).

Plate A4: 4030 Dry heath with *Calluna vulgaris* and *Vaccinium myrtillus* (Photo: Jenni Roche).

Plate A5: 8110 Siliceous scree with *Racomitrium lanuginosum* (Photo: Jenni Roche).

Plate A6: Coumfea from the top of the eastern corrie wall, with substantial scree slopes visible on the far side (Photo: Kate McNutt).

Plate A7: View of Coumtay from the east (Photo: Kate McNutt).

Plate A8: View of Coummahon from the west, with the Mahon Falls cascading down from the plateau (Photo: Kate McNutt).

Plate A9: Lough Coumfea in the snow (Photo: Fiona Devaney).

Plate A10: One of the Coum Iarthar Loughs, surrounded by 4030 Dry heath (Photo: Jenni Roche).

APPENDIX 3: PLANT SPECIES LIST

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

VASCULAR SPECIES	
Species name	**Common name**
Achillea millefolium	Yarrow
Agrostis canina	Velvet Bent
Agrostis capillaris	Common Bent
Agrostis stolonifera	Creeping Bent
Agrostis vinealis	Brown Bent
Alchemilla filicaulis	Lady's-mantle
Anthoxanthum odoratum	Sweet Vernal-grass
Asplenium trichomanes	Maidenhair Spleenwort
Bellis perennis	Daisy
Blechnum spicant	Hard-fern
Calluna vulgaris	Heather
Cardamine sp.	Bittercress/Cuckooflower
Carex binervis	Green-ribbed Sedge
Carex caryophyllea	Spring-sedge
Carex flacca	Glaucous Sedge
Carex panicea	Carnation Sedge
Carex paniculata	Greater Tussock-sedge
Carex pulicaris	Flea Sedge
Carex viridula subsp. *oedocarpa*	a Yellow-sedge
Chrysosplenium oppositifolium	Opposite-leaved Golden-saxifrage
Cirsium palustre	Marsh Thistle
Deschampsia flexuosa	Tufted Hair-grass
Diphasiastrum alpinum	Alpine Clubmoss
Dryopteris dilatata	Broad Buckler-fern
Empetrum nigrum	Crowberry
Epilobium brunnescens	New Zealand Willowherb
Erica cinerea	Bell Heather
Erica tetralix	Cross-leaved Heath
Eriophorum angustifolium	Common Cottongrass
Eriophorum vaginatum	Hare's-tail Cottongrass
Euphrasia officinalis agg.	Eyebrights
Festuca ovina	Sheep's-fescue

VASCULAR SPECIES

Species name	Common name
Festuca ovina agg.	Sheep's-fescues
Festuca rubra	Red Fescues
Galium saxatile	Heath Bedstraw
Hedera helix	Ivy
Huperzia selago	Fir Clubmoss
Ilex aquifolium	Holly
Juncus squarrosus	Heath Rush
Luzula campestris	Field Wood-rush
Luzula multiflora	Heath Wood-rush
Luzula sylvatica	Great Wood-rush
Lysimachia nemorum	Yellow Pimpernel
Nardus stricta	Mat-grass
Narthecium ossifragum	Bog Asphodel
Oxalis acetosella	Wood-sorrel
Plantago lanceolata	Ribwort Plantain
Polygala serpyllifolia	Heath Milkwort
Polypodium vulgare	Polypody
Potamogeton polygonifolius	Bog Pondweed
Potentilla erecta	Tormentil
Potentilla sterilis	Barren Strawberry
Pteridium aquilinum	Bracken
Ranunculus ficaria	Lesser Celandine
Sagina procumbens	Procumbent Pearlwort
Saxifraga spathularis	St Patrick's-cabbage
Saxifraga stellaris	Starry Saxifrage
Sedum rosea	Roseroot
Stellaria uliginosa	Bog Stitchwort
Succisa pratensis	Devil's-bit Scabious
Taraxacum officinale agg.	Dandelions
Teucrium scorodonia	Wood Sage
Trichophorum germanicum	Deergrass
Trifolium repens	White Clover
Umbilicus rupestris	Navelwort
Vaccinium myrtillus	Bilberry
Veronica chamaedrys	Germander Speedwell
Veronica officinalis	Heath Speedwell
Viola riviniana	Common Dog-violet

BRYOPHYTES

Species name	Common name
Amphidium mougeotii	Mougeot's Yoke-moss
Andreaea megistospora	Big-spored Rock-moss
Andreaea rothii	Hunt's/Dusky Rock-moss
Andreaea rothii subsp. *falcata*	Hunt's Rock-moss
Aulacomnium palustre	Bog Bead-moss
Brachythecium rivulare	River Feather-moss
Breutelia chrysocoma	Golden-head Moss
Bryum pseudotriquetrum	Marsh Bryum
Bryum pseudotriquetrum var. *pseudotriquetrum*	Marsh Bryum
Calliergonella cuspidata	Pointed Spear-moss
Calypogeia azurea	Blue Pouchwort
Calypogeia fissa	Common Pouchwort
Campylium stellatum	Yellow Starry Feather-moss
Campylopus atrovirens	Bristly Swan-neck Moss
Campylopus flexuosus	Rusty Swan-neck Moss
Campylopus introflexus	Heath Star-moss
Cephalozia bicuspidata	Two-horned Pincerwort
Ctenidium molluscum var. *molluscum*	Comb-moss
Cynodontium bruntonii	Brunton's Dog-tooth
Dichodontium palustre	Marsh Forklet-moss
Dicranella heteromalla	Silky Forklet-moss
Dicranum scoparium	Broom Fork-moss
Diplophyllum albicans	White Earwort
Douinia ovata	Waxy Earwort
Fissidens adianthoides	Maidenhair Pocket-moss
Fissidens dubius	Rock Pocket-moss
Frullania tamarisci	Tamarisk Scalewort
Hedwigia integrifolia	Green Hoar-moss
Hedwigia stellata	Starry Hoar-moss
Heterocladium heteropterum var. *heteropterum*	Wry-leaved Tamarisk-moss
Hookeria lucens	Shining Hookeria
Hylocomium splendens	Glittering Wood-moss
Hymenophyllum wilsonii	Wilson's Filmy-Fern
Hyocomium armoricum	Flagellate Feather-moss
Hypnum andoi	Mamillate Plait-moss

BRYOPHYTES

Species name	Common name
Hypnum jutlandicum	Heath Plait-moss
Isothecium myosuroides var. *myosuroides*	Mouse-tail Moss
Kurzia trichoclados	Heath Fingerwort
Lepidozia reptans	Creeping Fingerwort
Lophocolea bidentata	Bifid Crestwort
Lophozia ventricosa	Tumid Notchwort
Marsupella emarginata var. *emarginata*	Notched Rustwort
Microlejeunea ulicina	Fairy Beads
Molinia caerulea	Purple Moor-grass
Mylia anomala	Taylor's Flapwort
Odontoschisma sphagni	Bog-moss Flapwort
Palustriella commutata	Curled Hook-moss
Pellia neesiana	Nees' Pellia
Philonotis fontana	Fountain Apple-moss
Plagiochila spinulosa	Prickly Featherwort
Plagiothecium nemorale	Juicy Silk-moss
Plagiothecium undulatum	Waved Silk-moss
Pleurozium schreberi	Red-stemmed Feather-moss
Pogonatum urnigerum	Urn Haircap
Polytrichum alpinum	Alpine Haircap
Polytrichum commune	Common/Dense Haircap
Polytrichum formosum	Bank Haircap
Polytrichum juniperinum	Juniper Haircap
Polytrichum piliferum	Bristly Haircap
Pseudotaxiphyllum elegans	Elegant Silk-moss
Ptilidium ciliare	Ciliated Fringewort
Racomitrium aciculare	Yellow Fringe-moss
Racomitrium aquaticum	Narrow-leaved Fringe-moss
Racomitrium heterostichum	Bristly Fringe-moss
Racomitrium lanuginosum	Wooly Fringe-moss
Rhabdoweisia crenulata	Greater Streak-moss
Rhizomnium punctatum	Dotted Thyme-moss
Rhytidiadelphus loreus	Little Shaggy-moss
Rhytidiadelphus squarrosus	Springy Turf-moss
Riccardia sp.	a Germanderwort
Scapania gracilis	Western Earwort

BRYOPHYTES

Species name	Common name
Scapania undulata	Water Earwort
Scleropodium purum	Neat Feather-moss
Scorpidium revolvens	Rusty Hook-moss
Sphagnum capillifolium	Acute-leaved/Red Bog-moss
Sphagnum cuspidatum	Feathery Bog-moss
Sphagnum fallax	Flat-topped Bog-moss
Sphagnum palustre	Blunt-leaved Bog-moss
Sphagnum papillosum	Papillose Bog-moss
Sphagnum subnitens	Lustrous Bog-moss
Sphagnum tenellum	Soft Bog-moss
Thuidium tamariscinum	Common Tamarisk-moss

LICHENS

Species name	Species name
Cladonia asahinae	*Cladonia portentosa*
Cladonia bellidiflora	*Cladonia species*
Cladonia ciliata	*Cladonia squamosa*
Cladonia coccifera	*Cladonia squamosa* var. *subsquamosa*
Cladonia diversa	*Cladonia subcervicornis*
Cladonia furcata	*Platismatia glauca*
Cladonia gracilis	*Stereocaulon evolutum*
Cladonia macilenta	*Stereocaulon vesuvianum*

Figure 1. Survey area / boundary of Comeragh Mountains cSAC (001952), Co. Waterford

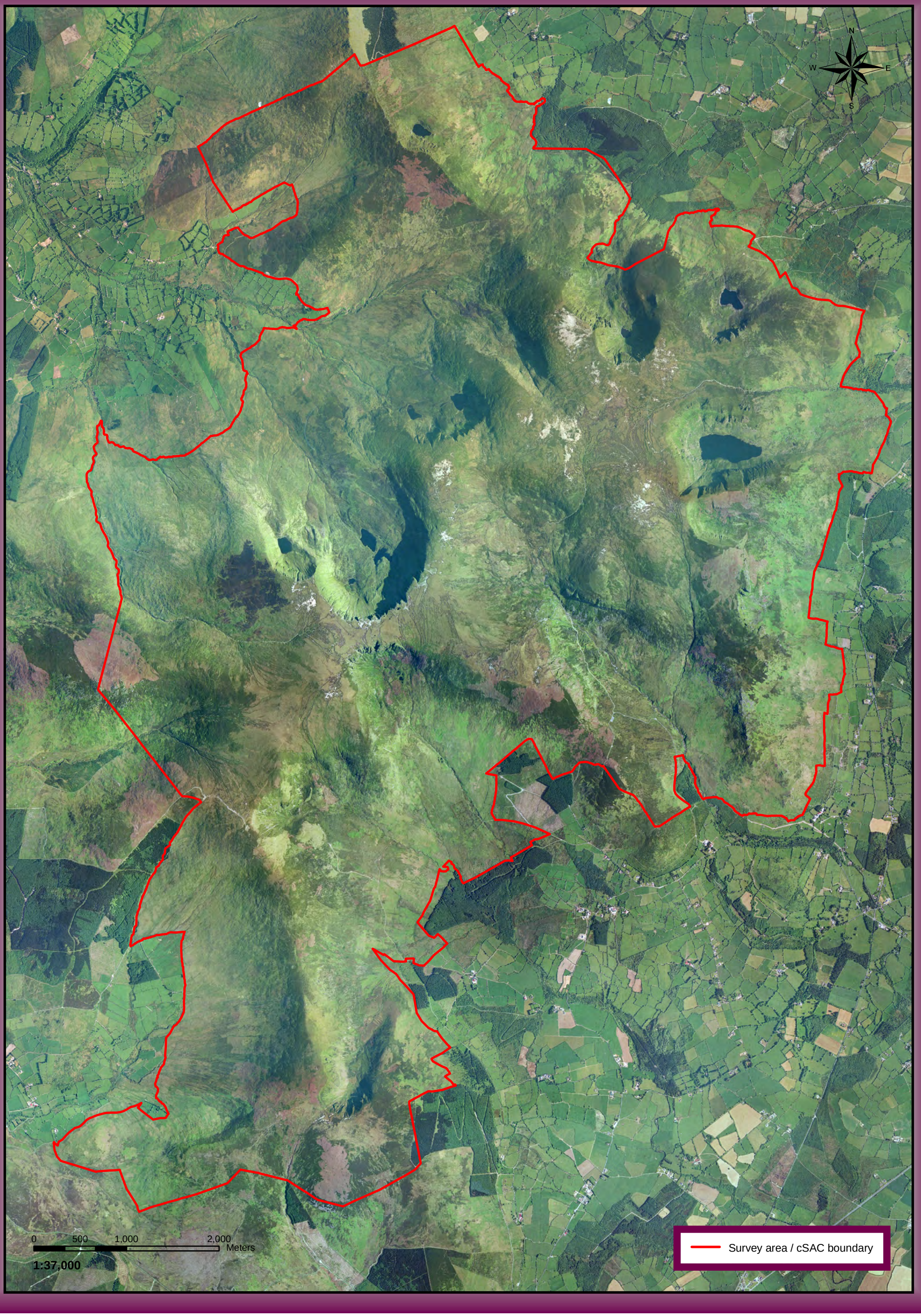

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Figure 2. Primary Fossitt habitats within Comeragh Mountains cSAC (001952), Co. Waterford

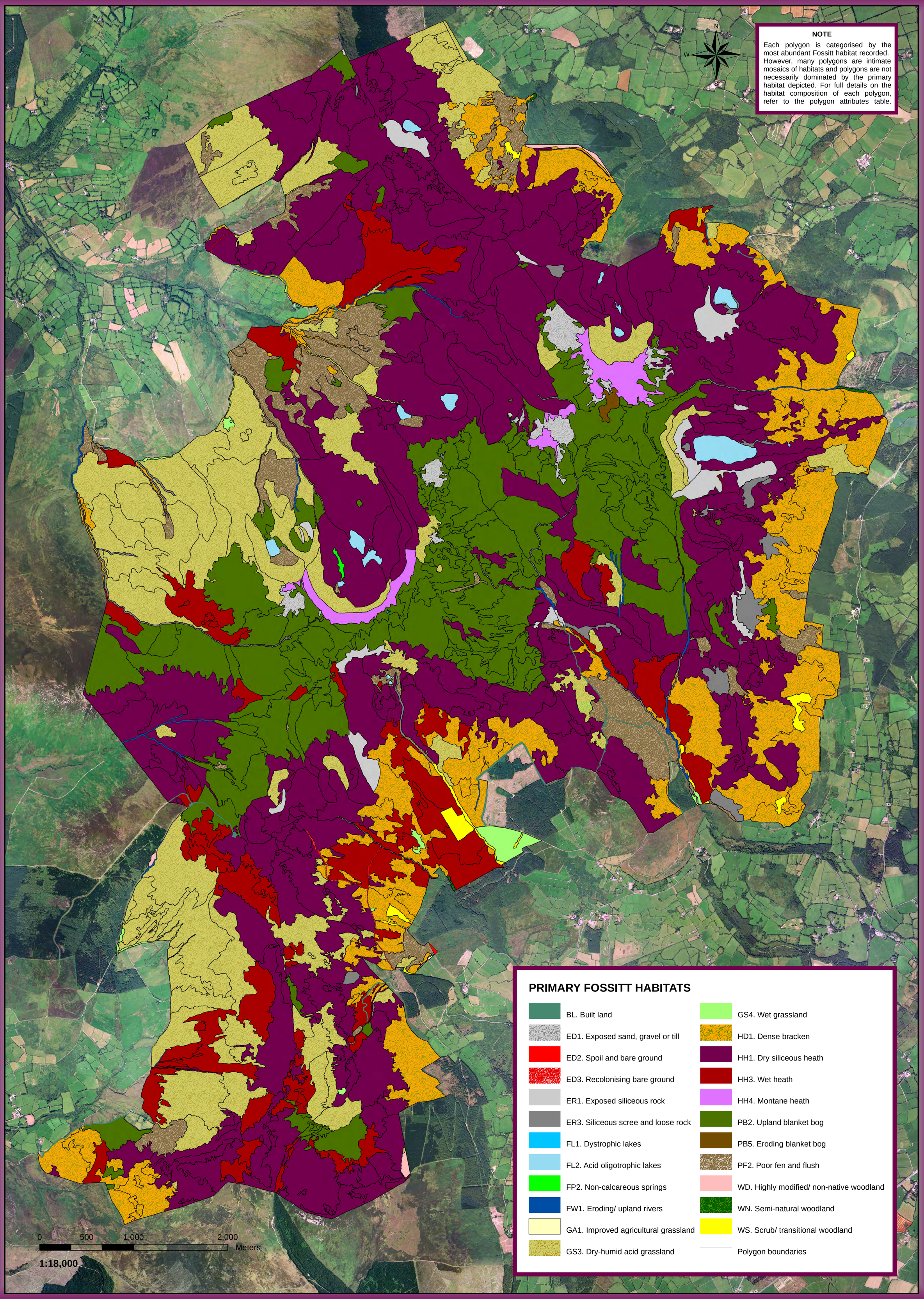

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Figure 3. Primary Annex I habitats within Comeragh Mountains cSAC (001952), Co. Waterford

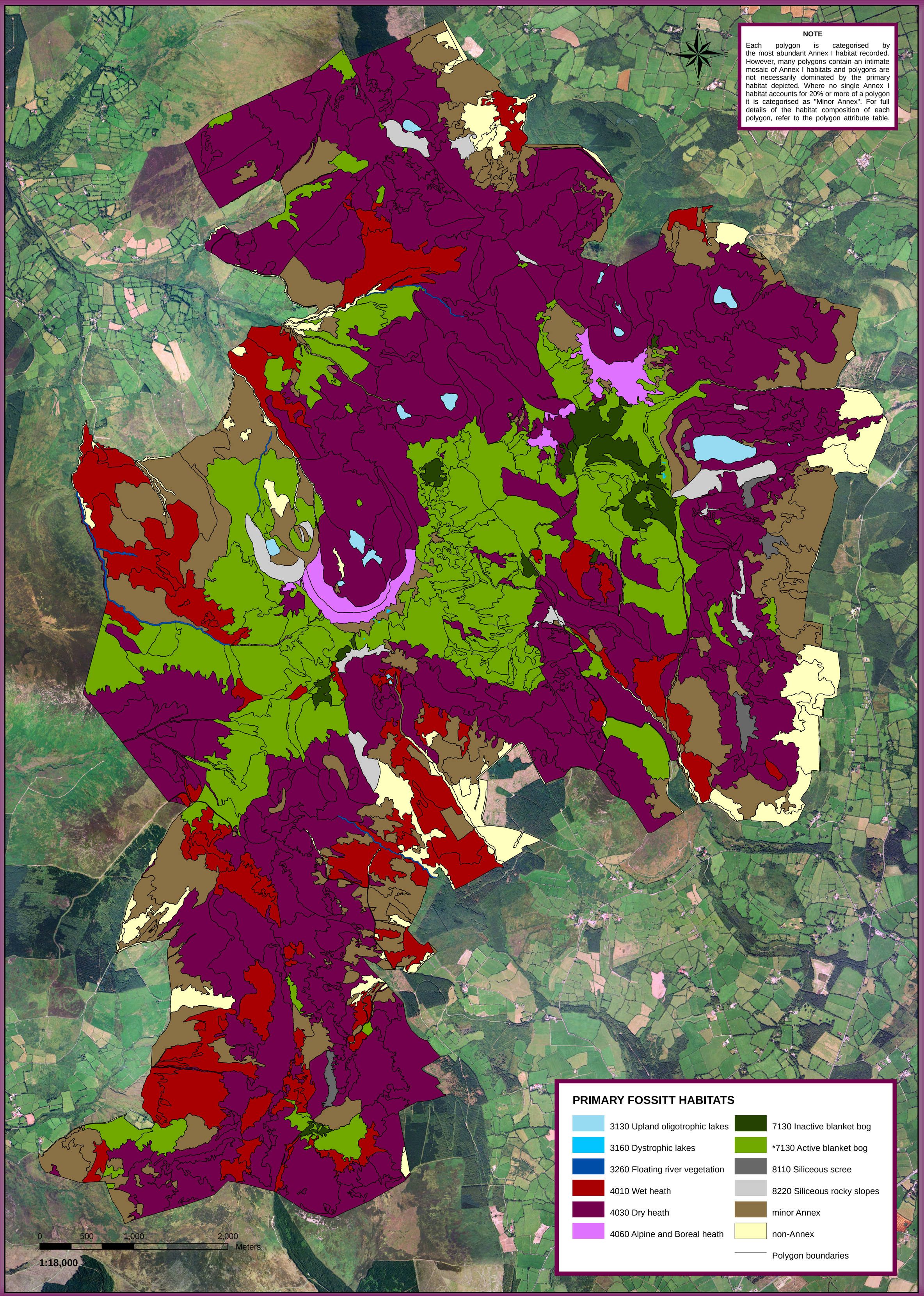

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Figure 4a. Cover of 4010 WET HEATH within Comeragh Mountains cSAC (001952), Co. Waterford

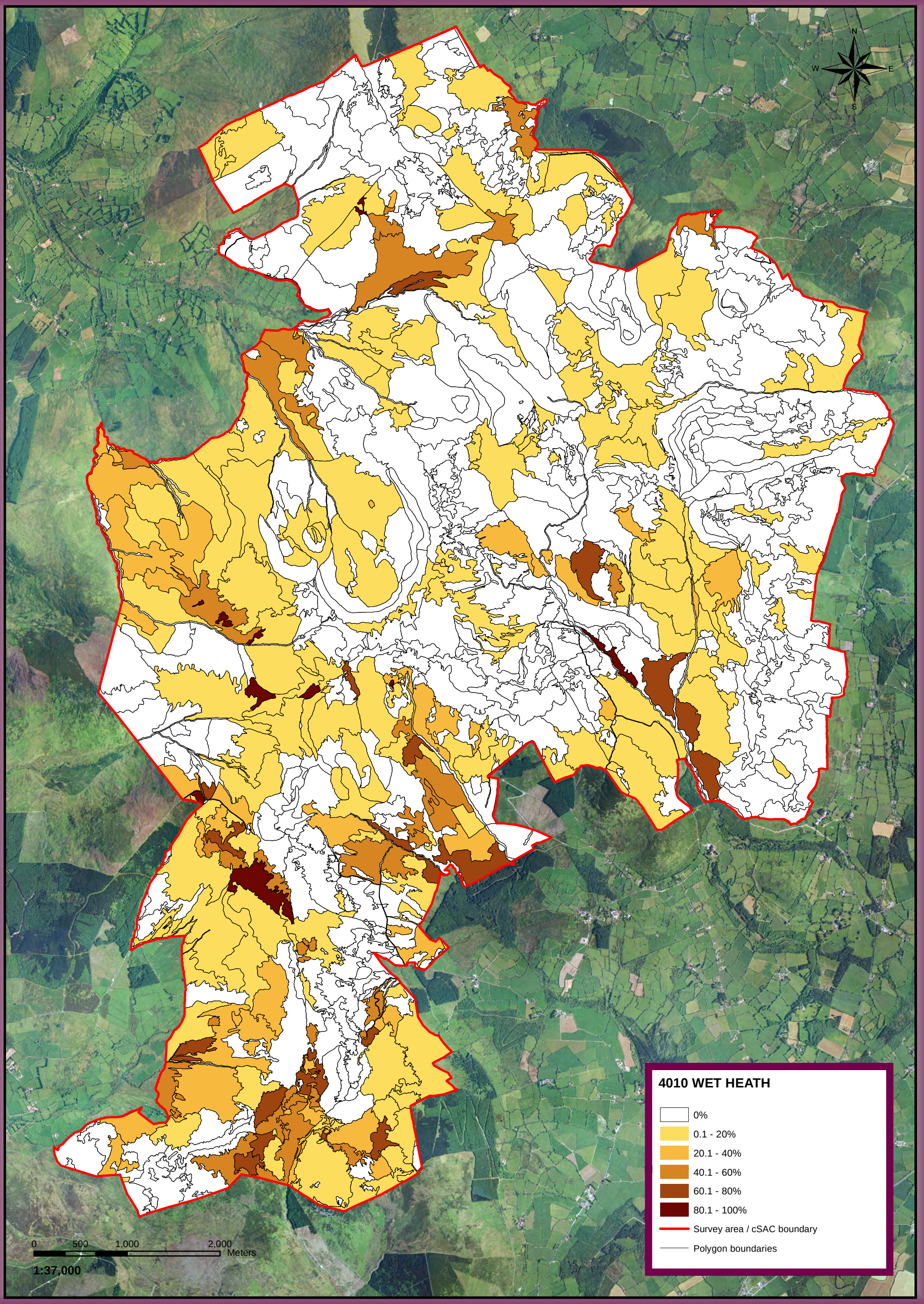

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Figure 4b. Cover of 4030 DRY HEATH within Comeragh Mountains cSAC (001952), Co. Waterford

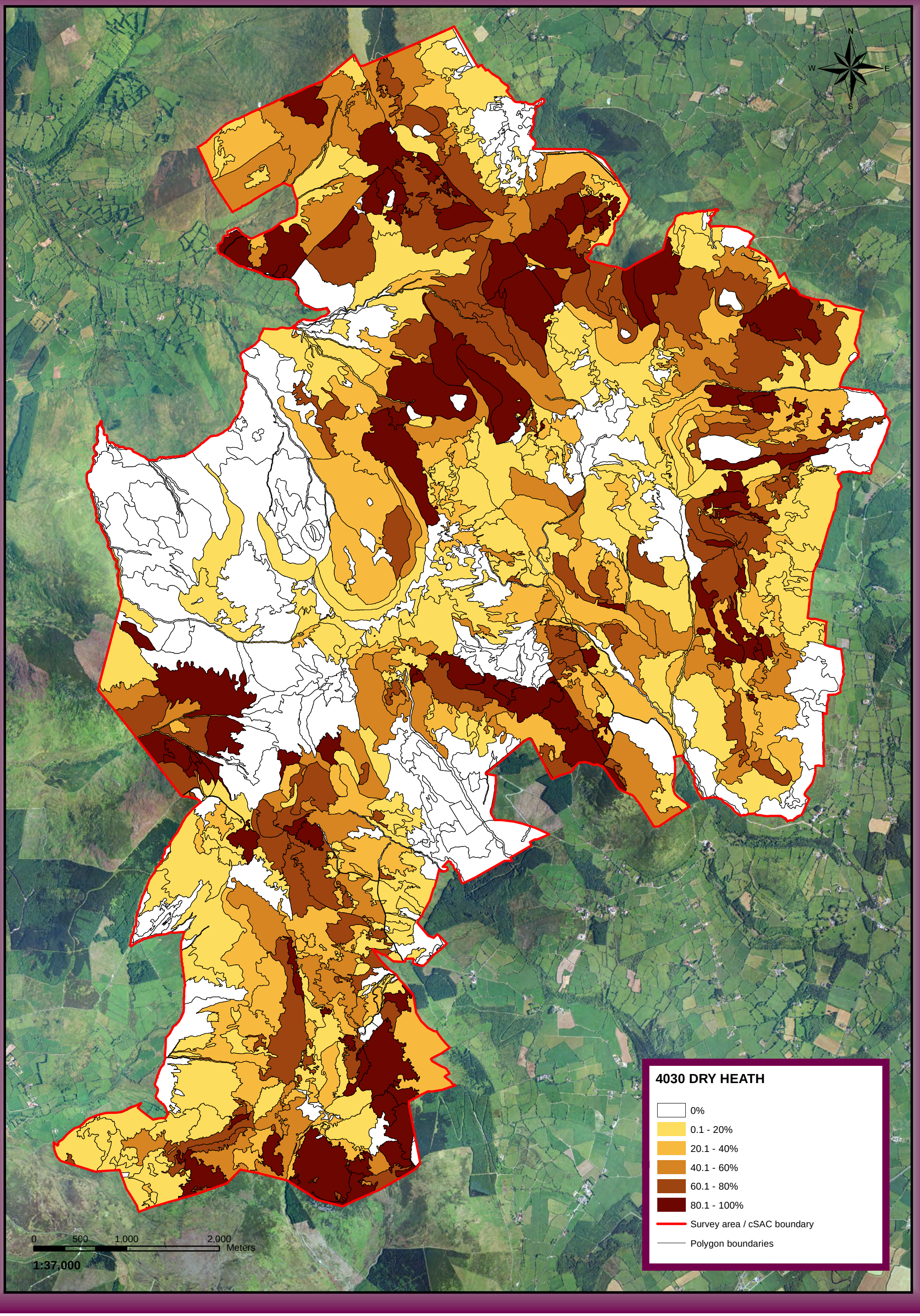

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Figure 4c. Cover of 4060 ALPINE AND BOREAL HEATH within Comeragh Mountains cSAC (001952), Co. Waterford

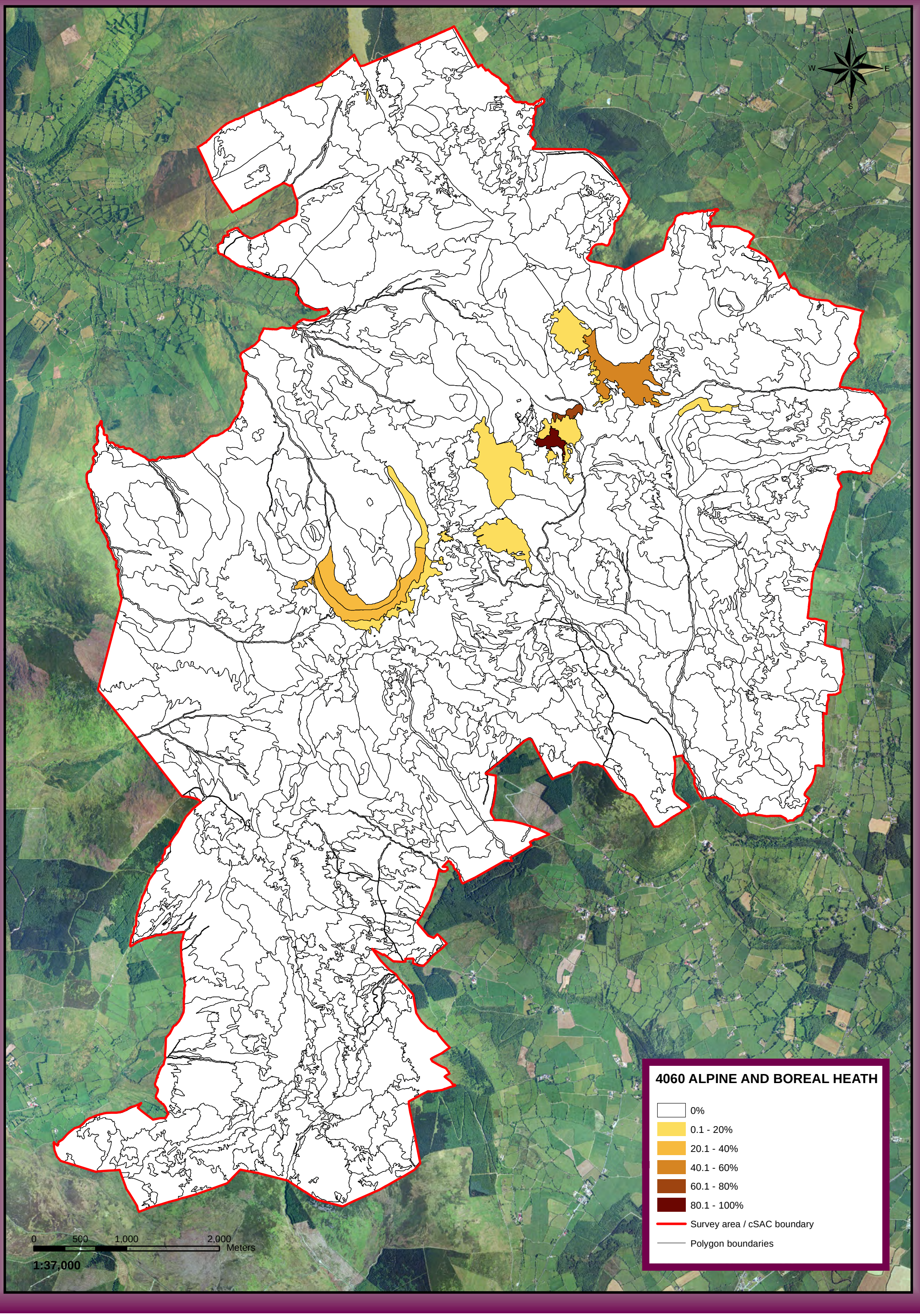

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Figure 4d. Cover of *6230 SPECIES-RICH *NARDUS* GRASSLANDS within Comeragh Mountains cSAC (001952), Co. Waterford

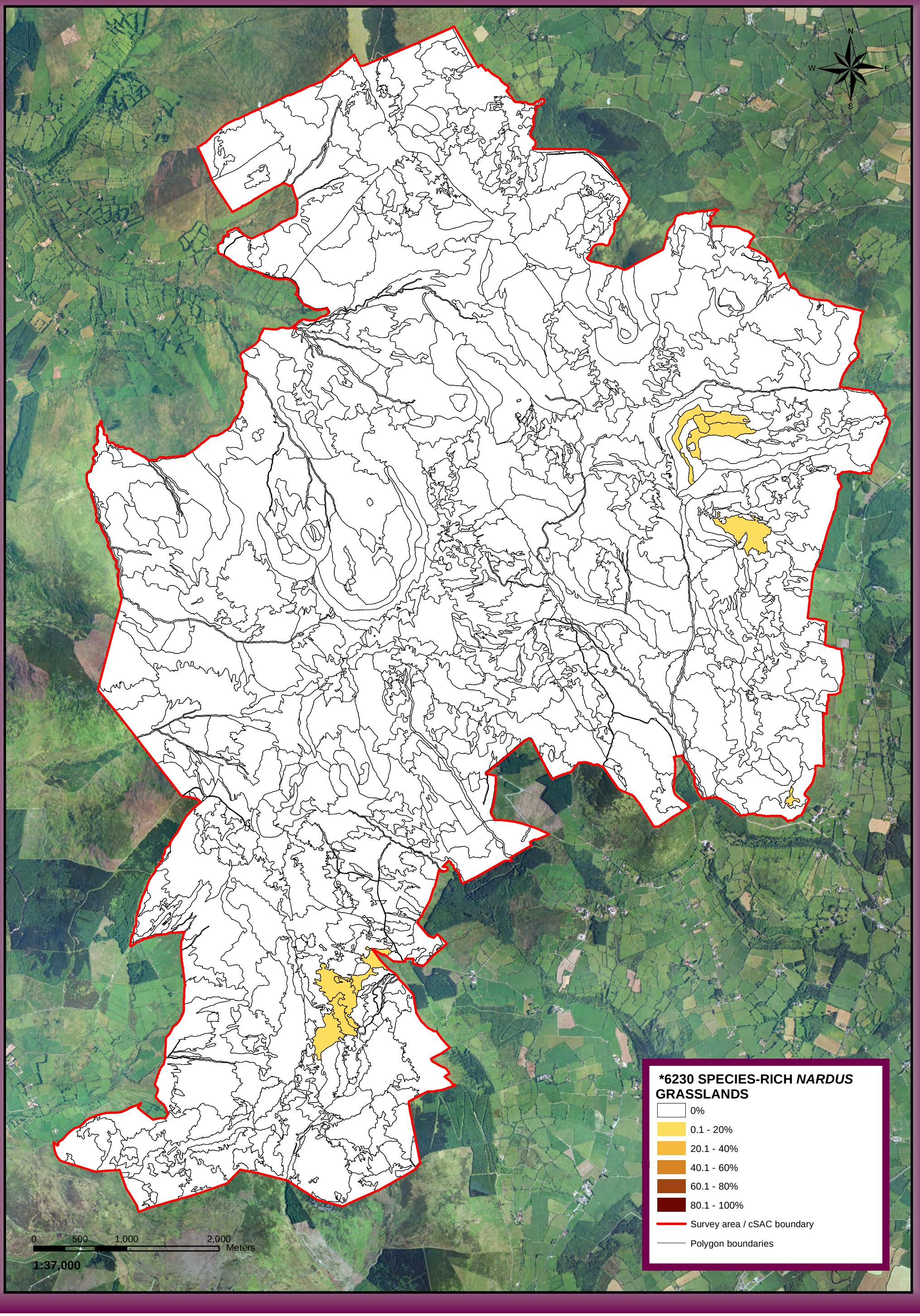

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Figure 4e. Cover of *7130 ACTIVE BLANKET BOG within Comeragh Mountains cSAC (001952), Co. Waterford

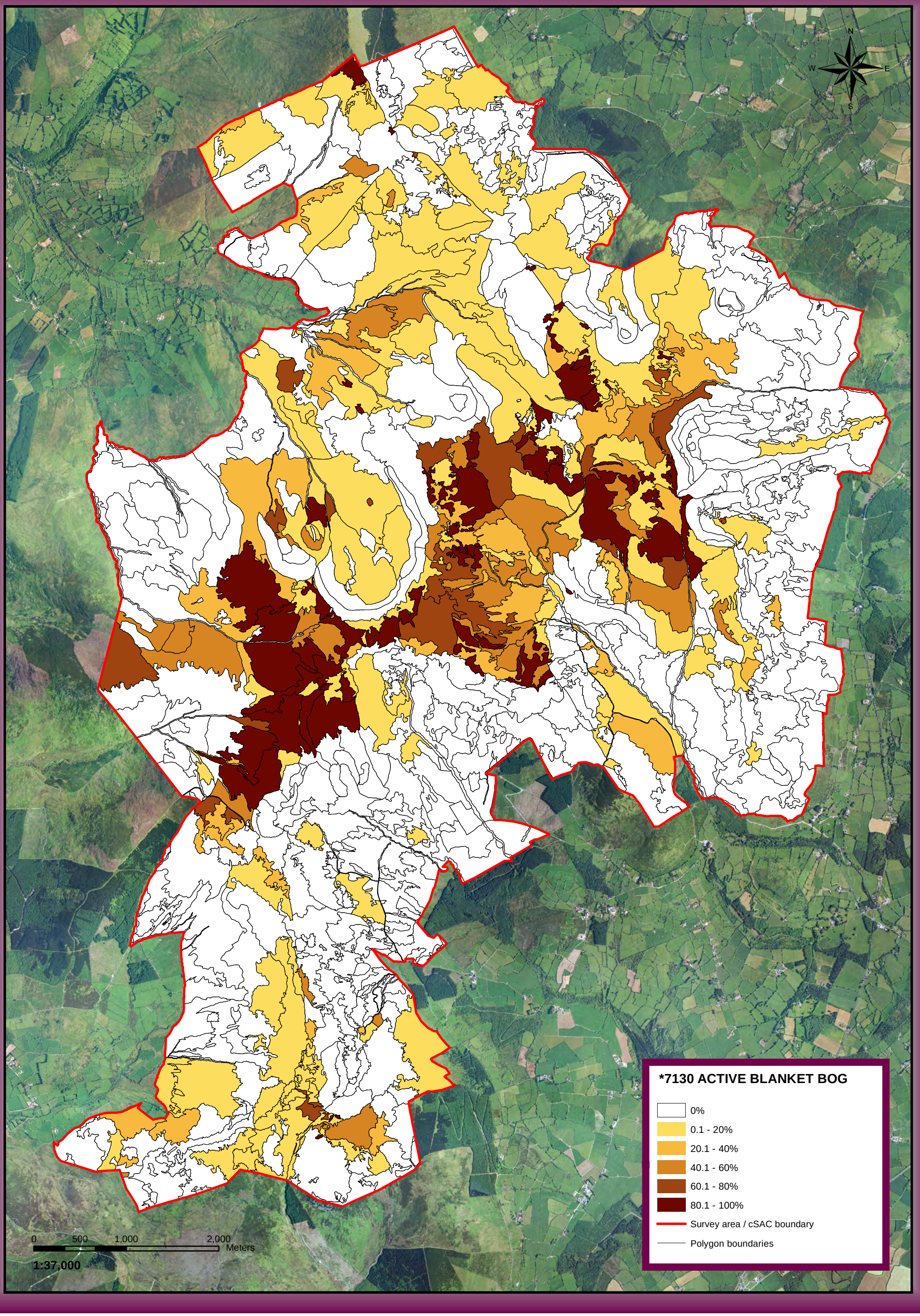

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Figure 4f. Cover of 7130 INACTIVE BLANKET BOG within Comeragh Mountains cSAC (001952), Co. Waterford

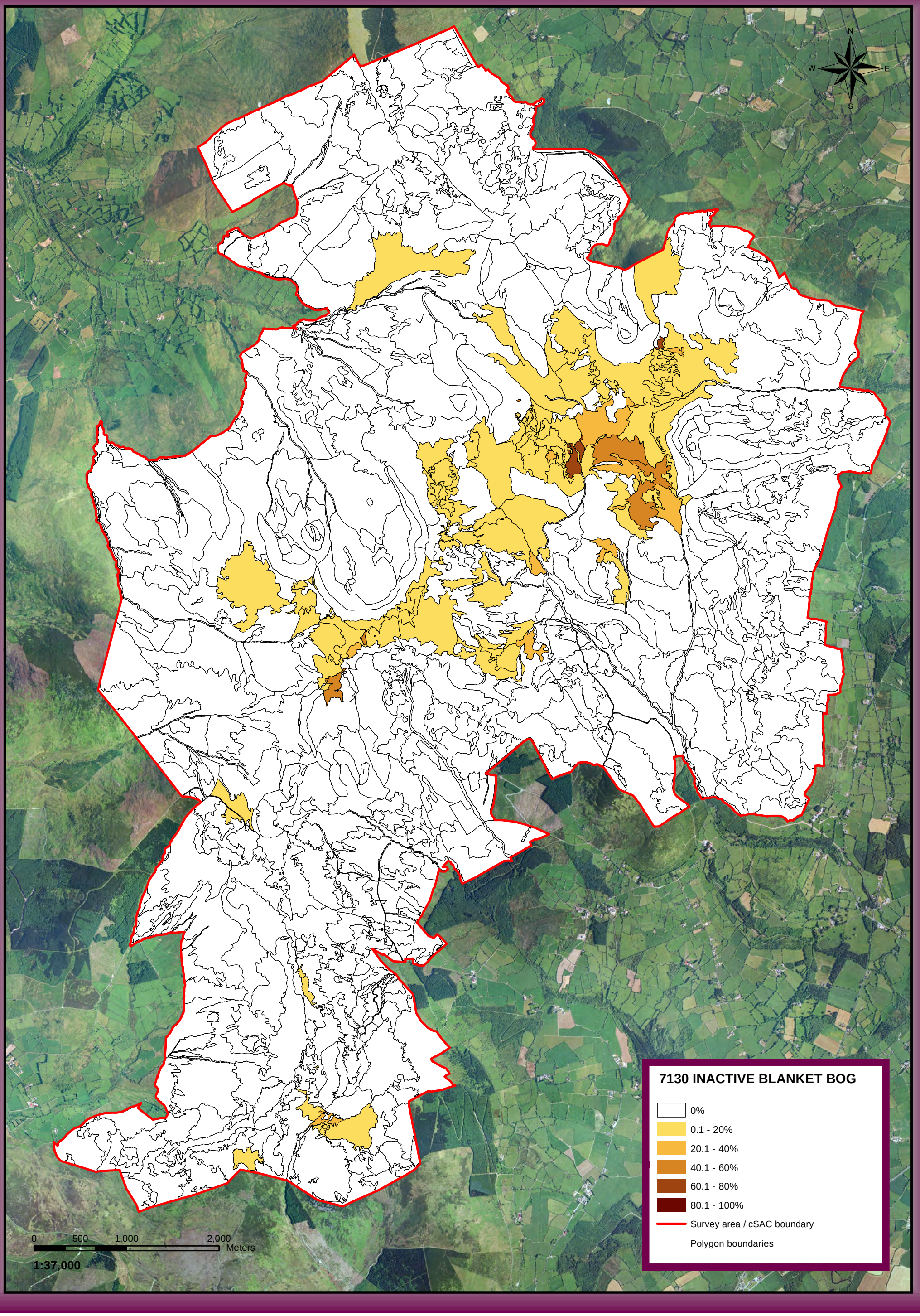

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Figure 4g. Cover of 7230 ALKALINE FENS within Comeragh Mountains cSAC (001952), Co. Waterford

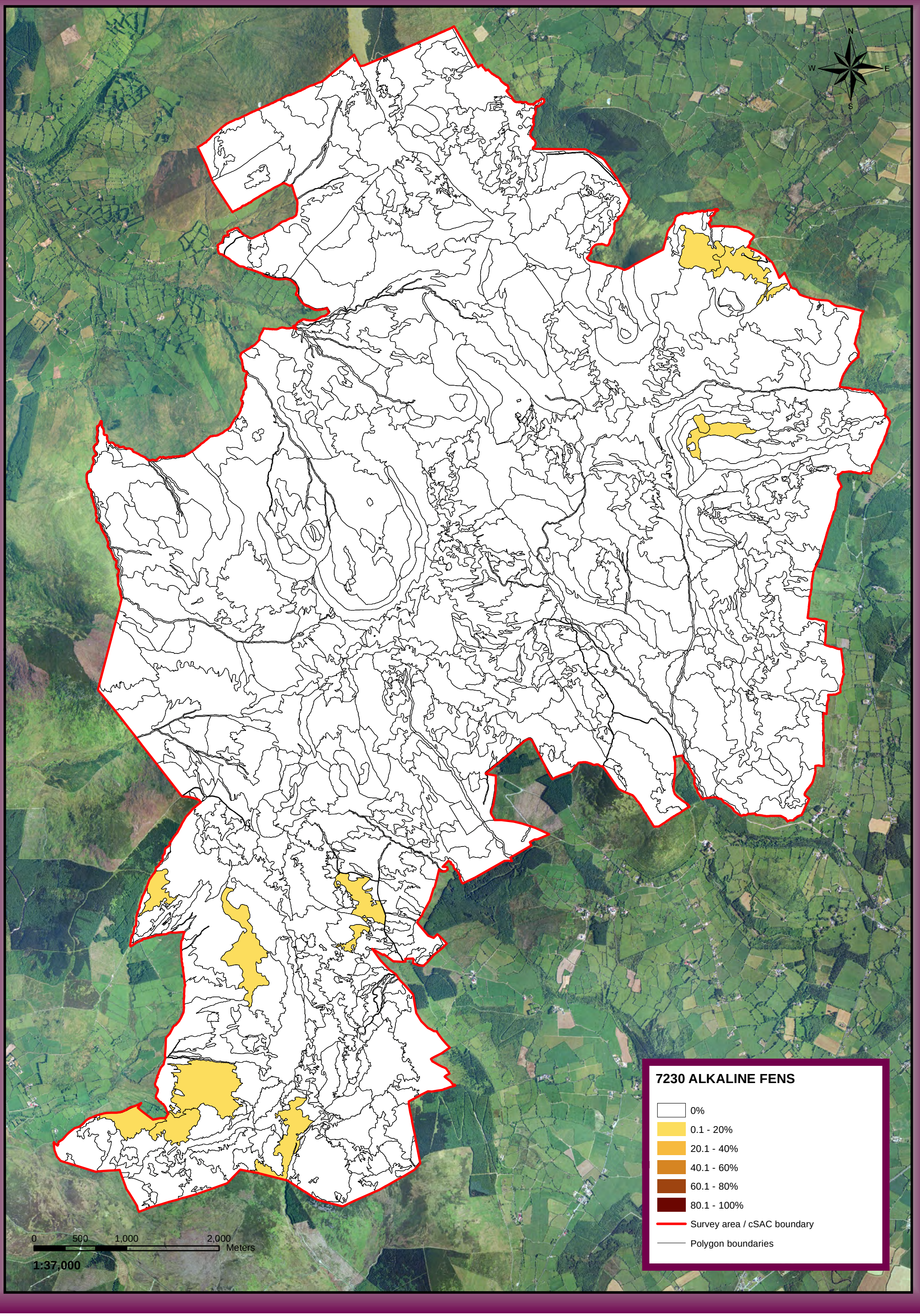

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Figure 4h. Cover of 8110 SILICEOUS SCREE within Comeragh Mountains cSAC (001952), Co. Waterford

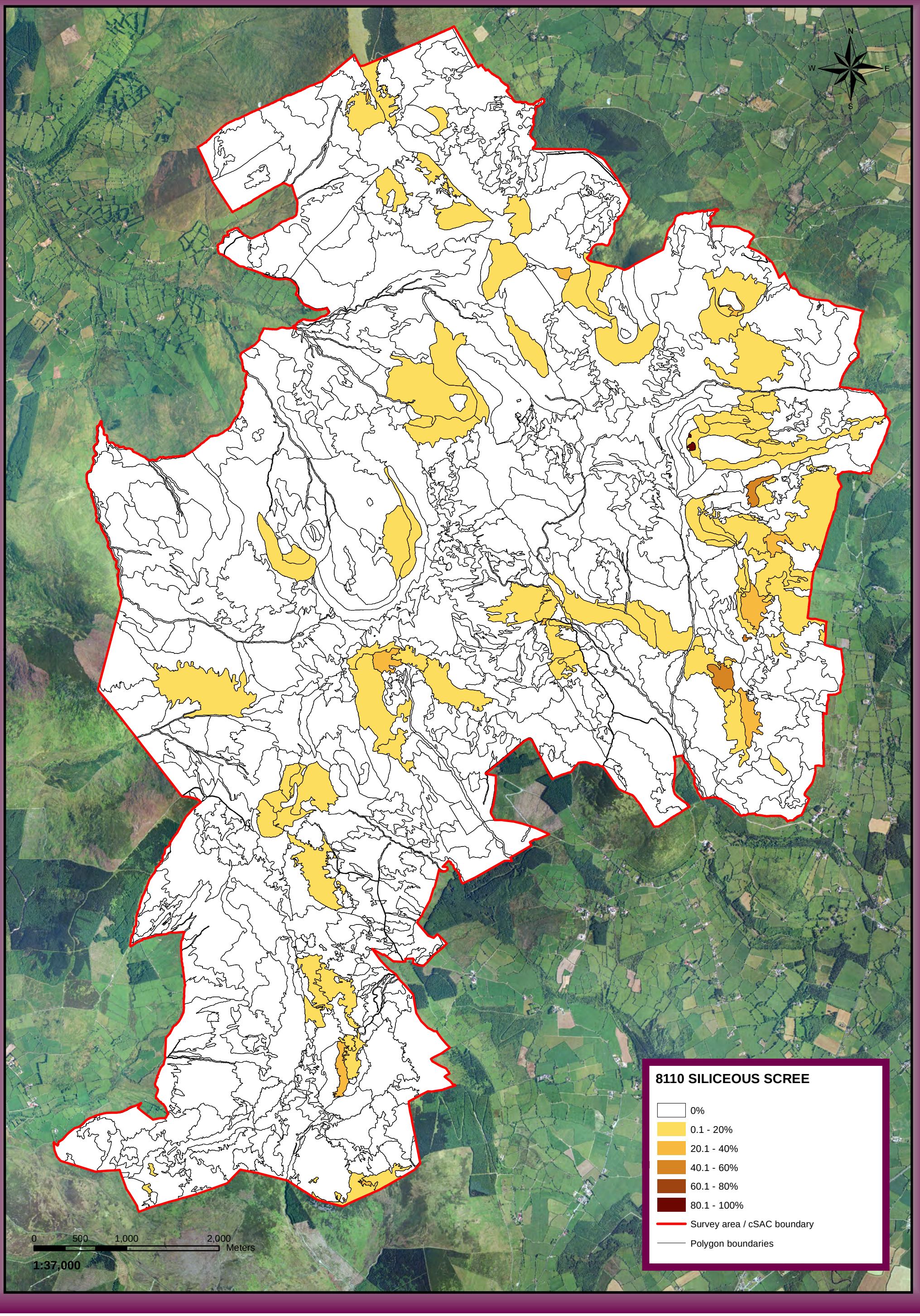

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Figure 4i. Cover of 8210 CALCAREOUS ROCKY SLOPES within Comeragh Mountains cSAC (001952), Co. Waterford

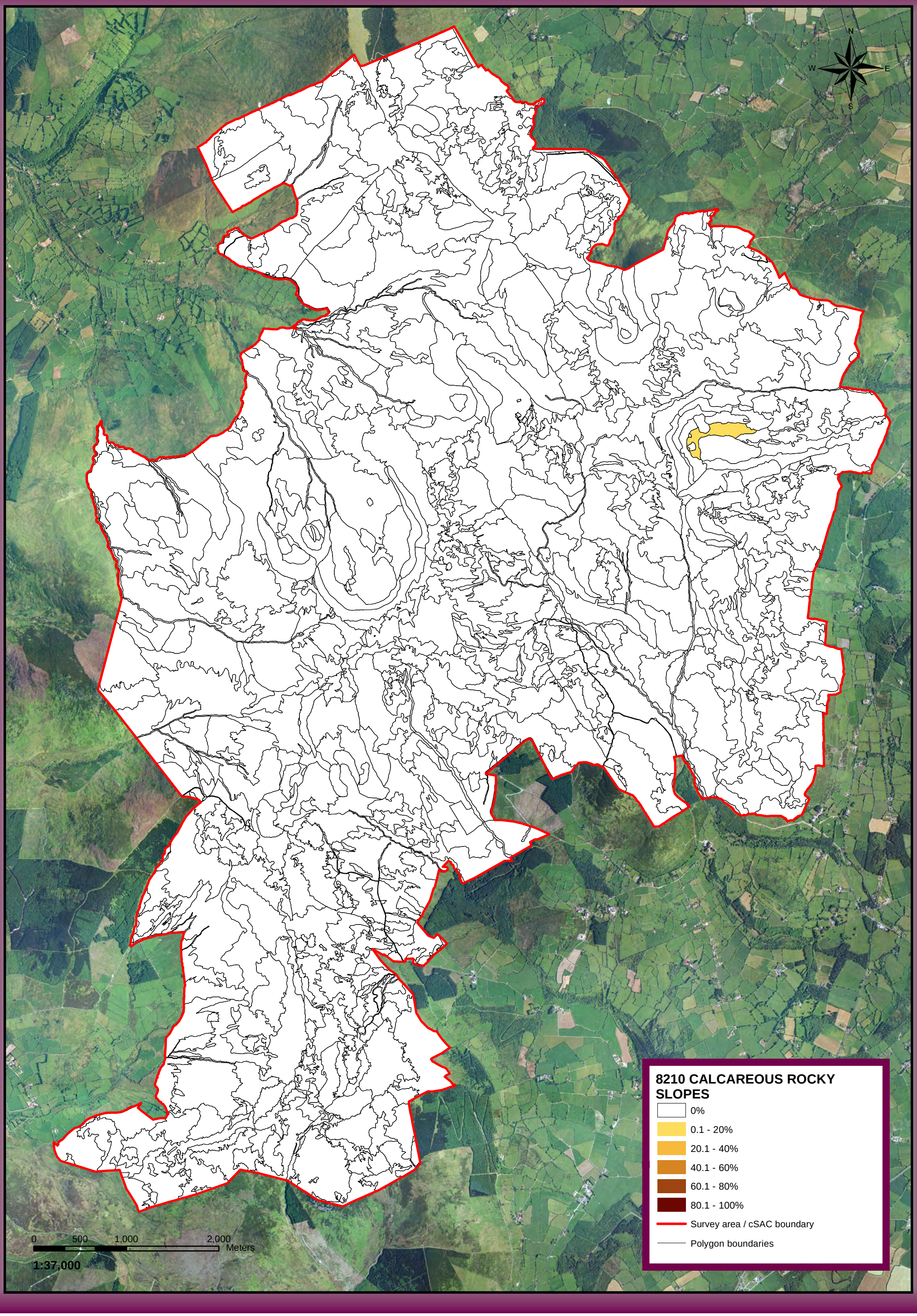

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Figure 4j. Cover of 8220 SILICEOUS ROCKY SLOPES within Comeragh Mountains cSAC (001952), Co. Waterford

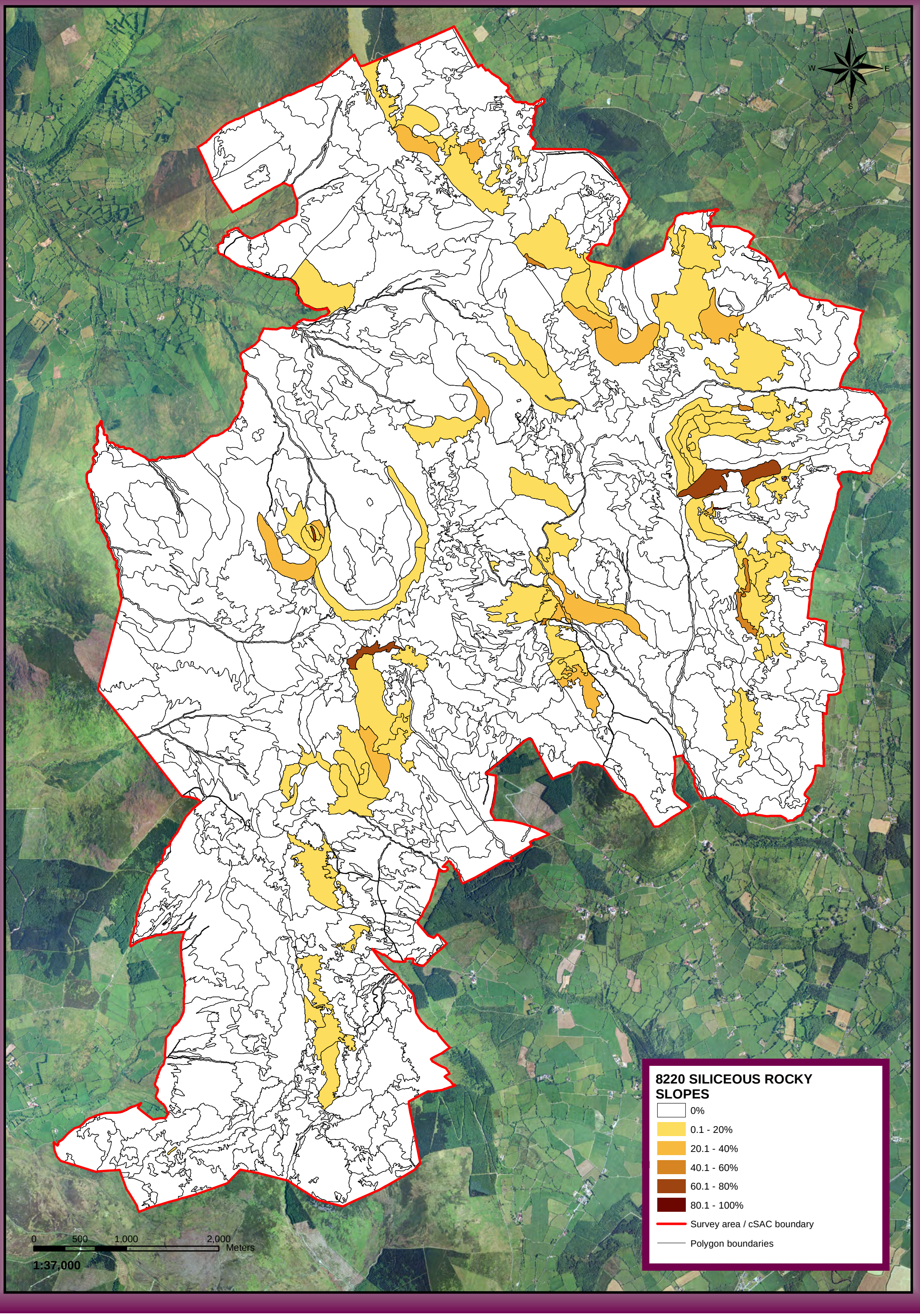

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Figure 5. Location of rare and notable plant records within Comeragh Mountains cSAC (001952), Co. Waterford

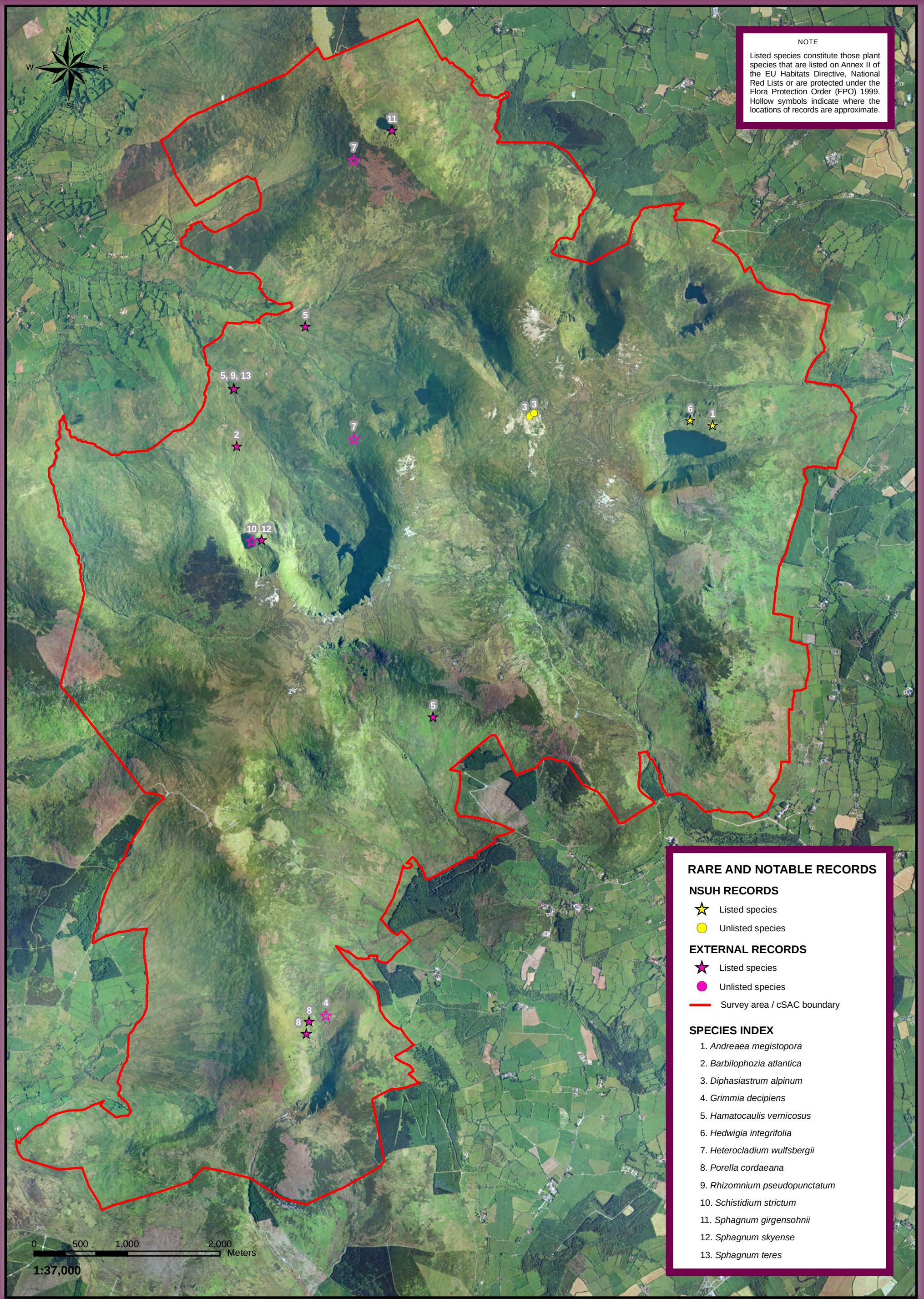

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Figure 6. Location and results of conservation assessment monitoring stops within Comeragh Mountains cSAC (001952), Co. Waterford

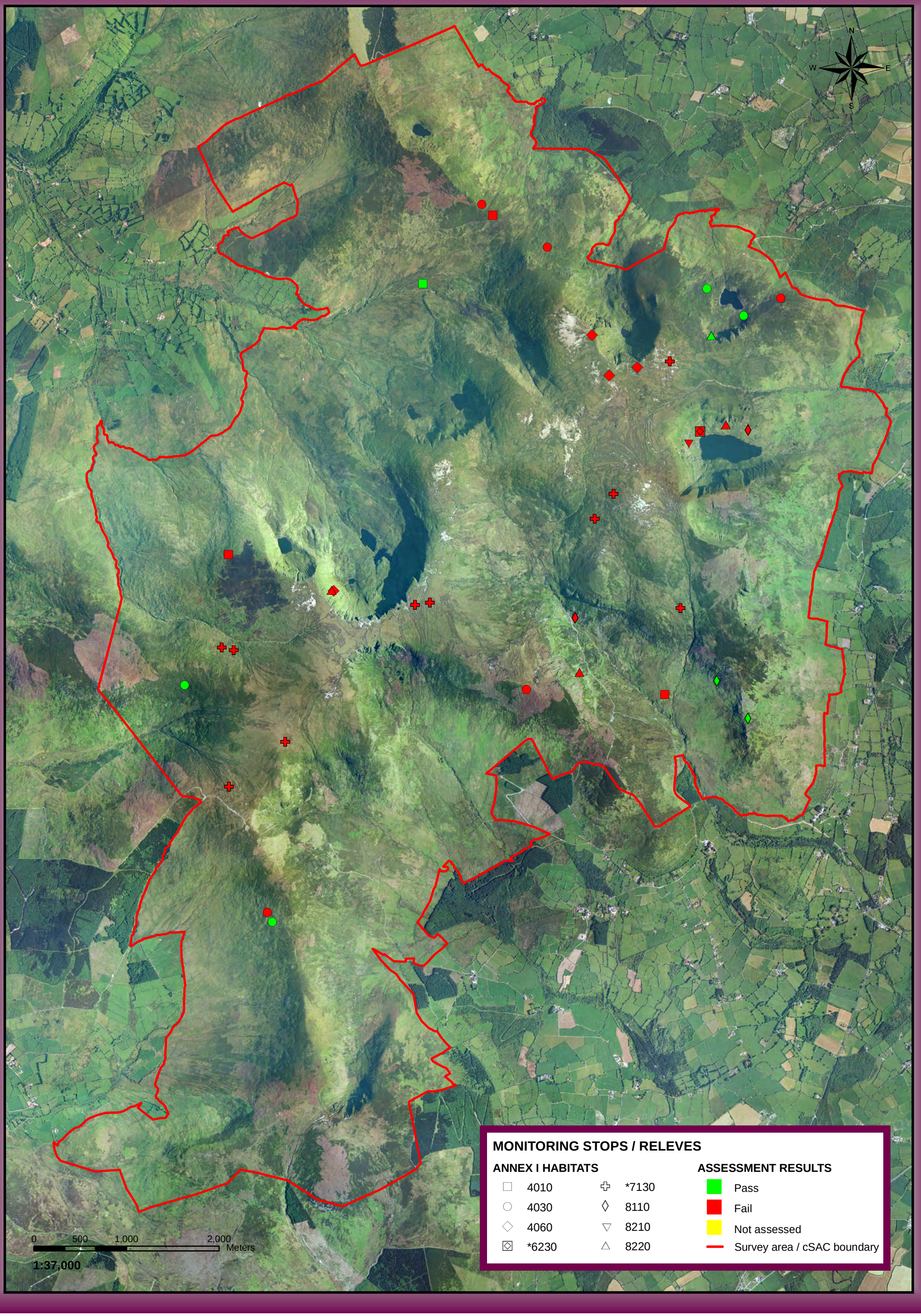

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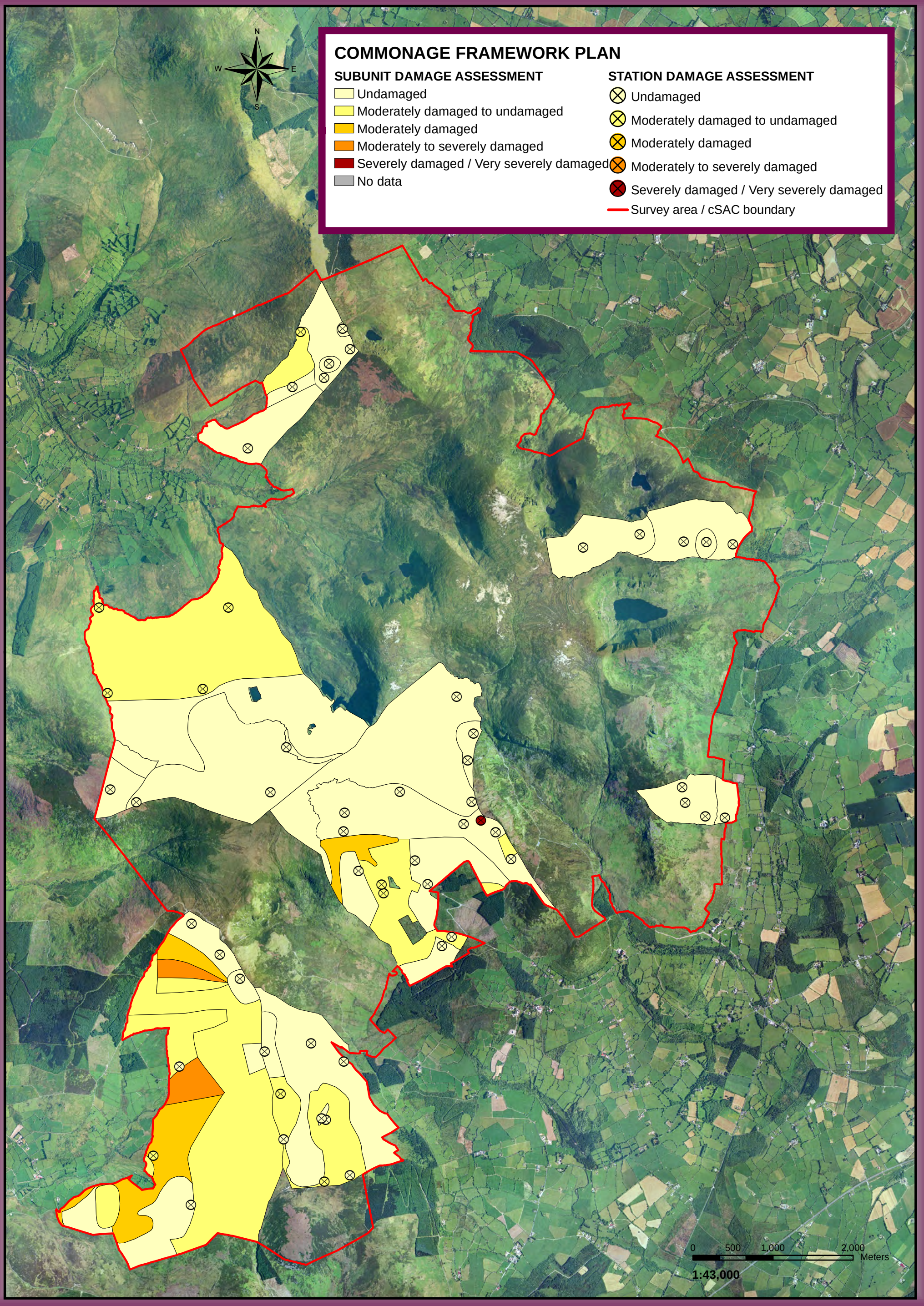
Figure 7. Commonage Framework Plan damage assessment (2000) within Comeragh Mountains cSAC (001952), Co. Waterford



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