



Glen Clova Vegetation Survey Report

September 2021

Prepared by Lindsay Mackinlay MSc MCIEEM

Principal Ecologist

Parnassus Ecology

on behalf of Tilhill Forestry Ltd.

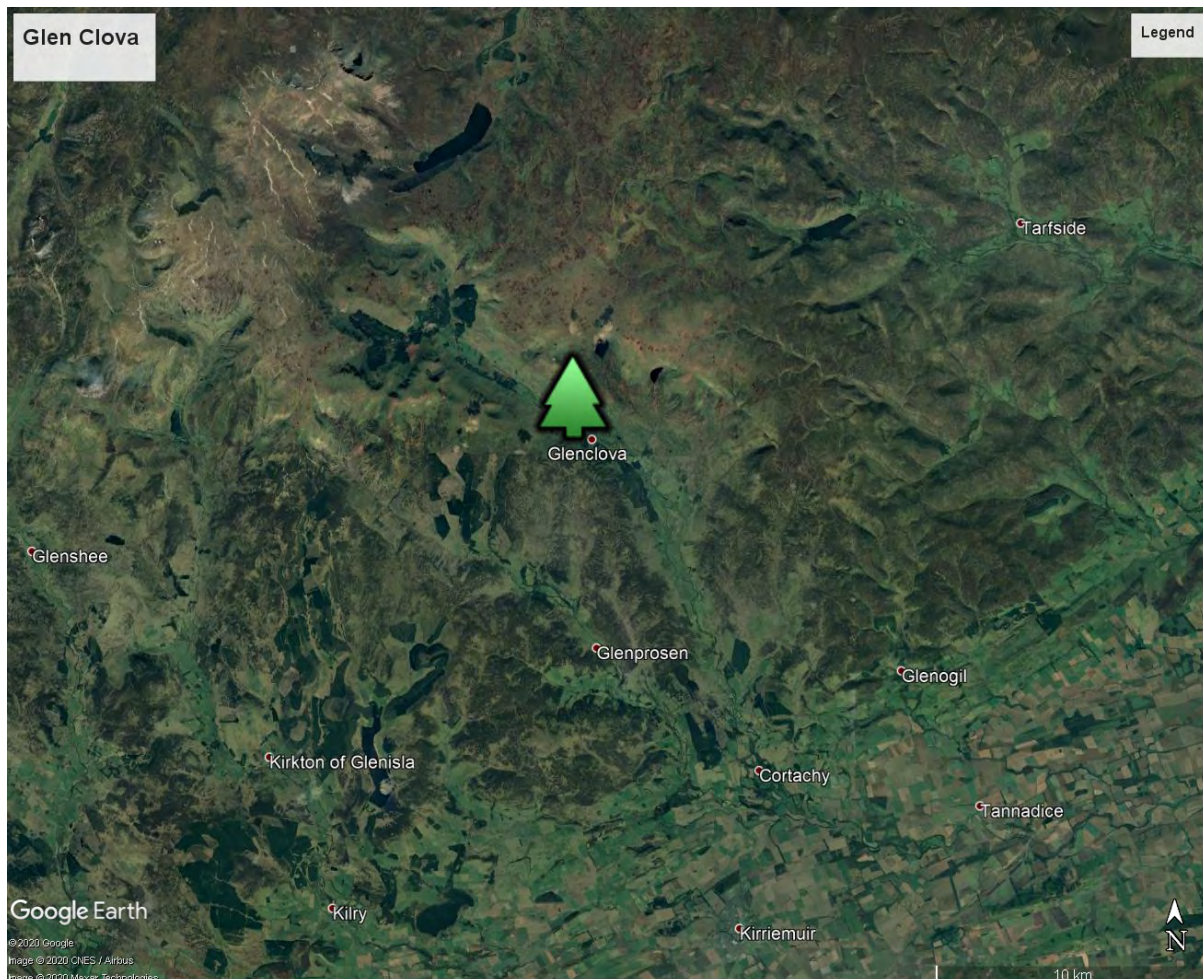
TABLE OF CONTENTS:

1). Introduction	2
2). Survey Methods	3
2.1). Phase 1 Habitat and NVC Survey Approach at Glen Clova	3
2.2). Phase 1 and NVC Survey Procedures	4
2.3). Survey & Access Conditions.....	5
3). Phase 1 Habitats & NVC Plant Communities	6
3.1). Site Summary (<i>inc.</i> notable fauna).....	6
3.2). Woodland, Scattered trees and Scrub	10
3.3). Acid grassland.....	11
3.4). Calcareous and Neutral grassland	13
3.5). Poor semi-improved and improved grassland	14
3.6). Marshy grassland.....	15
3.7). Tall herb and fen.....	16
3.8). Dry dwarf-shrub heath (with acid grassland)	18
3.9). Wet dwarf-shrub heath (with acid grassland)	20
3.10). Blanket Bog, Dry and Wet Modified bog	21
3.11). Flushes, springs and springheads	23
4). Evaluation of Habitats and Species	26
5). Recommendations.....	37
Appendix 1: Phase 1 Habitat (NVC) Maps and Target Notes for Glen Clova	39
- Steel's Craig	
- Bontyre	
- Craig Duff	
- Brownholm & Corrie of Clova	
- Coremachy	
Appendix 2: Glen Clova Plant Species List.....	78
Appendix 3: EUNIS Habitat/NVC Codes.....	85

1). Introduction

Glen Clova lies approximately 20km north of Kirriemuir, within the Cairngorms National Park and Angus, covering an area of approximately 1000ha, and rising from approximately 240m to 600m above sea level.

Map 1: General overview: Glen Clova



The land was surveyed to facilitate consideration of ongoing forestry proposals in the area. Particular attention has been made to peatland and wetlands (Ground Water Dependent Terrestrial Ecosystems or GWDTEs) as they are protected by the Water Framework Directive. The Scottish Environment Protection Agency (SEPA) have currently classified these GWDTEs using the National Vegetation Classification (NVC) vegetation communities which are highly ground water dependent and moderately ground water dependent¹. These have been highlighted in the report.

¹ SEPA (2017) Landuse Planning System Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (Version 3)

2. Survey Methods

2.1 Phase 1 Habitat and NVC Survey Approach at Glen Clova

A Phase 1 survey is a standard approach to identify and present habitats² and map their spatial extent. Habitats were classified according to current Phase 1 guidance, and boundaries between habitats were mapped onto satellite images. Additional information on habitats and species was recorded using target notes, which have been included in this report (**Appendix 1**).

The following method was employed at Glen Clova, over two main survey periods; October/November 2020 & June 2021. All work took place on land outwith Sites of Special Scientific Interest (SSSIs), including Caenlochan SSSI, but within the Cairngorm Massif Special Protection Area (SPA) – the latter designated for its golden eagle population.

Initial survey work took place between 20th October 2020 and 27th November 2020. During this time, it quickly became apparent that the short-day lengths and poor weather would hinder the ability of the surveyor to cover large areas in an effective and cost-efficient manner, and half the work was therefore postponed until summer 2021. This decision was also made on the basis that the winter months are not optimal months for vegetation survey work, as many rarer species are not flowering and/or are otherwise not evident.

However, in order to permit some forward-planning over the winter prior to further surveys in summer 2021 (during the optimal survey period), a two-tier approach to the fieldwork was taken in agreement with Tilhill. Where possible and on areas considered most likely to have plant communities of key sensitivity *e.g.* flushes, bogs, the Phase 1/NVC survey approach was solely used, providing detailed map information, and encompassing approximately 250ha of the site. 'Recce survey' and 'remote sensing' approaches were adopted on a further 500ha of land, where the site was viewed as being more uniform in terms of vegetation types *e.g.* heather moorland, in order to sample habitats and plant communities. The remaining areas of the site were left unsurveyed until June 2021.

The 'recce survey' involved walking across areas of land and sampling vegetation at regular points on the way. Peat probe work was also used to assist in the assessment of peatland areas. Mapping of these 'recce areas' then took place using OS aerial imagery, Google EarthPro imagery, Google streetview and photographs taken by the surveyor in order to augment the field samples and produce Phase 1 vegetation maps. In some sections of the site, remote sensing techniques only using high-quality aerial imagery were also employed to map vegetation (without any recce or detailed surveys beforehand), on the basis of work carried out elsewhere on the site, which gave more confidence to identify broad habitats via their texture and colour on aerial maps.

In June 2021, the remaining areas of Glen Clova were subject to detailed Phase 1/NVC survey whilst those areas mapped during the 'recce survey' and 'remote sensing' in Oct/Nov 2020 were subject to detailed ground-truthing in order to check that the earlier mapping was correct, with any

² JNCC (2010) Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit, ISBN 0 86139 636 7

amendments made on the respective maps as required, and to assess for the presence of any notable plant species *e.g* many flushes were re-visited. In practice, it was found that the recce and remote sensing methods provided generally reliable assessments of the vegetation.

2.2. Phase 1 and NVC Survey Procedures:

On those areas of the site subject to detailed Phase 1/NVC survey in Oct/Nov 2020 and June 2021, the site was carefully walked over, with a zig-zag and transect approach adopted in order to try and obtain a full picture of the habitats present in an efficient manner. Plant communities were surveyed by eye, also using the DAFOR index to collate the relative abundance of plant species, and where appropriate, classified to (sub) community level as per the National Vegetation Classification (NVC) survey method. The excellent guidance produced by Ben and Alison Averis (2020), titled '*Plant Communities found in surveys by Ben and Alison Averis but not described in the UK National Vegetation Classification*' was also used to assist with the interpretation of field data, alongside the Tablefit v.4 programme (Marrs, R.H., Smart, S.M, Jones, M. & Hill, M.O. (2019): *TABLEFIT v. 3.0 & v.4, programs for the identification of vegetation types according to the British National Vegetation Classification*).

Survey routes were pre-planned with the help of aerial imagery whilst mapping took place in the field using an iPad Mini4 with a Garmin Glo II, in addition to taking regular ten-figure GPS coordinates, using a Garmin64s, to allow habitats and target notes to be further accurately mapped out. The mapping software used was the Phase 1 Habitat survey app created by Oxford Brookes University (2014) and also, latterly, QField. All maps, including Digital/GIS maps, were produced by Acasta Ecology on behalf of Parnassus Ecology.

During mapping, in order to reduce the risk of areas being overlooked (due to topography, tall vegetation, difficult or unsafe access, *etc*) or misclassified (it was impossible to physically walk upon every square metre), binoculars, photographs (with high resolution) and the examination of high-quality OS aerial imagery were also employed in order to assist with habitat classification and mapping.

In order to assist with peatland vs heathland classification, a peat probe (maximum depth of 1m) was used to gain a measurement of peat depth in some key areas. This was particularly the case around Brownholm where it became apparent during recce surveys that deep peat (>50cm) was in a mosaic with dry heath. However, it was not possible within the limits of this survey work to determine the exact boundaries of the deep peat areas and it is therefore recommended that a detailed peat survey be carried out to confirm the exact boundaries of the deeper peat at Glen Clova.

It should be noted that some of the boundaries on the vegetation map are indicative only as habitats (and plant communities) rarely have distinct boundaries since they often merge 'untidily' into each other and can form close mosaics. In such incidences, the dominant NVC plant community has been mapped with a note taken of the other key communities present *e.g* Mx(M10). In other incidences, for example where there is much transitional vegetation or fine mosaics are present, all the NVC plant communities in the area have been noted together *e.g* Mx/M10/M15a, U4a/U5, H10-

H12/U4a/U5, but have still been classified under their more broad Phase 1 habitat *e.g.* acid/neutral flush, semi-improved acid grassland, dry heath/acid grassland. Please note that Phase 1 codes only *e.g.* B1.2, E2, C1, B5, *etc.* have been used on maps in those areas where no detailed Phase 1/NVC survey took place but where the classification is based primarily on the interpretation of aerial imagery backed up by nearby ground-truth checks.

Within this report, the NVC communities have been categorised as ‘highly dependent on ground water’ (denoted by **) or ‘moderately dependent on ground water’ (denoted by a *), in order to assist with forward planning.

Finally, the habitats and plant communities found during the survey work have also been classified using the new pan-European EUNIS (European Nature Information System) habitat classification system (*Appendix 3*), which NatureScot (formerly SNH) intends to adopt as a consistent framework for terrestrial habitat data and mapping in Scotland in the future. The EUNIS system will form the basis of the development of the terrestrial Habitat Map of Scotland (HabMoS), which NatureScot plans to use for the future management of the natural heritage.

A note of any notable fauna observed during the survey work was also taken, with sightings noted in the Target Notes (*Appendix 1*). Fieldwork was undertaken over ten days between 20th October 2020 and 27th November 2020 and over ten days between 6th-20th June 2021.

2.3. Survey and Access Conditions

Survey conditions were variable for fieldwork, with satisfactory weather mostly throughout the survey period, mainly because the surveyor chose better days so that extreme weather would not interfere with survey work. Given the survey in 2020 was carried out from late October to late November 2020, most species were past flowering. As a result, those areas identified as having plant communities of potential interest and sensitivity were re-visited in June 2021 to allow a final assessment on their classification, quality and true extent *e.g.* base-rich flushes, calcareous grassland.

Access was generally good across the site with the surveyor able to reach all parts of the site, often in liaison with the estate staff in order to avoid any areas subject to shooting (deer, pheasant) and shepherding activities on the day.

3). Phase 1 Habitat and NVC Plant Communities

This section includes a brief summary and overview of the habitats present at Glen Clova, accompanied by maps and photos, as well as a more detailed description of the NVC plant communities present within the area.

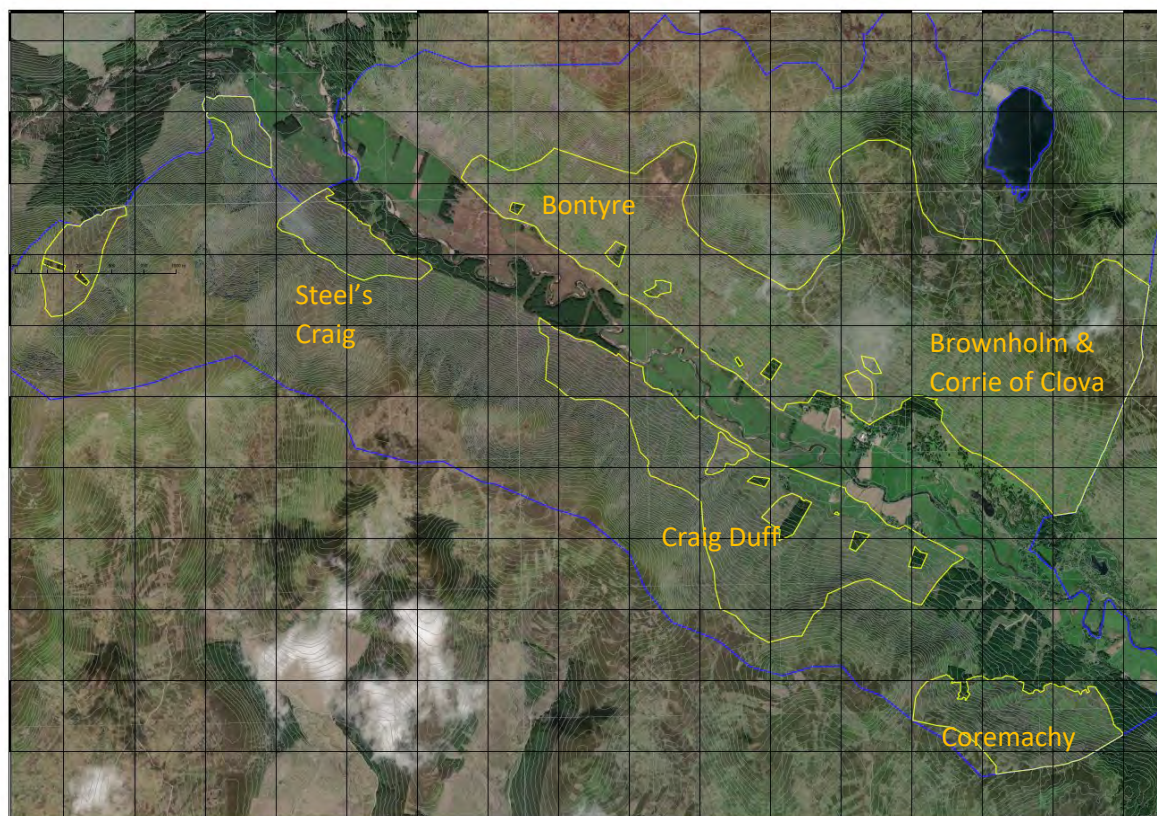
3.1 Site Summary (*inc* notable fauna)

The site can be divided up into several discrete sections, with each having its own characteristics, as described below. All habitats are subject to red deer grazing, and in many areas, sheep grazing too. As a result, many areas did appear to be heavily-grazed, most notably the dry heath/acid grassland areas around Craig Duff, Coremachy and Bontyre, as well as lower areas at Brownholm. Red deer were commonly observed during survey work, often in large numbers, particularly around the upper areas of Brownholm, Craig Duff and Coremachy.

An overview of the site's survey sections is presented in **Map 2** below, with the entire site (divided up into 5 sections) presented on bigger-sized maps in **Appendix 1** for ease of examination.

The site has been roughly divided up into the following general survey areas, going roughly down the glen north-west to south-east: Steel's Craig, Bontyre, Craig Duff, Brownholm & Corrie of Clova, and Coremachy.

Map 2: Overview of Glen Clova Survey Sections



The Steel's Craig area sits at the very north-west edge of the proposed planting area, beside existing conifer forest. This area has large areas of boulder scree on steeper slopes, often with dry heath and tall ferns growing in and around it, and occasional base-rich flushes percolating through lower areas. Where there is less scree, acid grassland dominates, mixing in with dry heath. At the base of the slope, large wet heath areas mix in with marshy grassland, neutral, acid and more species-rich base-rich flushes, and islands of dry heath and acid grassland.

Across the glen to the south-east, around Bontyre, the vegetation is dominated by large areas of semi-improved acid grassland on lower slopes, often in mosaic with dry heath patches, marshy grassland and frequent flush complexes, the latter often a mix of base-rich flushes, neutral sedge mire and more acidic soligenous (wet heath) mires. Large patches of bracken persist throughout whilst boulder scree is particularly pronounced towards its northern and upper slopes. On the steeper higher areas, boulder scree becomes more dominant, such that dry heath is the prevalent vegetation, with acid grassland and intermittent flushes in places, until reaching the Corrie of Bonhard, where wet heath makes way for wet modified bog, blanket bog, marshy grassland, and further boulder scree areas.

The Craig Duff area sits on the opposite side of the glen from the Glen Clova hotel. This area supports probably the richest plant communities on the site, with extensive areas of base-rich and neutral flushes, often intermixing with the more acidic soligenous wet heath mires to produce species-rich complexes, sometimes percolating through the crags and higher rockier areas. These flushed areas merge into adjacent extensive areas of semi-improved acid grassland, heath, marshy grassland and acid flushes around the middle and lowest slopes. Small areas of calcareous grassland are also present here, often associated with the base-rich flushing. Towards the highest areas, the vegetation is somewhat more uniform, being a mix of overgrazed dry heath and acid grassland. On the flatter areas, within the in-bye areas, the vegetation primarily consists of improved grassland.

Brownholm and Corrie of Clova take in the land to the immediate east of the Glen Clova Hotel. On lower slopes, there is a mix of extensive species-poor marshy grassland and acid flushes, intermixed with semi-improved acid grassland, much bracken and the odd base-rich flush or wet heath patch. This vegetation merges into extensive areas of dry heath as it heads uphill, much of which has been subject to regular burning for grouse management. Around Brownholm's upper slopes, the dry heath merges into areas of deeper peat, with modified blanket bog. Towards the Corrie of Inchdowrie, there are extensive areas of blanket bog present, much of which appears to have been subject to recent heather beetle damage, which merges into dry heath on sloped, more mineral soils.

Coremachy is the southern-most section of the proposed planting area. Much of this area is dominated by dry heath and semi-improved acid grassland around the upper and middle slopes and more craggy areas. There is a little blanket bog and acid/neutral flush towards the north-west. On lower slopes, large areas of bracken dominate the mosaics of dry and wet heath vegetation, with small strips of base-rich and acidic soligenous mires. Some marshy grassland and acid flush is also present, with the vegetation merging into the adjacent scrub and birch woodland, itself sitting beside existing mature conifer plantations.

In terms of notable fauna, black grouse were spotted on lower slopes just north-east of the Glen Clova hotel in October 2020 and June 2021, whilst a Golden eagle was observed flying north across the glen on only one occasion, in October 2020. Both Peregrine falcon and ring ouzel were observed nesting around crags on the north-western areas of Craig Duff below Cairn Inks, with another ring ouzel spotted on the small crag up from the Glen Clova Hotel. Snipe were also a regular sight in flush areas, where they were feeding. This was particularly the case around parts of Craig Duff and Coremachy.

Mountain hare were regularly observed around the Brownholm section of the site during the surveys whilst large red deer herds were observed on several locations, most notably on the slopes around Coremachy, on higher areas above Craig Duff, and especially in the area around Brownholm (~100 red deer in November 2020 & June 2021). Several red deer were also observed around both Corrie of Bonhard and Corrie of Clova. Red grouse were a common sight around the Brownholm area.

In addition, both adder and common lizard were spotted on the site. ***Notable fauna have been target noted on relevant maps and tables (Appendix 1).***



Adder observed near Corrie of Bonhard

The most common habitats present at Glen Clova are dry heath, dry heath/acid grassland mosaic, and semi-improved acid grassland, with significant areas of marshy grassland, bracken, flushes and blanket bog. The area of each habitat is listed in **Table 1** below.

Table 1: Glen Clova Phase 1 Habitat Areas (ha)

Habitat	Area (ha)
A1.1.1 - Broadleaved woodland - semi-natural	0.6
A1.2.2 - Coniferous woodland - plantation	1.2
A2.1 - Scrub - dense/continuous	0.7
A2.2 - Scrub - scattered	1.4
A3.1 - Broadleaved Parkland/scattered trees	2.1
A3.3 - Mixed Parkland/scattered trees	0.8
B1.2 - Acid grassland - semi-improved	160.5
B2.2 - Neutral grassland - semi-improved	0.2
B3.2 - Calcareous grassland - semi-improved	0.1
B4 - Improved grassland	15.2
B5 - Marsh/marshy grassland	93.2
B6 - Poor semi-improved grassland	1.9
C1.1 - Bracken - continuous	69.7
C1.2 - Bracken - scattered	8.1
C3.2 - Other tall herb and fern - non ruderal	1.1
D1.1 - Dry dwarf shrub heath - acid	233.7
D2 - Wet dwarf shrub heath	22.6
D5 - Dry heath/acid grassland	231.4
D6 - Wet heath/acid grassland	11.8
E1.6.1 - Blanket sphagnum bog	50.7
E1.7 - Wet modified bog	4.0
E1.8 - Dry modified bog	23
E2.1 - Flush and spring - acid/neutral flush	59.2
E2.2 - Flush and spring - basic flush	28.2
F1 - Swamp	0.1
G1.3 - Standing water - oligotrophic	0.01
I1.1.1 - Inland cliff - acid/neutral	0.8
I1.2.1 - Scree - acid/neutral	24.6
I1.4.1 - Other exposure - acid/neutral	0.2
I2.1 - Quarry	0.1
Total	1047ha

3.2. Woodland, Scattered trees and scrub

There is very little woodland within the survey area as plantation blocks were largely excluded from the land subject to survey. However, some mixed mature planted woodland (heavily grazed underneath) is present just west of Gallow Knowe (Craig Duff area) with some birch-dominated broadleaved woodland at nearby Caddam. Beyond these areas, there is the rare mature tree, such as Ash or Oak, present in places, with a rare willow *e.g.* Downy willow, and rowan growing along some steep stream sides, such as the Corrie Burn and the Burn of Farchal.

Of note, a little juniper is growing on crags near Craigie Laigh (Craig Duff), whilst creeping willow is abundant in one wet heath area at the very south-western corner of Brownholm.



Mature mixed planted woodland near Gallow Knowe



Willow scrub by the Corrie Burn

3.3. Acid grassland

U4a Festuca ovina-Agrostis capillaris-Galium saxatile grassland

U4b Festuca ovina-Agrostis capillaris-Galium saxatile grassland (Holcus lanatus-Trifolium repens sub-community)

U5 Nardus stricta-Galium saxatile grassland

**U6 Juncus squarrosus-Festuca ovina grassland*

There are very large areas of semi-improved acid grassland present across the entire site, especially on the slopes around Craig Duff and Bontyre, and in between wetter areas on the lower slopes by Brownholm.

Most of the grassland is divided between two main plant communities, namely U4a and U5, often mixing into each other in several places, especially on middle slopes. The acid grassland is often found in mosaic with H12 and H10 dry heath, especially on higher areas around Coremachy, Craig Duff and Bontyre. Many areas of acid grassland are often separated from each other by boulder scree as well as linear patches of marshy grassland and flushes, the latter often snaking their way down slopes from springheads above.

U4a grassland is the ubiquitous acid grassland around more fertile lower slopes, with common bent, sweet vernal grass and sheep's fescue interwoven with tormentil and heath bedstraw. Many of these sheep-favoured patches have scattered bracken or bracken patches around them or merge into continuous bracken in places.



More fertile U4a grassland at the bottom and amongst scree area at north-east edge of site, near Bontyre, with typical scattered bracken patches.

Some fertilisation of the grasslands has taken place through intensive livestock grazing in more sheltered, lower areas, where it has been classified as U4 or U4b on occasion. In such places, the grassland more closely resembles an improved pasture but still supports acid elements, such as

tormentil and heath bedstraw, but has more white clover, Yorkshire fog, yarrow and *Rhytidiadelphus squarrosus* moss.



The whiter U5 grassland (foreground), with the more green U4a grassland on lower slopes, around (brown) common sedge-dominated Mx neutral sedge mire/flush areas, Bontyre.

On much of the site, the U4a grassland frequently merges with mat-grass dominated U5 grassland (*aka* white moor), such that many areas have been described as U4a/U5 or U5(U4a). The U5 grassland shares many similar species to the U4a grassland but mat-grass is much more frequent and often abundant. Both grassland types are often found growing around some of the scattered boulder scree areas.



Extensive area of acid grassland (with occasional dry heath) towards north-west edge of Craig Duff section

On the highest slopes, U5 grassland is the dominant grassland community, often having abundant blaeberry, heath bedstraw and *Polytrichum* moss growing alongside the mat-grass, with occasional sweet vernal-grass, bents and pleurocarpous mosses. It is not uncommon for patches of common sedge to be also present amongst the U5 grassland in these areas.

There is also some U6 grassland present on the highest areas, such as around the entrance to the Corrie of Bonhard. This grassland is dominated by heath rush and is often present on much more wet ground, including on some wet modified bog areas.

3.4. Calcareous & Neutral Grasslands

***CG10 Festuca ovina-Agrostis capillaris-Thymus polytrichus grassland*

One of the most species-rich plant communities on upland sites are the calcareous grassland patches, which often support many species. At Glen Clova, there are not large extensive areas of this type of grassland. However, significant patches of it are present around some sections of Craig Duff, often associated with adjacent base-rich flushes around the crags and lower slopes, and merging into acid grassland. Elsewhere, there are only very occasional small patches of calcareous grassland, so small they have largely been target-noted rather than highlighted on maps.

The calcareous patches have been classified as CG10, being characterised by species such as abundant common bent, sheep's fescue, wild thyme, lesser clubmoss, alpine bistort, lady's bedstraw, fairy flax, alpine lady's-mantle (not abundant), mountain everlasting, common dog-violet, glaucous sedge, carnation sedge, flea sedge, wild strawberry, mouse-ear hawkweed, bird's-foot trefoil, ribwort plantain, quaking grass, and occasionally limestone bedstraw and common rock-rose. These grasslands are usually most obvious because of the frequent or abundant wild thyme within their short swards and can merge into more acidic grassland areas. They are also wet in other places where they sit beside base flushes on Craig Duff crags.



Calcareous grassland (grey-green coloured area in foreground) around crags at Craig Duff



Common rock-rose: an indicator of calcareous grassland

3.5. Poor semi-improved and Improved grassland

Improved grassland is present within the Glen Clova site, primarily on the lowest, in-bye fields in the Craig Duff area. There is also a small area of poor semi-improved grassland in the same area. Several large fields have clearly been resown and/or received intensive fertilizer applications, with their vegetation dominated by much rye grass and white clovers as well as being heavily-grazed by sheep.



Improved grassland (bright green) below Craig Duff area beside River South Esk.

3.6. Marshy grassland

** M23a *Juncus effusus/acutiflorus-Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community

**M23b *Juncus effusus/acutiflorus-Galium palustre* rush-pasture

*M25 *Molinia caerulea-Potentilla erecta* mire (including M25a *Molinia caerulea-Potentilla erecta* mire *Erica tetralix* sub-community)

One of the common Phase 1 habitats across the site is 'marshy grassland', which primarily consists of three NVC plant communities, often in very close mosaic and transition with each other and other wetland plant communities. These consist of the M23a (sharp-flowered rush dominated), M23b (soft rush dominated), and M25 (purple moor-grass dominated) communities. In some places, the vegetation is simply a thick or linear patch of soft-rush (**Je**). The vast majority of the marshy grassland at Glen Clova is species-poor, usually becoming more species-rich where it merges with patches of base-rich flushes (M10) and neutral sedge mires (Mx).



Large area of M23a marshy grassland along the lower Brownholm slopes

The M23a grassland is dominated by sharp-flowered rush, with frequent marsh thistle, sweet vernal-grass, meadow buttercup and tormentil, alongside occasional or locally frequent purple moor-grass, devil's-bit scabious and marsh violet. In rare places, yellow pimpernel and selfheal are also present. The M23b marshy grassland is similar but is dominated by soft rush and is usually more species-poor than the M23a community. Larger areas of this grassland are on the lower slopes, most notably around Brownholm and Bontyre, as well as dotted around the lowest areas at Steel's Craig, Craig Duff and Coremachy.

In many parts of the site, the M23a/b marshy grassland communities merge into areas more dominated by tussocks of purple moor-grass (M25), forming mosaics of both communities.

Chickweed wintergreen is often found in such areas and is a common species across the site as a whole. In addition, it is often common to find patches of species-poor common sedge (Cxn), and/or neutral sedge mire (Mx), or acid flush (M6), or some base flushing around the edges of the M23a grassland, however, these do not largely increase the botanical species-richness of these areas in any significant way at Glen Clova, although they will be of local importance for insect and birdlife.

In some areas, the species-poor purple moor-grass dominated M25 community is the predominant marshy grassland habitat present. In a few places, most notably where the community merges into degraded M15 wet heath, this community has heath species present, such as cross-leaved heath and ling heather, as well as devil's-bit scabious and *Sphagnum capillifolium* moss, forming the more heath-like M25a marshy grassland.

3.7. Tall herb and fen

U19 Oreopteris limbosperma-Blechnum spicant community

U20a- U20c – Pteridium aquilinum-Galium saxatile community

There are two main tall herb and fern plant communities present on the Glen Clova site, namely those dominated by lemon-scented fern (U19) and those dominated by bracken (U20) respectively.

The U19 community consists of thick patches dominated by the bright green shuttlecocks of lemon-scented fern. This community is particularly noticeable around the boulder scree areas at Steel's Craig, where it often grows around scree and more open vegetation in a mosaic with dry heath (H12) and sometimes acid grassland. It is also found on the steeper slopes around some of the burns, such as the Corrie Burn, where it commonly grows with thick patches of golden-scaled male-fern.



Patches of U19 lemon-scented fern around Steel's Craig

Large areas of both continuous and scattered bracken are present on the lower slopes of the site, most often on the better drained slopes at Bontyre, Brownholm and Coremachy, although patches are present in all sections.

In some places, the bracken has formed a continuous canopy with some deep leaf litter underneath (U20c), however, there are also large areas where grassland, including semi-improved acid grassland (U4a), sits below a continuous or scattered bracken cover with little litter (U20a). This is particularly

the case around the grassy strips present in the Brownholm and Bontyre sections of the site. In other areas, such as Coremachy, the bracken grows over dry heath vegetation and boulder scree.



Both scattered (foreground) and continuous (background) bracken by Bontyre



Thick bracken spreading into dry heath areas at Coremachy

3.8. Dry dwarf-shrub heath (with acid grassland)

H9 Calluna vulgaris-Deschampsia flexuosa heath

H10 Calluna vulgaris-Erica cinerea heath community

H12 Calluna vulgaris-Vaccinium myrtillus heath community

H16 Calluna vulgaris-Arctostaphylos uva-ursi heath

H18 Vaccinium myrtillus-Deschampsia flexuosa heath

H22 Vaccinium myrtillus – Rubus chamaemorus heath

One of the most common habitats present across the Glen Clova site is dry heath, often mixing with U5 mat-grass dominated acid grassland in the upper slopes across the survey area. In many places, the dry heath grows amongst boulder scree with a sprinkling of bracken and lemon-scented fern.

The most common dry heath communities present are the H12 and H10 communities, often merging into each other in places on steeper, drier mineral soils, and around the crags and scree. This vegetation is dominated by ling heather with frequent blaeberry, cowberry, wavy hair-grass and abundant pleurocarpous mosses, such as *Hylocomium splendens*, and occasional hard fern, sweet vernal-grass, sheep's fescue, mat-grass, heath bedstraw, green-ribbed sedge and bent grasses. On the more south-facing slopes around Bontyre in particular, bell heather becomes locally abundant (H10) and blaeberry reduces in frequency. In other places, crowberry and *Rhytidiadelphus loreus* moss becomes more abundant with increasing altitude.



Dry heath, some recently burnt, at Brownholm

The condition of the dry heath in many parts of the site is degraded, due in large part to overgrazing by red deer and sheep, but also due to burning. In some parts of the site, such as Craig Duff, the dry heath is much more dominated by blaeberry (H18) where heather has been heavily browsed in large patches, whilst in and around the Brownholm section, extensive burning has resulted in

impoverished H9 dry heath communities with little else than ling heather present with frequent blaeberry, occasional heath rush and cowberry, and abundant pleurocarpous mosses. These often merge into H12 dry heath communities where they have recovered from earlier burns.

The bog-like H22 dry heath community is also found at Glen Clova, being present in patches beside blanket and modified bog habitats by the Corrie of Inchdowrie. This heath has an initial appearance like M19 bog, with much cloudberry, but lacks Sphagnum mosses and has much ling heather and blaeberry.



Dry heath growing in and around boulder scree

A very small area of H16 dry heath (TN6) is present on the site where no burning has taken place in some time. This heath mixes in with surrounding H12 dry heath and has ling heather dominant along with frequent bearberry, cowberry, crowberry and abundant *Cladonia* lichens. Bell heather is also occasional along with locally frequent blaeberry and rare stag's-horn clubmoss.



Extensive dry heath merging into acid grassland at Coremachy

3.9. Wet dwarf-shrub heath (with acid grassland in places)

*M15 (M15b) *Trichophorum cespitosum*-*Erica tetralix* wet heath

*M15a *Trichophorum cespitosum*-*Erica tetralix* wet heath (*Carex panicea* sub-community)

*M15d *Trichophorum cespitosum*-*Erica tetralix* wet heath (*Vaccinium myrtillus* sub-community)

Wet heath vegetation is present across several large patches of the site. Where this vegetation is growing on deep peat (>50cm) alongside M17 or M19 mire vegetation, it has been classified as wet modified bog, as per Phase 1 guidance.

Wet heath habitat can be quite variable, however, at Glen Clova, it is largely characterised by abundant ling heather and cross-leaved heath, with frequent heath rush, deer-grass, along with some *Sphagnum capillifolium* moss, *Polytrichum* moss, purple moor-grass and blaeberry. In several places, this vegetation merges into mire vegetation where hare's tail cottongrass and *Sphagnum* mosses become more abundant. Towards the south-west corner of the Brownholm section, creeping willow is locally abundant within the wet heath community there.

At Glen Clova, especially around the higher slopes to the west of the Corrie Burn and above Bontyre towards the Corrie of Bonhard, M15 wet heath often grows in mosaic with H12 dry heath and U5 acid grassland in response to local soil conditions.



M15a very wet soligenous heath communities in mosaic with M10 base-rich flushes, Craig Duff

One of the most common wet heath communities present is the very wet M15a community, which often sits in very wet flush complexes alongside base-rich M10 and neutral Mx sedge mires. This community supports many of the species of other wet heath areas but often also has much bog asphodel, common cottongrass, heath lousewort, devil's-bit scabious, sundew as well as carnation sedge. It has often been classified as being part of either base-rich or neutral flushes, due to its close association with both M10 base-rich flushes and Mx neutral sedge mires (both GWDTEs) at Glen Clova.

3.10. Blanket, Dry and Wet Modified bogs

M2 Sphagnum cuspidatum/fallax bog pool community

**M15 Trichophorum cespitosum-Erica tetralix wet heath*

M17 Trichophorum cespitosum – Eriophorum vaginatum blanket mire

M18 Erica tetralix – Sphagnum papillosum raised and blanket mire

M19a Calluna vulgaris-Eriophorum vaginatum blanket mire (Erica tetralix sub-community)

M19b Calluna vulgaris-Eriophorum vaginatum blanket mire (Empetrum nigrum ssp. nigrum sub-community)

M20 Eriophorum vaginatum blanket and raised mire

Peatland at Glen Clova is concentrated on the uppermost areas only, being concentrated primarily within the Corrie of Bonhard, Corrie of Clova and over the higher slopes at Brownholm towards the Corrie of Inchdowrie. A small area is also present on the north-west edge of Coremachy too.

This peatland has been classified as either blanket bog, wet modified bog or dry modified bog respectively, depending on the extent of degradation and species present.

The most common peatland community present is the ling heather-dominated M19/M19a mire community. This vegetation includes abundant mature ling heather and hare's-tail cottongrass growing alongside frequent blaeberry, some common cottongrass and cross-leaved heath, and wavy hair-grass. This vegetation typically grows over abundant mosses, including *Sphagnum capillifolium*, *Sphagnum fallax*, *Polytrichum commune* and abundant pleurocarpous mosses. In some places, there is frequent or localised *Sphagnum papillosum* and more *Sphagnum* moss cover, more frequent cross-leaved heath and deer grass, occasional bog asphodel and much less ling heather, being more indicative of M17 bog. However, in several areas, such as the Corrie of Inchdowrie and Coremachy, the M17-19 intermediate bog described by Averis & Averis (2020) is more common place, with species such as cross-leaved heath and deer grass being common alongside ling heather, but with no/little *Sphagnum papillosum* moss.



Blanket bog, Corrie of Clova (left) with M2 bog poll (right)

In the Corrie of Clova, much of the bog appears to be the ling heather-dominated M19a type but a small area does have close affinities to M18 bog, having frequent *Sphagnum magellanicum* moss,

although this was not a good fit and could also be viewed as being a M17-type bog too. In addition, there are a number of open M2 bog pools present towards the centre of the bog surface.

Another bog type present at Glen Clova is the M19b bog, which looks very similar to the M19a vegetation but has frequent cloudberry present. In reality, both M19a and M19b are intermixed together and mainly found around the Corrie of Inchdowrie.



M19/M17 bog at Corrie of Inchdowrie: heather beetle has killed many of the ling heather shoots

In drier areas around the shoulder of Brownholm, there are significant areas of dry modified bog, where the M19 bog vegetation, dominated by ling heather, hare's-tail cottongrass and having some *Sphagnum capillifolium* moss in patches, merges with H12 dry heath, differentiated by the lack of cotton grasses and bog mosses. This vegetation has undoubtedly developed due to past burns going through the bog vegetation.

There is also some wet modified bog vegetation present, particularly at the entrance to the Corrie of Bonhard and around other bog edges. In these areas, M15 wet heath vegetation is present along with some species-poor hare's-tail cotton grass-dominated (M20) vegetation, both merging into standard M19 bog vegetation on heavily modified areas, likely formed due to past overgrazing and burns on wet ground.

Other plant communities associated with the bog vegetation at Glen Clova includes areas of U6 wet grassland and patches of M6 acid flush.

3.11. Flushes, springs and springheads

****M6** *Carex echinata-Sphagnum fallax/denticulatum mire*

****M6c** *Carex echinata-Sphagnum fallx/denticulatum mire Juncus effusus sub-community*

****M6d** *Carex echinata-Sphagnum fallx/denticulatum mire Juncus acutiflorus sub-community*

****M10** *Carex dioica-Pinguicula vulgaris mire*

****M11** *Carex viridula ssp. Oedocarpa-Saxifraga aizoides mire*

****Mx** *Neutral sedge mire*

****M32** *Philonotis fontana-Saxifraga stellaris spring*

****M32b** *Philonotis fontana-Saxifraga stellaris spring (Montia fontana-Chrysosplenium oppositifolium sub-community)*

****M37** *Palustriella commutata-Festuca rubra spring*

A major feature of the middle and lower areas of Glen Clova is the wet flush complexes. These often start from springheads above before meandering in strips downhill between grassland, rock and heath, and are roughly classified by their degree of acidity. However, during this survey, it was difficult to classify these areas as either base-rich or acid as they often support base-rich flushes which run through acid communities, such as the very wet M15a heath community, forming mosaics. As a result, some of them are classified as acid/neutral mire or base flush, depending on the extent to which base-rich flushes were present in the complex.



Extensive flush and marshy grassland complexes on Craig Duff slopes (golden brown colour)

It is best to describe these areas from the top down. In many places at Glen Clova, groundwater springs reach the surface on middle slopes. In these locations, small moss-dominated springhead communities are present, largely dominated by the M32b *Philonotis fontana-Saxifraga stellaris spring (Montia fontana-Chrysosplenium oppositifolium sub-community)*, with opposite-leaved saxifrage and blinks present, along with mosses and sometimes rushes, starry saxifrage and bog stitchwort. On occasion, especially along the bottom of crags at Craig Duff, the M37 springhead community is present, with the frequent orange-brown *Palustriella commutata* moss present.



M10 base-rich flushes mix with M15a wet heath on lower slopes around Craig Duff

The springheads then commonly spread into base-rich (M10, M11) and neutral sedge mire (Mx) communities. In many cases, both vegetation types are present and mix with the very wet M15a heath community. The M10 base-rich flushes are dominated by a mix of carnation sedge, tawny sedge, star sedge, glaucous sedge, common yellow-sedge, dioecious sedge, common butterwort, few-flowered spike-rush, marsh arrowgrass, jointed rush, quaking grass and mosses. In some places, there is rare yellow saxifrage – where this species is frequent or abundant, the flush is classified as a M11 flush. However, most flushes on the Glen Clova site are the M10 type. On the lowest slopes and flush complexes, the uncommon broad-leaved cotton grass is a frequent feature, whilst Scottish asphodel is also found on occasion.



Typical springheads oozing from groundwater springs upslope.

Mx neutral sedge mires are a common feature across the site, being dominated by species such as common sedge, star sedge, and carnation sedge but without *Sphagnum* mosses. A full description of the Mx neutral sedge mires can be found within the excellent guidance note by Ben and Alison Averis (2020), titled '*Plant Communities found in surveys by Ben and Alison Averis but not described in the UK National Vegetation Classification*'. Both the M10 and Mx flushes are commonly found around M25 and M23a marshy grassland or as narrow strips heading downhill.



Sedge-dominated Mx neutral sedge mire

The main acid flushes present at Glen Clova are the M6, M6c and M6d communities, which are dominated by common sedge, soft rush and sharp-flowered rush respectively, all over a *Sphagnum* moss carpet, often with frequent *Polytrichum* mosses and occasional tormentil. These communities are not as common on the Glen Clova site as the other flushes, with bigger areas of M6 flushes found on the slopes around the Corrie Burn.



M6c acid flush, with soft rushes growing over Sphagnum mosses.

4). Evaluation of Habitats and Species

A simple assessment of the importance of habitats and species present at Glen Clova was carried out in order to provide some context to the survey (**Table 2**).

Several habitats of local and national importance are present at Glen Clova, being considered priorities for conservation action, however, no statutory nature conservation sites **designated specifically for their vegetation** apply to the survey area (Source: SiteLink, NatureScot: <https://sitelink.nature.scot/map>). The majority of the site does sit within the Cairngorms Massif Special Protection Area (SPA), designated for its significant golden eagle breeding population.

There are several statutory designated sites sitting immediately adjacent to but outwith the proposed forest area, namely Loch Brandy SSSI, Red Craig SSSI, Caenlochan SSSI and Caenlochan Special Protection Area (SPA).

The Scottish Biodiversity List was checked for plants and habitats that Scottish Ministers currently consider to be of principal importance for biodiversity conservation in Scotland. By identifying the species and habitats that are of the highest priority for biodiversity conservation, the list helps public bodies carry out their biodiversity duty (**See Table 2**)

The Cairngorms Nature Action Plan (2019-2024) was also checked to assess habitats and plant species currently identified for priority conservation action in the area (**See Table 2**). The whole proposed site sits within the Cairngorms National Park boundary.

Plant species listed within *Cheffings, C.M. & Farrell, L. (Eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. 2005 (updated in 2018). The Vascular Plant Red Data List for Great Britain. Species Status7: 1-116. Joint Nature Conservation Committee, Peterborough* was also checked to see if any were present on the site, given the botanical value of some habitats. Two species currently listed upon this list are present on the site, either as individual plants/very small clumps at one or two locations only, which have been target-noted:

1. Downy willow (*Salix lapponum*): VU – Vulnerable **TN 33 (Brownholm)**
2. Spignel (*Meum athamanticum*): NT – Near-Threatened **TN 62 (Craig Duff)** & also by roadside (Craig Duff and Bontyre)

Finally, notable plants, in the context that they are uncommon on the site and are good indicators of higher quality habitat, have also been target-noted within the maps and tables within **Appendix 1**. These include species like broad-leaved cottongrass, Scottish asphodel, lesser twayblade, limestone bedstraw and northern bedstraw.

Table 2: Assessment of Importance of Key Habitats and Plant Species at Glen Clova

Habitat & Species	Scottish Biodiversity List (2013)	Cairngorms Nature Action Plan (2019-2024)
Species:	Juniper (1/2 plants) Wild pansy (localised) Downy willow (1/2 plants)	-
Habitats:		
M6 – acidic/neutral flushes Mx neutral sedge mire	✓ (Upland Flushes, Fens and Swamp – watching brief only)	-
M17-M20; M15/M25a on deep peat >50cm – blanket bog & wet/dry modified blanket bogs	✓ (Blanket bog)	✓ (Blanket bog)
H10, H12, H16, H18 & M15 – dry and wet heath (<50cm peat)	✓ (Upland heathland)	-
H22 mountain heath	✓ (Mountain heaths & willow scrub)	-
M10, M11, M32 & M37 base- rich/neutral flushes and bryophyte-dominated springs M23a marshy grassland in unenclosed upland areas	✓ (Upland Flushes, Fens and Swamp – watching brief only)	-
U6 <i>Juncus squarrosus</i> - <i>Festuca</i> <i>ovina</i> grassland; U5 <i>Nardus stricta</i> - <i>Galium</i> <i>saxatile</i> grassland	✓ (watching brief only)	-
U4 <i>Festuca ovina</i> --- <i>Agrostis</i> <i>capillaris</i> --- <i>Galium</i> <i>saxatile</i> grassland	-	-
CG10 <i>Festuca ovina</i> --- <i>Agrostis</i> <i>capillaris</i> --- <i>Thymus</i> <i>polytrichus</i> grassland.	✓ Upland calcareous grassland	✓ <i>Species-rich grasslands</i>

The majority of the M23a grassland is species-poor at Glen Clova and consequently not viewed as being important for the purposes of this assessment and due to its widespread distribution.

The following figures (**Figures 1 -15 below**) set out the **key plant communities of conservation interest which are sensitive to forest planting at Glen Clova, primarily flushes (springheads), peatland and calcareous grassland**. It is recommended that key plant communities or features of interest be inspected in the field before any detailed proposed buffer areas and/or planting boundaries are finalised around them for reasons outlined in Section 2.

- Site boundary
- Summary target notes
- Acid flushes with M6 elements
 - Acid/Neutral flushes with Mx & very wet M15a elements
 - Base-rich flushes with M10 elements
 - Springheads, including M32, M37 and M10
- Summary
- Acid/neutral flushes
 - M10/M32 flush present
 - Blanket bog
 - Calcareous grassland
 - Dry modified bog
 - Wet modified bog

Figure 1: Key Plant Communities Sensitive to Forest Planting: Steel's Craig

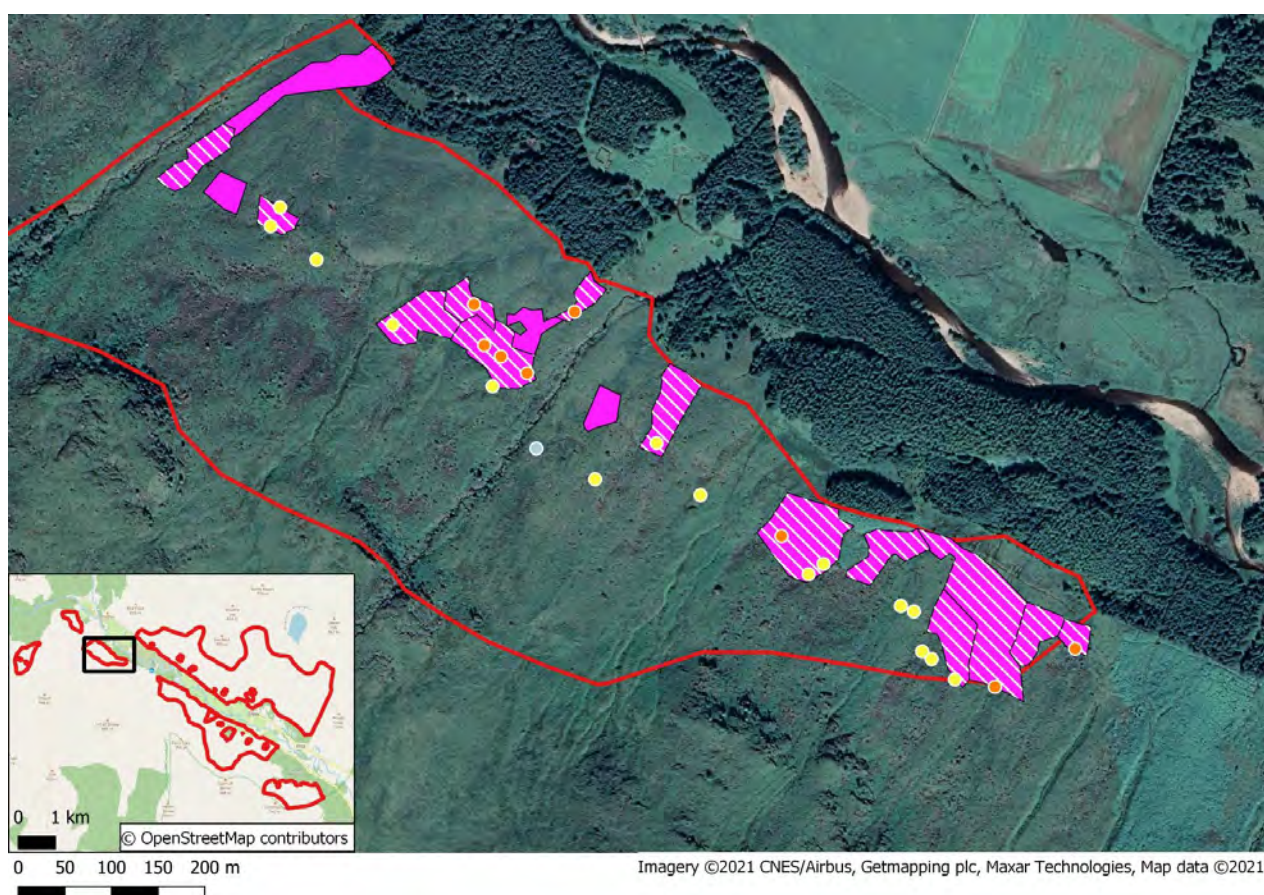


Figure 2: Key Plant Communities Sensitive to Forest Planting (Bontyre)

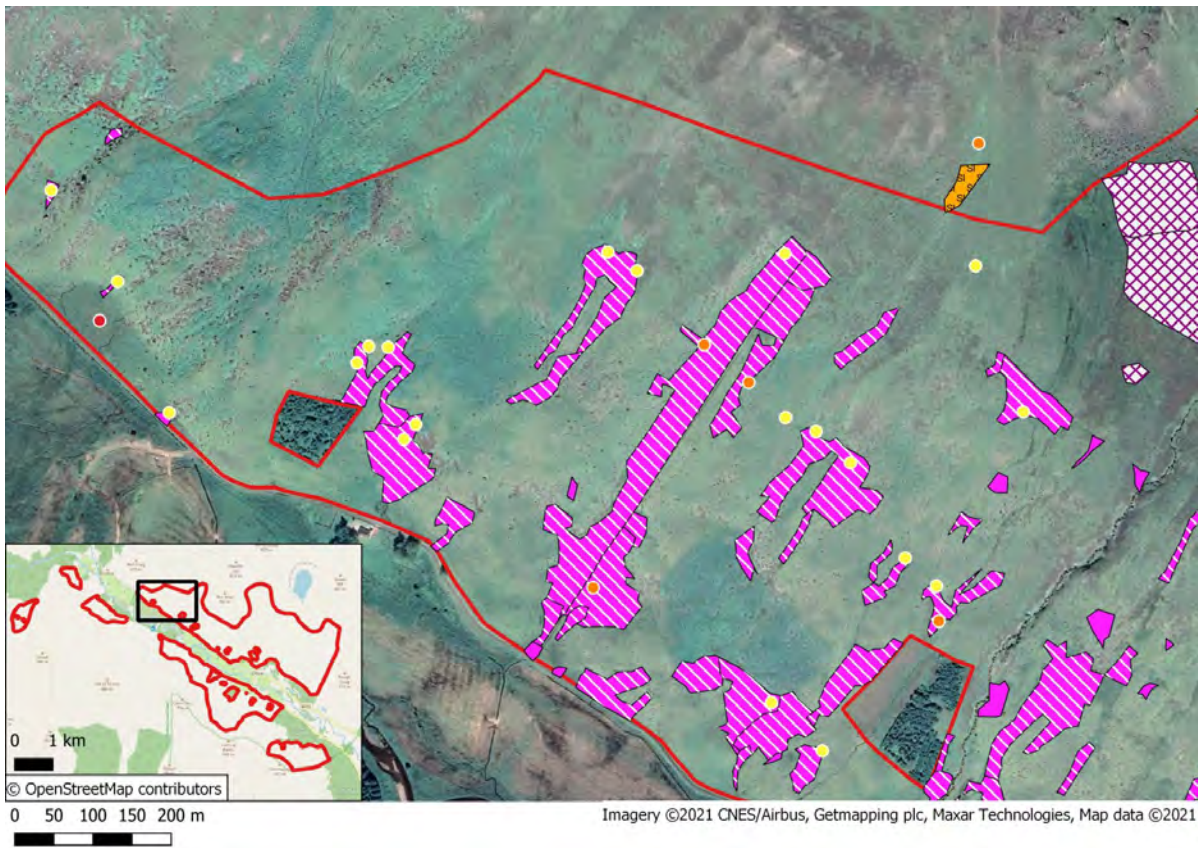


Figure 3: Key Plant Communities Sensitive to Forest Planting (Bontyre)

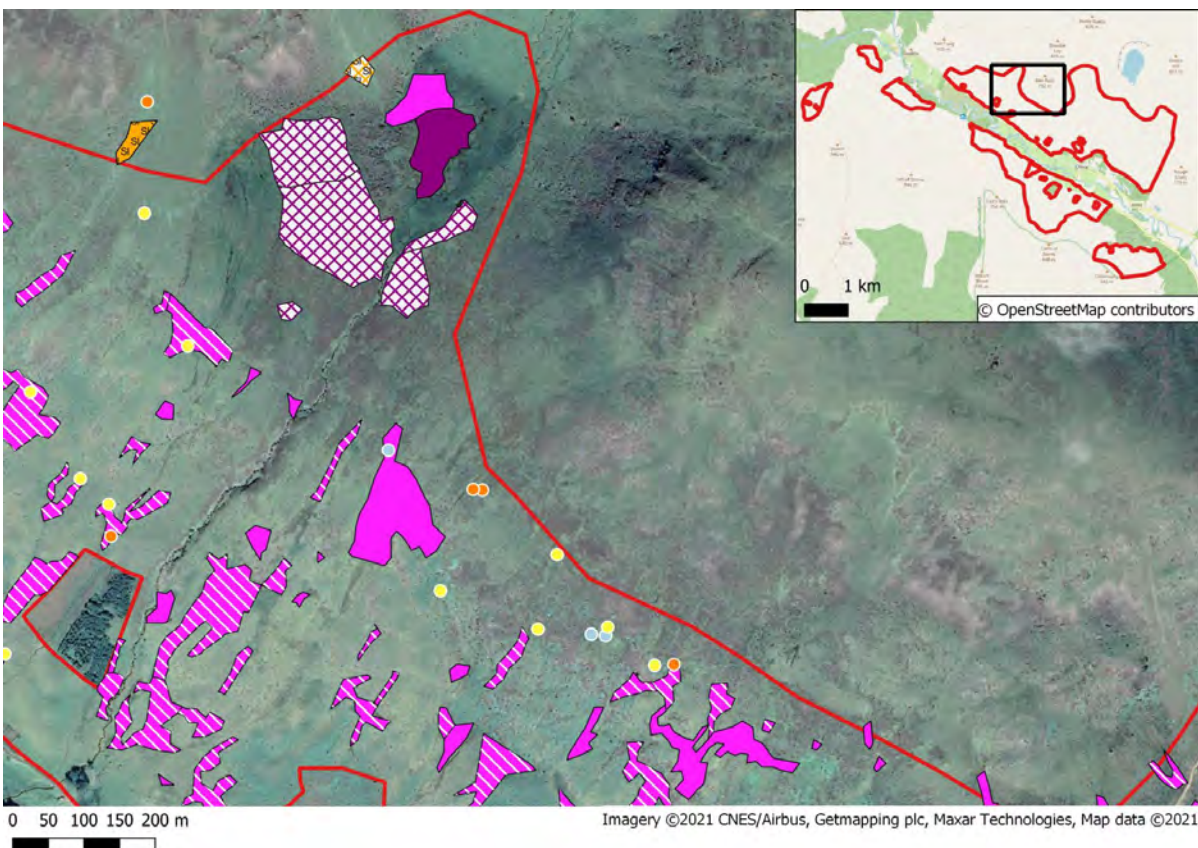


Figure 4: Key Plant Communities Sensitive to Forest Planting (Bontyre)

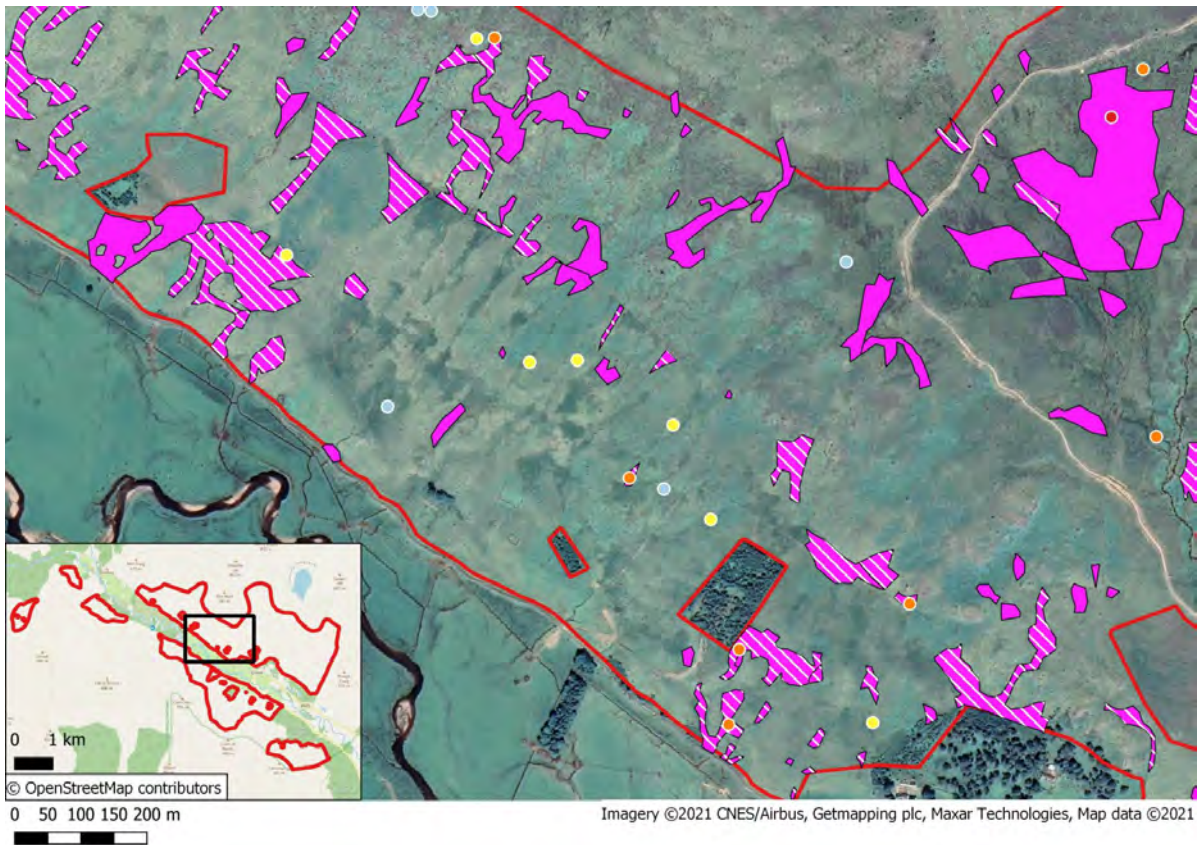


Figure 5: Key Plant Communities Sensitive to Forest Planting (Bontyre & Brownholm)

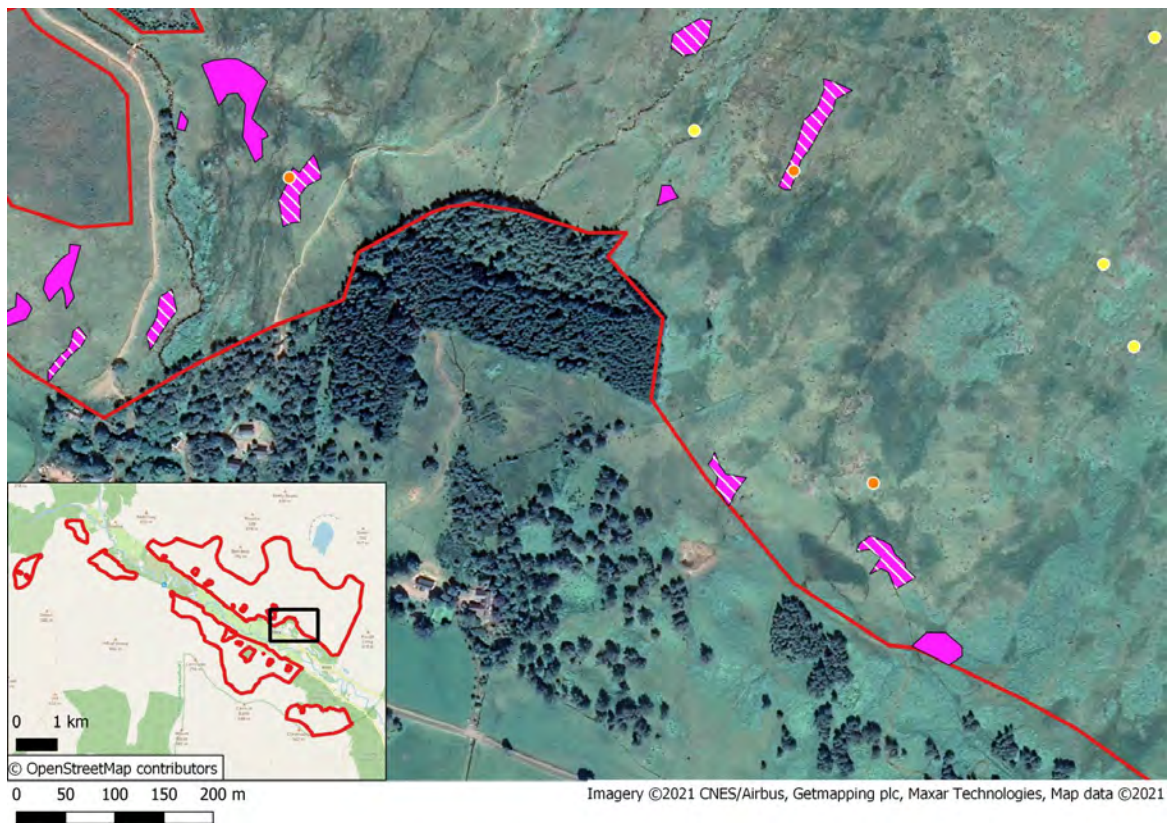


Figure 6: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

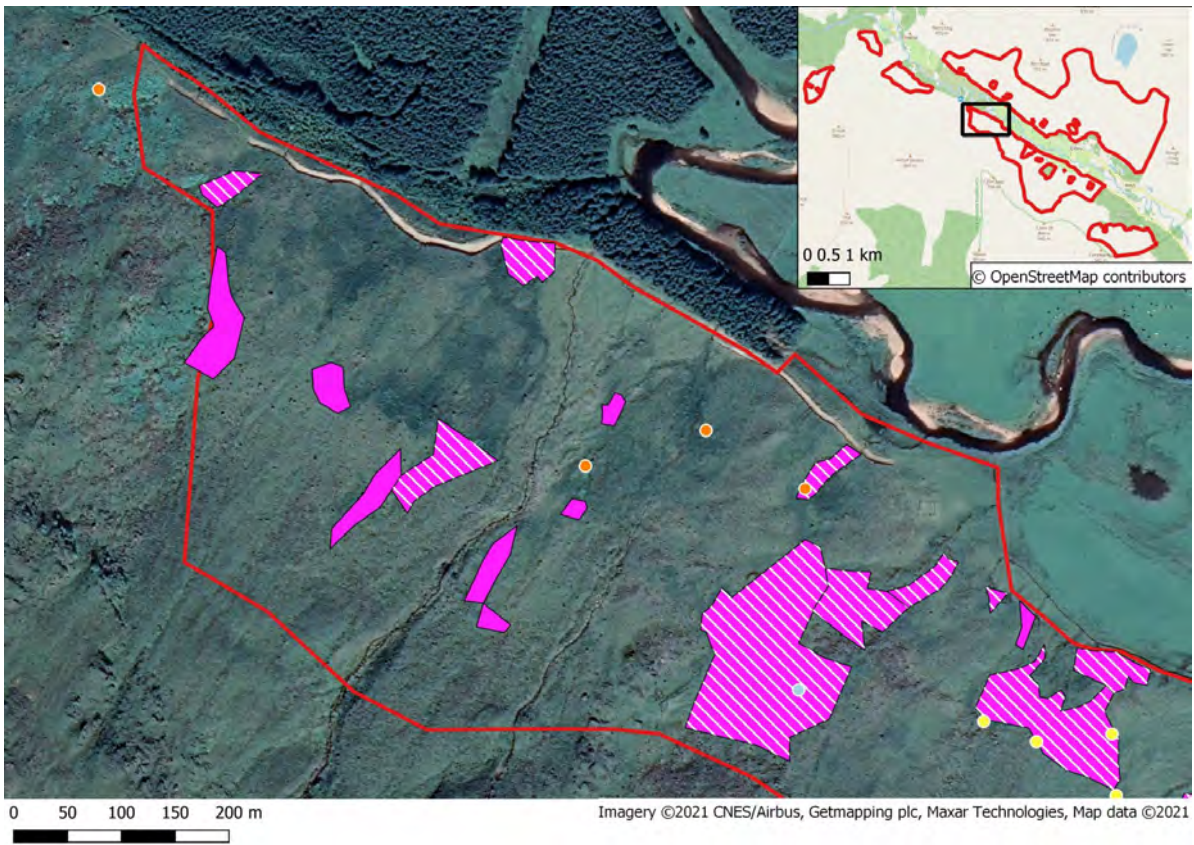


Figure 7: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

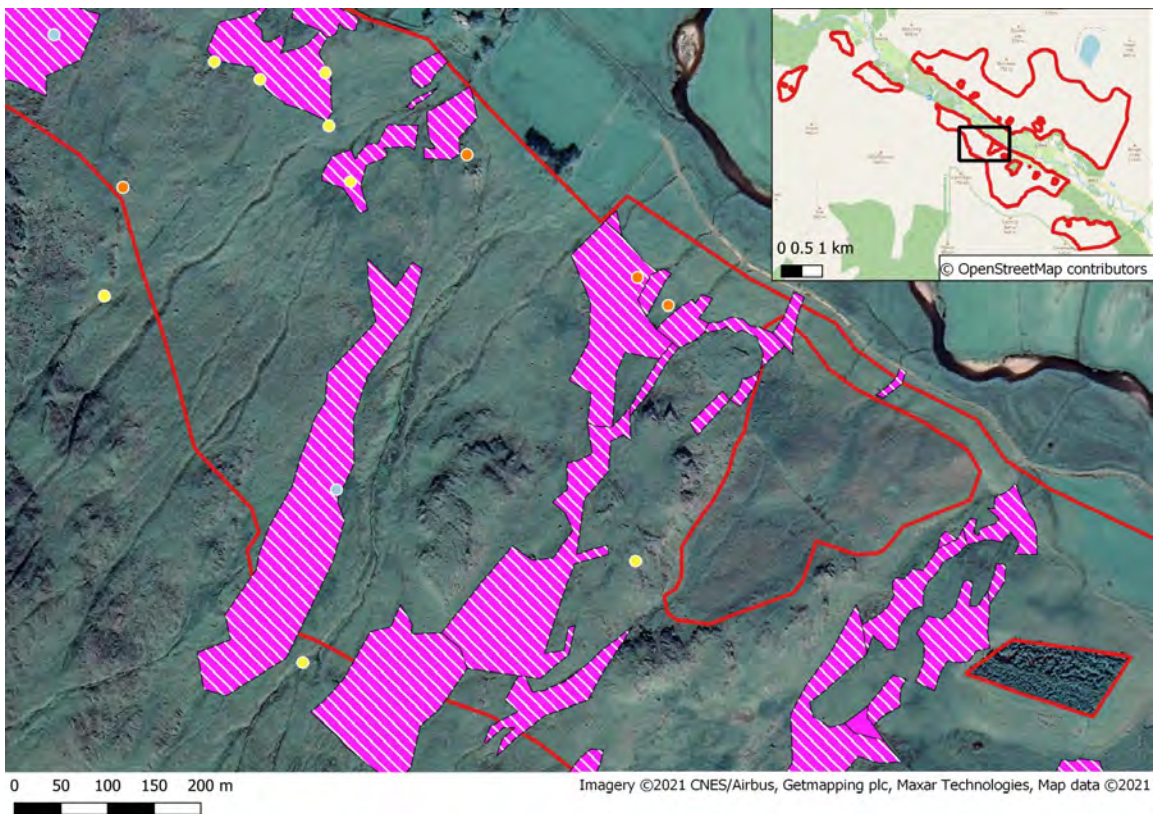


Figure 8: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

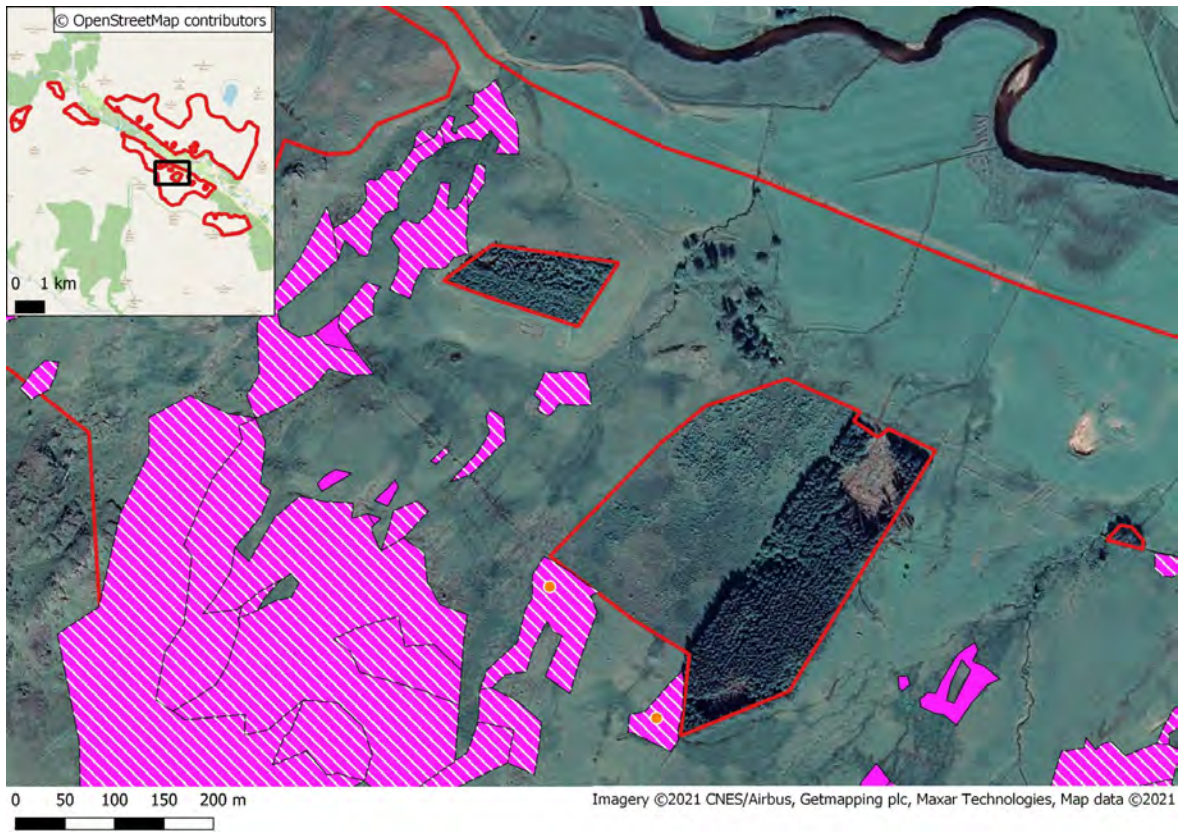


Figure 9: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

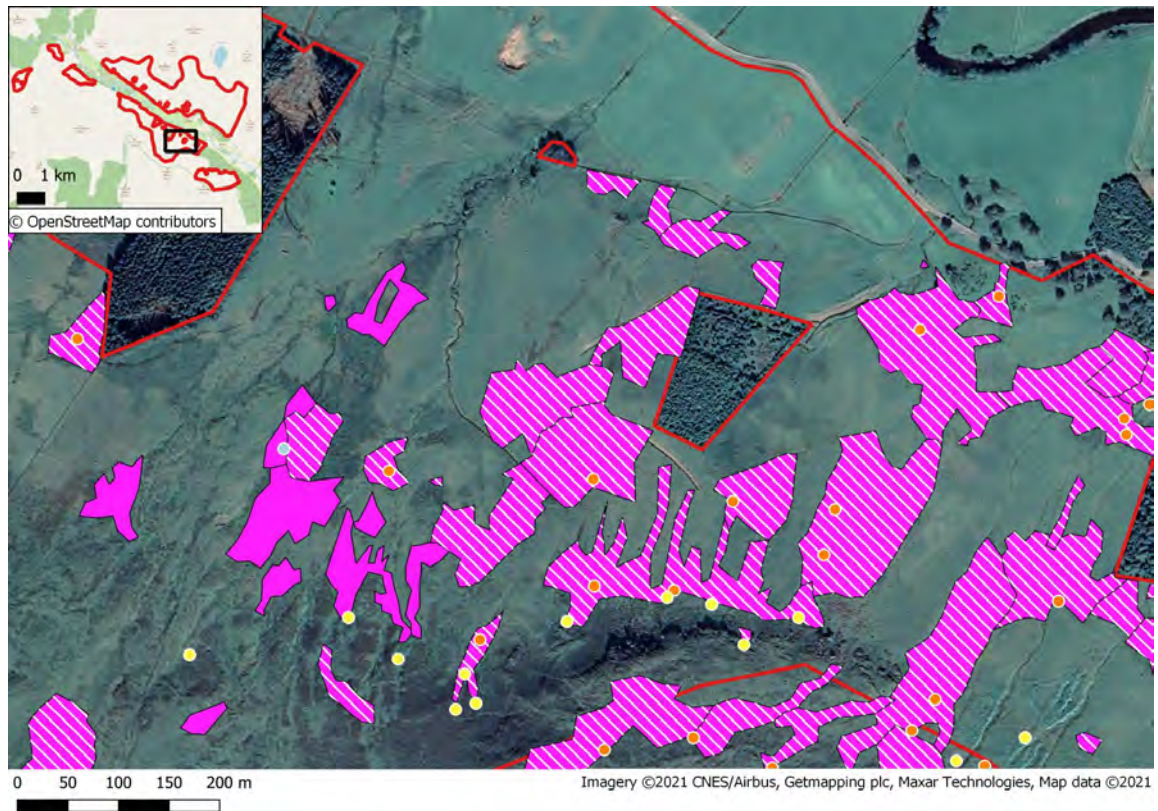


Figure 10: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

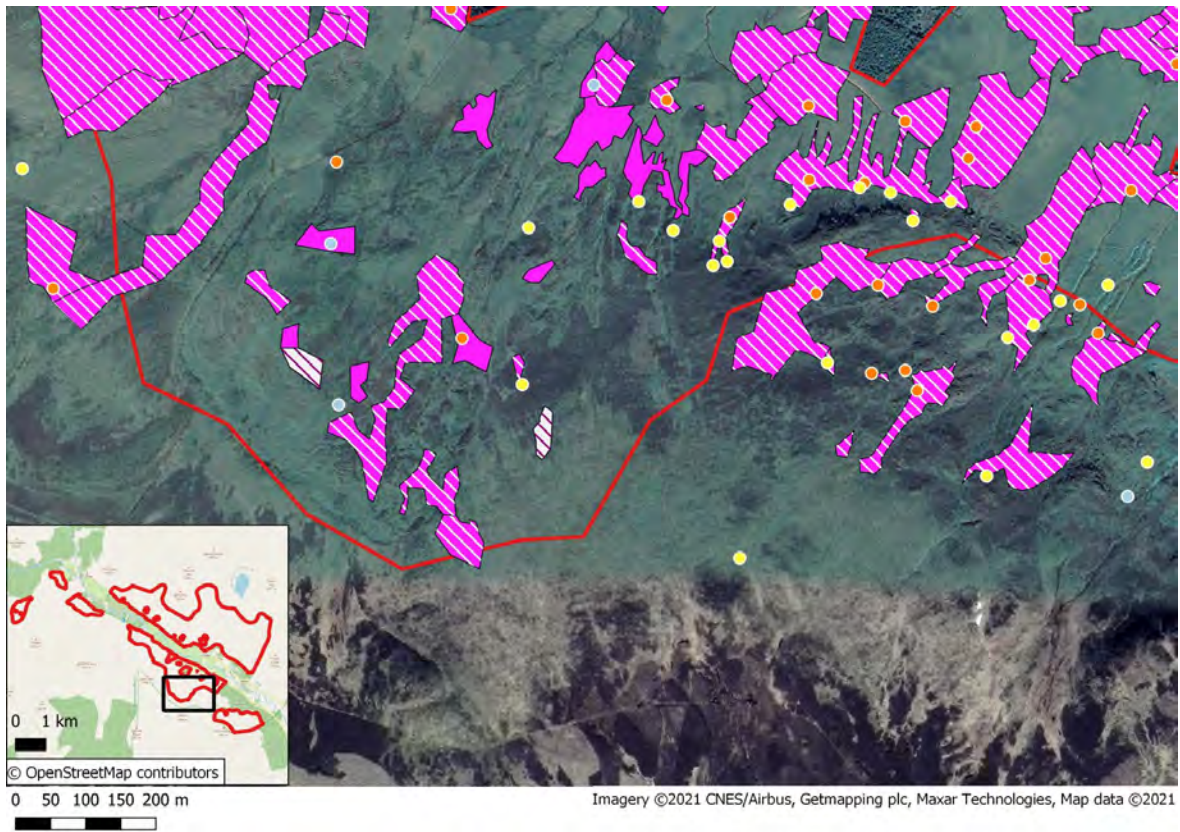


Figure 11: Key Plant Communities Sensitive to Forest Planting (Craig Duff)

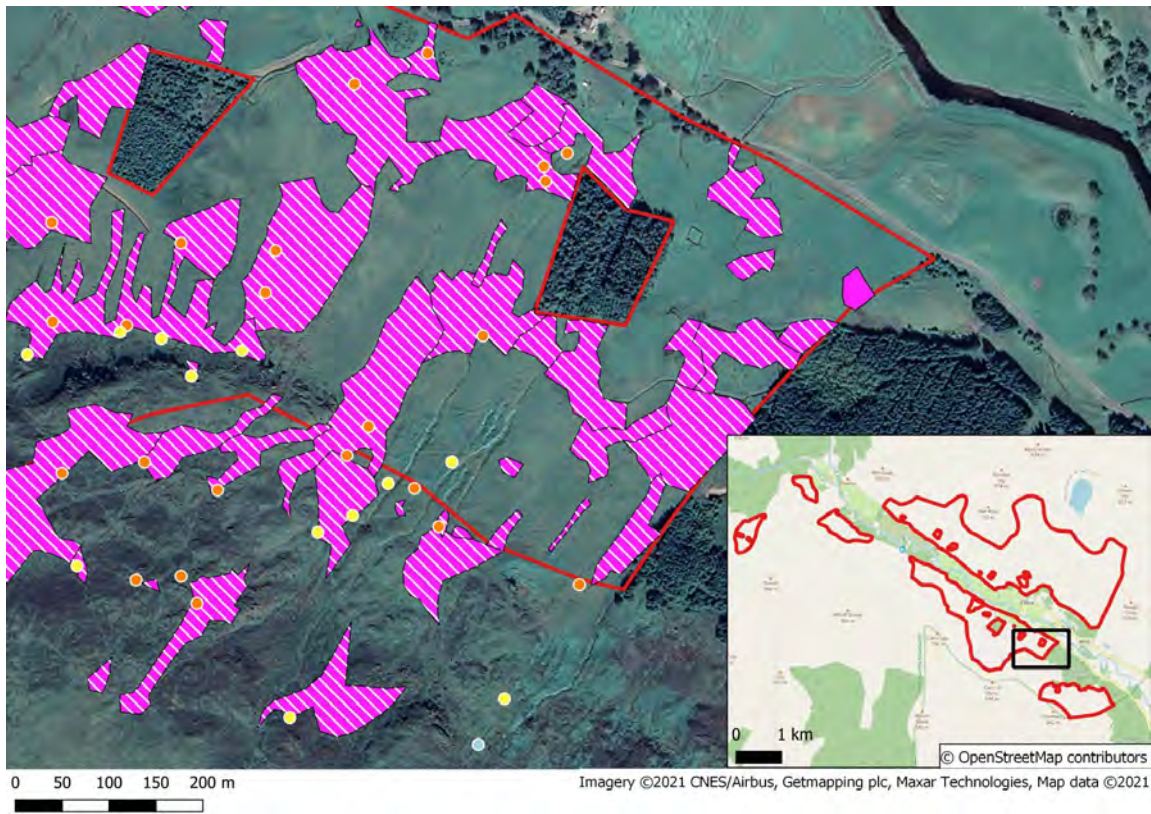


Figure 12: Key Plant Communities Sensitive to Forest Planting (Brownholm)

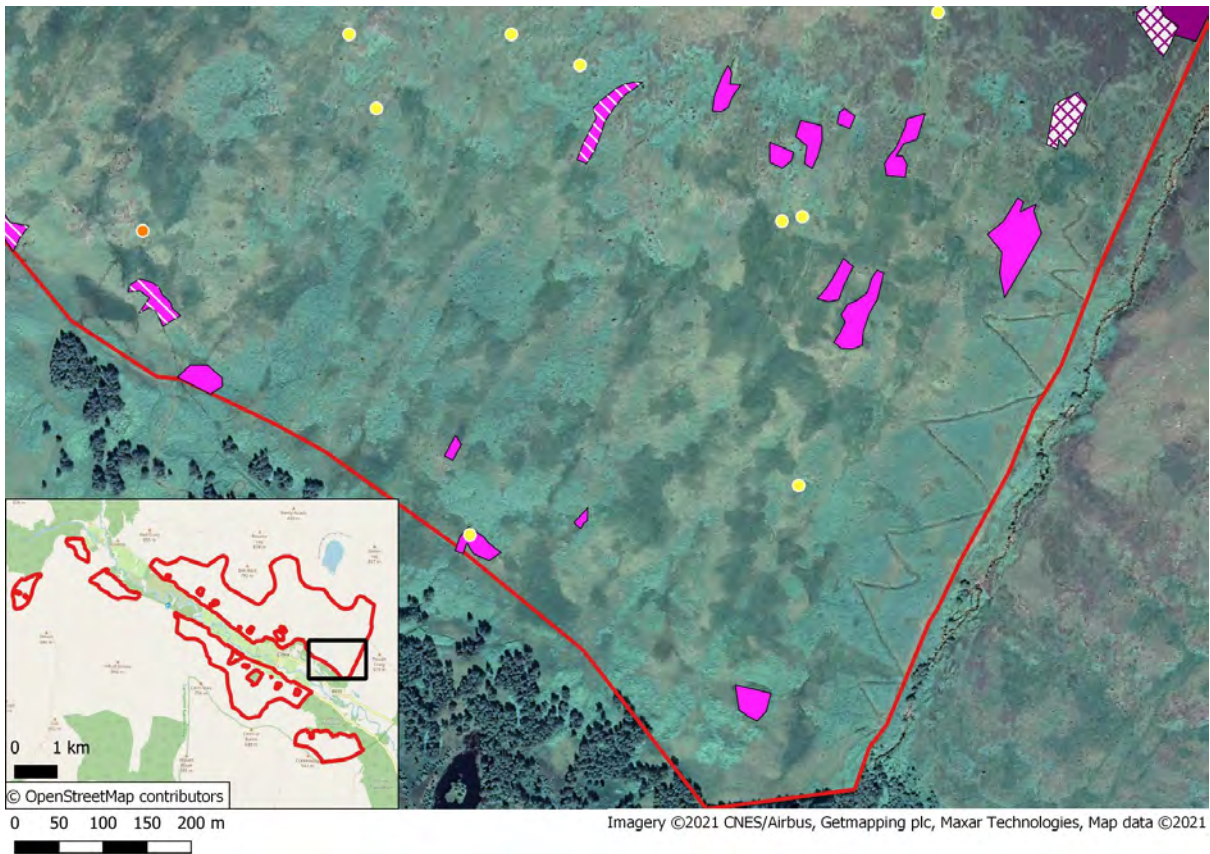


Figure 13: Key Plant Communities Sensitive to Forest Planting (Brownholm)

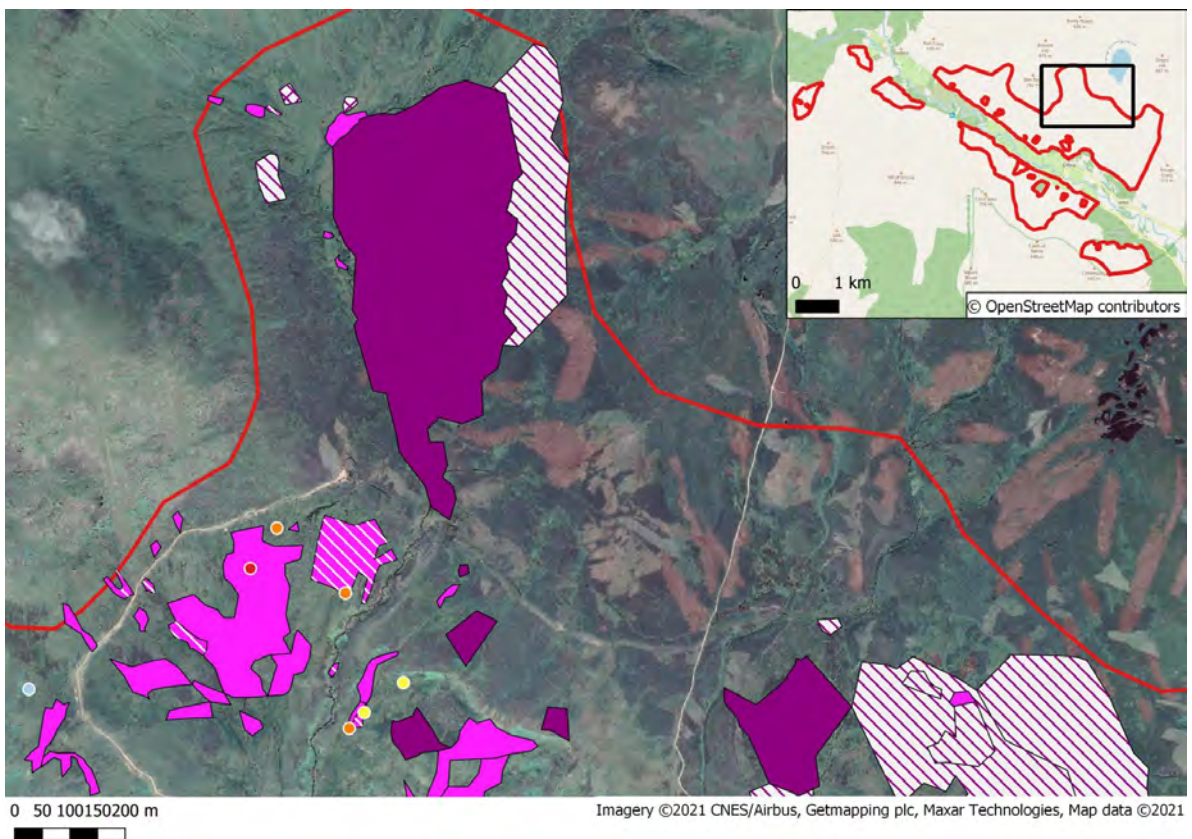
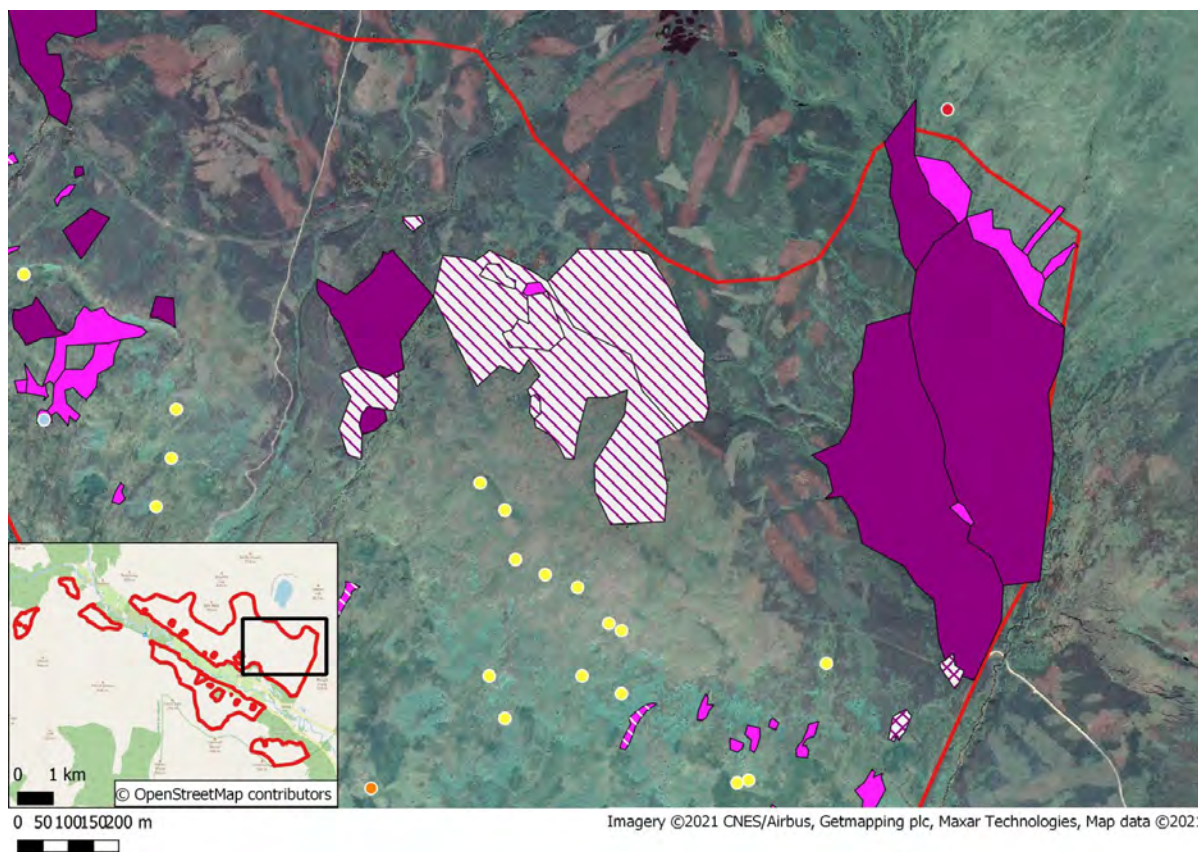







Figure 14: Key Plant Communities Sensitive to Forest Planting (Brownholm)



 Site boundary

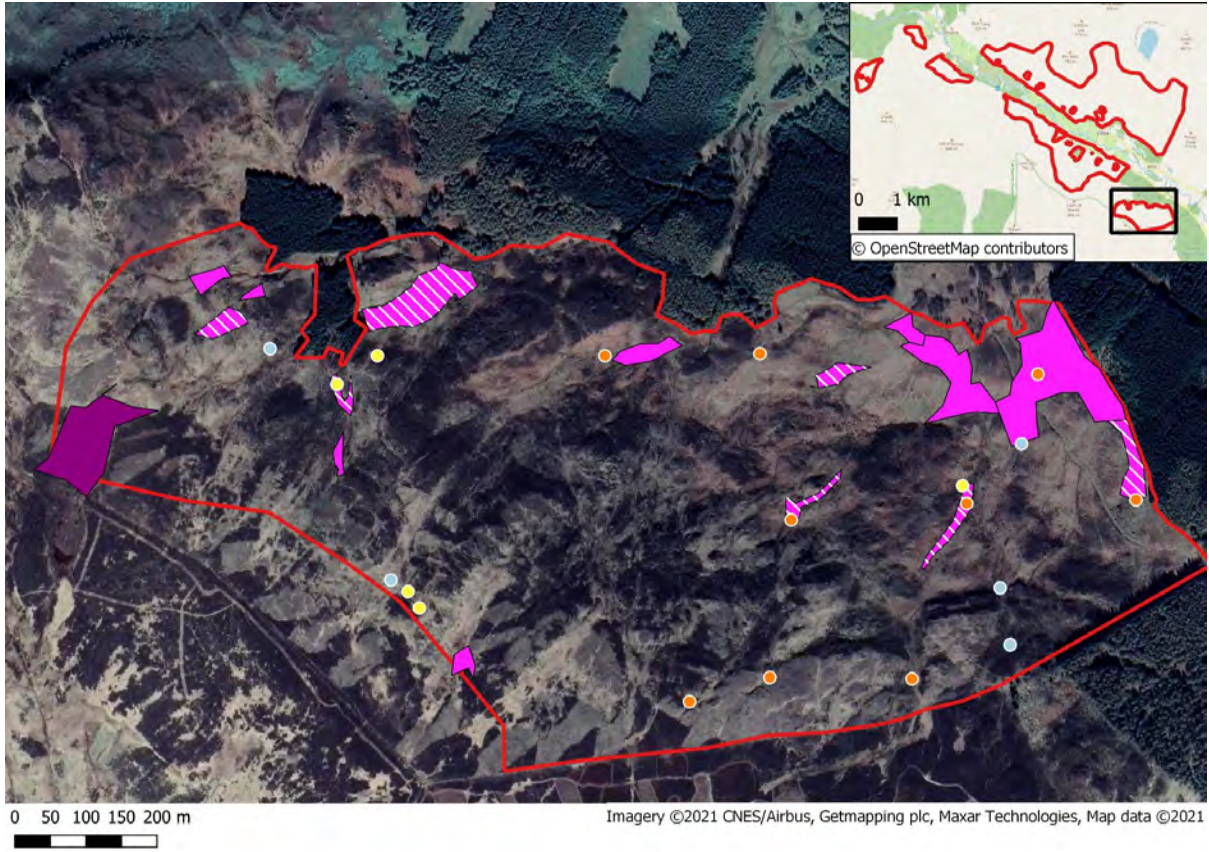
Summary target notes

-  Acid flushes with M6 elements
-  Acid/Neutral flushes with Mx & very wet M15a elements
-  Base-rich flushes with M10 elements
-  Springheads, including M32, M37 and M10

Summary

-  Acid/neutral flushes
-  M10/M32 flush present
-  Blanket bog
-  Calcareous grassland
-  Dry modified bog
-  Wet modified bog

Figure 15: Key Plant Communities Sensitive to Forest Planting (Coremachy)



5). Recommendations:

It is understood that much of the site is being considered for potential tree-planting. The following is recommended for consideration as part of the planning process.

Overall, it is felt that any planning for tree planting needs to also take account of the future management of those areas which are unsuitable for planting, with particular emphasis on those habitats that could benefit from continued low-intensity grazing and/or being kept wet/marshy, especially the species-rich flush/grassland complexes around the lower slopes at Craig Duff.

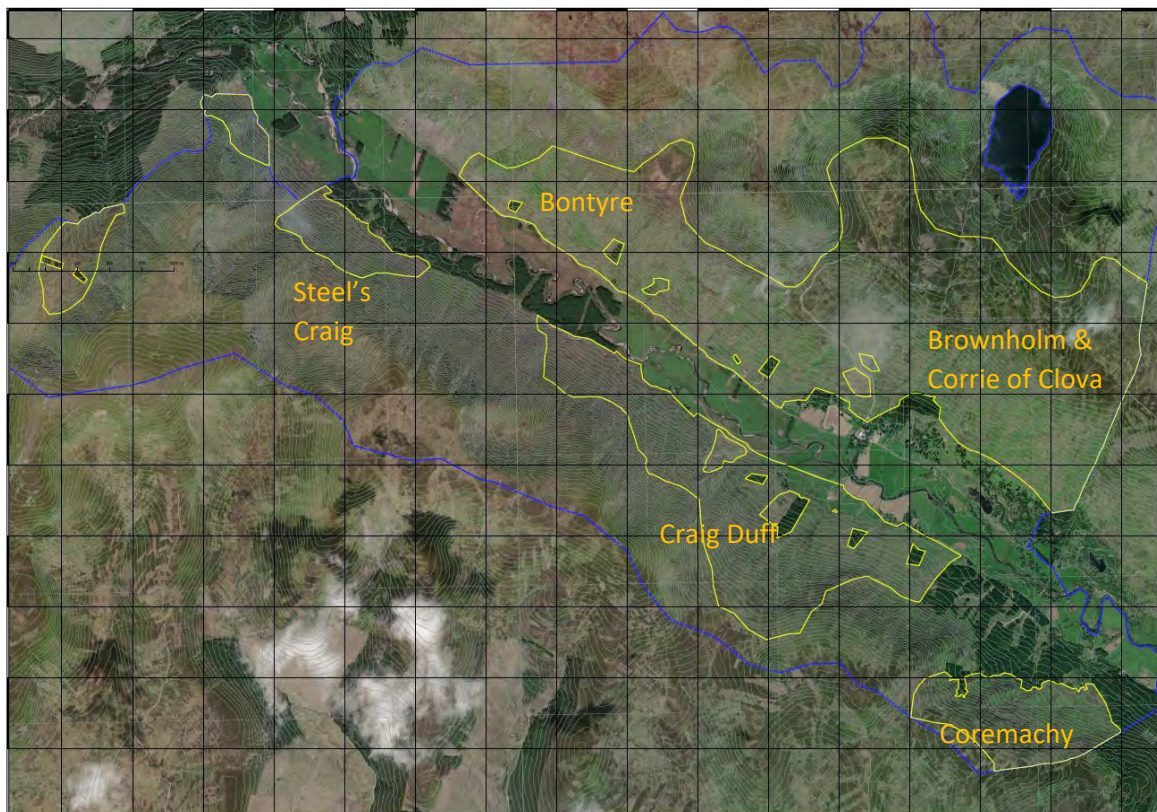
1. There are several plant communities present on the site that are considered, under current SEPA guidance, to be highly or moderately dependent on ground water (as denoted by ** or * in **Section 3** of report). Tree planting should generally be considered carefully around these habitats and be in line with current best guidance for planting around GWDTEs.
 - Tree planting should definitely seek to avoid the base-rich M10 (M11) and M32(M37) springheads and flushes (often associated directly with groundwater springheads). These areas often merge into Mx neutral sedge mires and M15a wet soligenous mires to form flush complexes. Where this occurs, the whole complex should be viewed as a sensitive GWDTE area *e.g.* M15a/M10/Mx patch (*see Figures 1 -15*). These areas also support a number of uncommon plant species, such as broad-leaved cottongrass and Scottish asphodel, as well as being important for local birdlife for feeding.
 - There are several areas of M6 acid flush present on the site, most notably on lower areas running down from the Corrie of Clova, as well as localised patches at Craig Duff and Steel's Craig. These areas are extremely wet and should be looked at case by case for any potential wet woodland-type planting *e.g.* willows, alder. The areas in, around and above the Minrie Burn (Craig Duff) should likely be left unplanted as they appear important for local birdlife, particularly snipe.
 - Suitable-sized buffer zones around all the above flush features should also be designed into any tree planting proposals within current best practice. It is not possible to specifically advise on the size and shape of each buffer zone as much will depend on aspect (and future shading), nature of drains in each area, forest design *etc.*, but buffers could be up to 20m in size (allowing for height of mature trees) in some places but be much less in other places;
 - It is considered that low-density broadleaf tree-planting *e.g.* wet woodland species, would be appropriate in most of the marshy grassland areas, as these are primarily species-poor at Glen Clova. Such planting would be in keeping with these areas as they often develop a patchy tree cover over taller herbs and rushes in the absence of grazing.

2. Species-rich calcareous grassland (CG10) is an uncommon habitat at Glen Clova and is often associated with adjacent base-rich flushes. In some places on the lower slopes of Craig Duff, this vegetation merges into acid grassland, itself sitting beside flush complexes. It is therefore recommended that these areas be included as open space within the proposals and protected from excessive shading via a buffer zone (20m). Ideally, the grassland and lower flush areas at Craig Duff should continue to be grazed (at low levels) in order to maintain their interests if this was possible.

3. There are several areas of deep peat within the survey area, although it is understood several of these areas have now been excluded from this proposed scheme *e.g.* Corrie of Clova, Corrie of Bonhard. Nevertheless, there are still significant areas of peat centred around Brownholm and the Corrie of Inchdowrie, with smaller patches at Coremachy. It was beyond the remit of this survey to carry out a detailed soil and peat survey on the site. A detailed, focussed peat depth survey should therefore be carried out on key parts of the site, including the sections named above.

Appendix 1: Phase One/NVC Habitat Survey Maps with Target Notes

1. Steel's Craig
2. Bontyre
3. Craig Duff
4. Brownholm and Corrie of Clova
5. Coremachy



Phase One Habitat Map Codes:

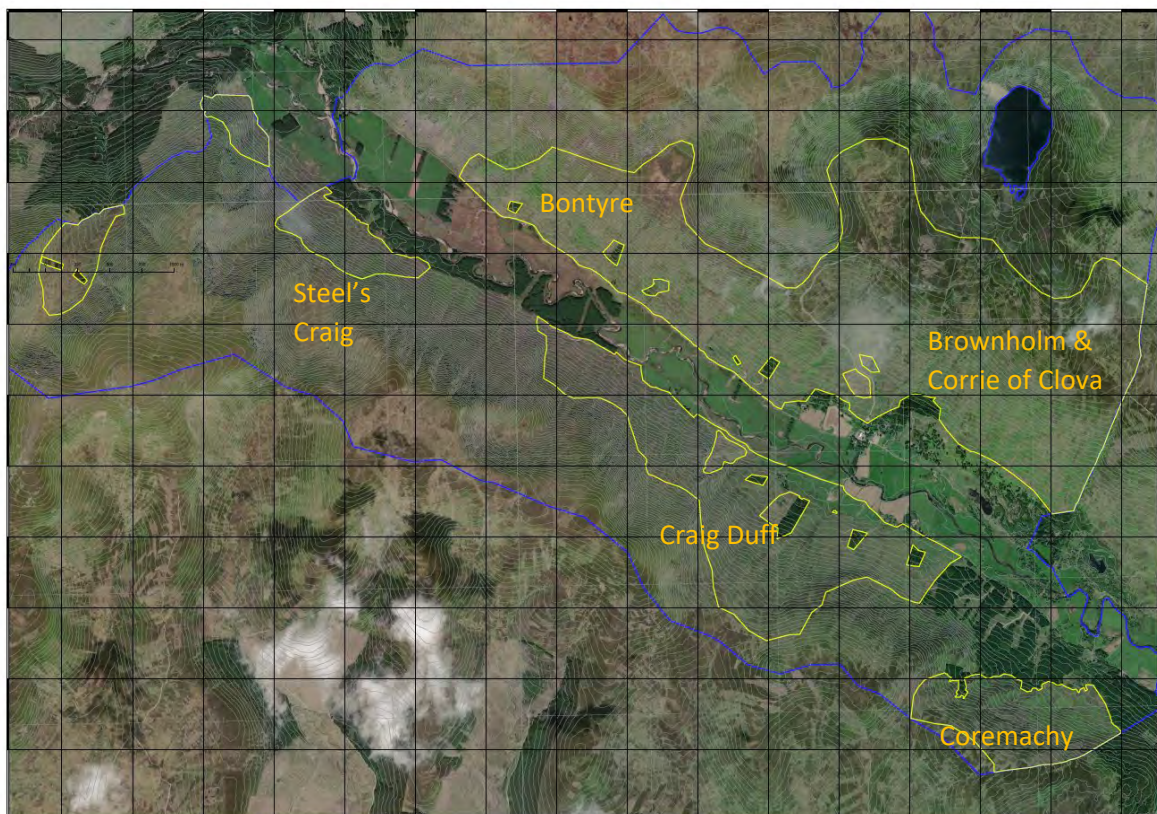
 Target notes

Habitats:

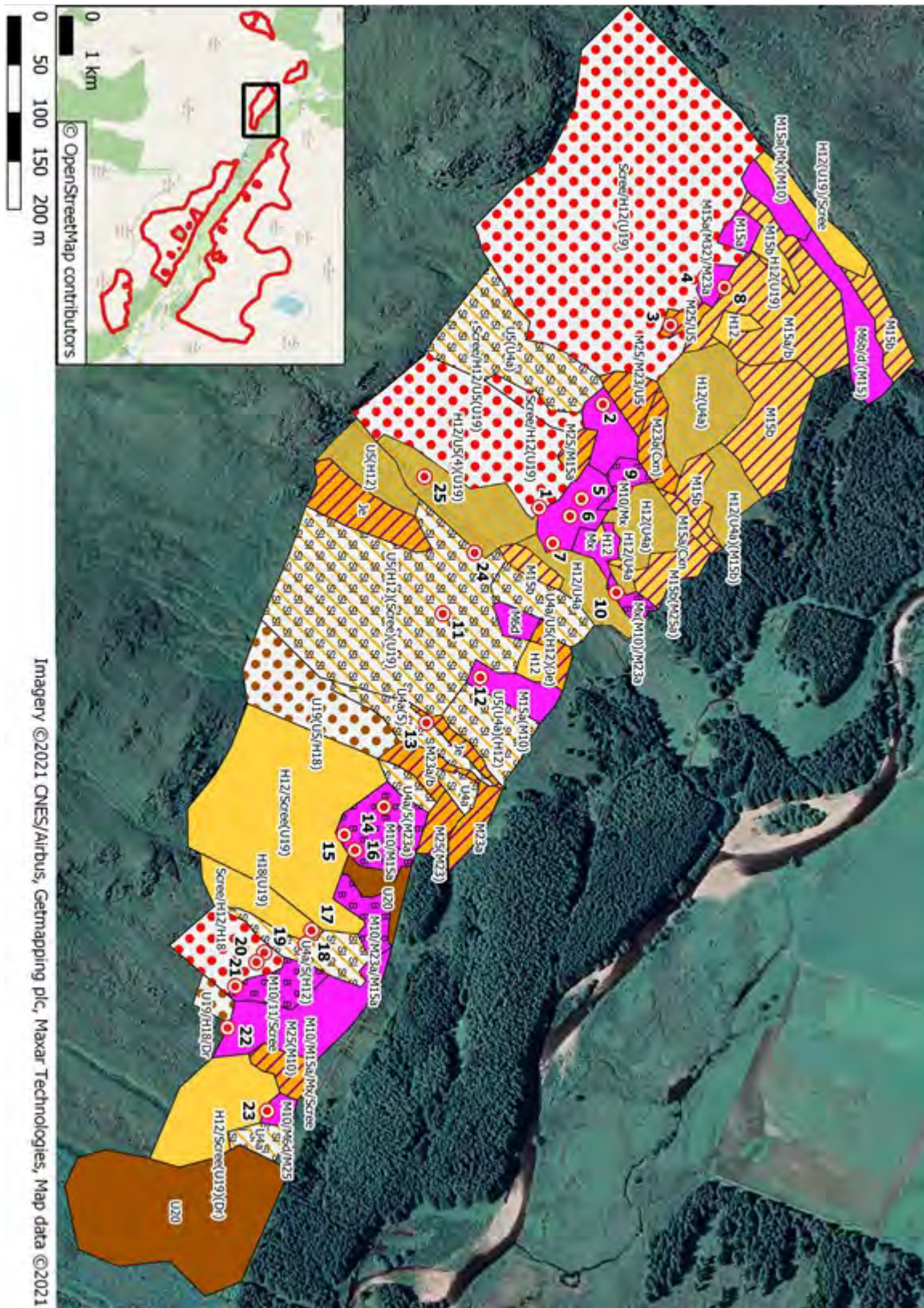
-  A1.1.1 - Broadleaved woodland - semi-natural
-  A1.2.2 - Coniferous woodland - plantation
-  A2.1 - Scrub - dense/continuous
-  A2.2 - Scrub - scattered
-  A3.1 - Broadleaved Parkland/scattered trees
-  A3.3 - Mixed Parkland/scattered trees
-  B1.2 - Acid grassland - semi-improved
-  B2.2 - Neutral grassland - semi-improved
-  B3.2 - Calcareous grassland - semi-improved
-  B4 - Improved grassland
-  B5 - Marsh/marshy grassland
-  B6 - Poor semi-improved grassland
-  C1.1 - Bracken - continuous
-  C1.2 - Bracken - scattered
-  C3.2 - Other tall herb and fern - non ruderal
-  D1.1 - Dry dwarf shrub heath - acid
-  D2 - Wet dwarf shrub heath
-  D5 - Dry heath/acid grassland
-  D6 - Wet heath/acid grassland
-  E1.6.1 - Blanket sphagnum bog
-  E1.7 - Wet modified bog
-  E1.8 - Dry modified bog
-  E2.1 - Flush and spring - acid/neutral flush
-  E2.2 - Flush and spring - basic flush
-  F1 - Swamp
-  G1.3 - Standing water - oligotrophic
-  I1.1.1 - Inland cliff - acid/neutral
-  I1.2.1 - Scree - acid/neutral
-  I1.4.1 - Other exposure - acid/neutral
-  I2.1 - Quarry

1. Steel's Craig

Phase 1 (NVC) Map and Target Notes



1. Steel's Craig



(All grid references are NO e.g. NT 28703 74712, and NVC Codes e.g. U4a, DAFOR used to describe relative abundance of plants: D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare; L = Local e.g. LF).

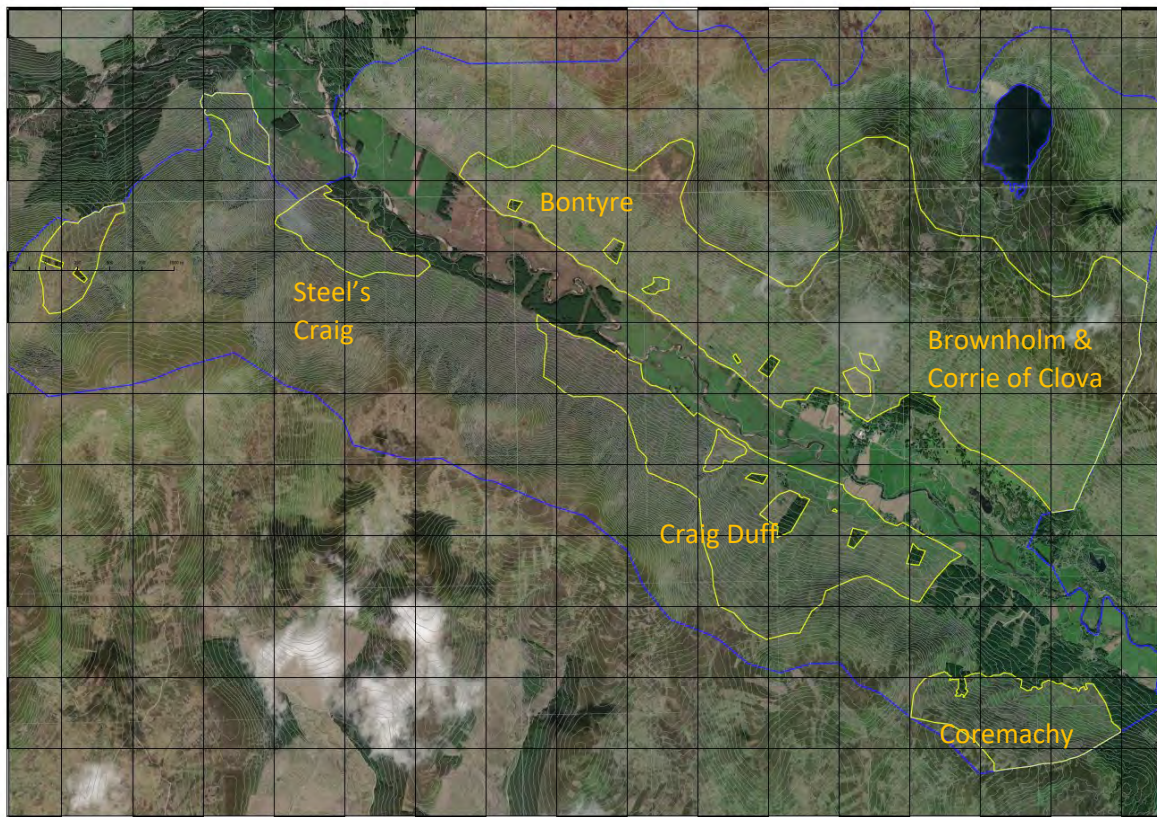
1. Steel's Craig Target Notes:

Target Note Number	NO_Grid_Ref_ (Eastings)	NO_Grid_Ref_ (Northings)	Comments
1	28703	74712	M32 springhead
2	28596	74778	M32 springhead and lesser twayblade orchid present
3	28514	74848	M32 & M15a wet strip of vegetation
4	28465	74884	Several springheads going into M15a/M23a mire and marshy vegetation
5	28694	74756	Clump of broad-leaved cottongrass present in M10 base-rich mire vegetation, with jointed rush, etc.
6	28712	74744	Broad-leaved cottongrass, tawny sedge, etc present in M10(M11) base-rich mire area
7	28740	74726	Broad-leaved cottongrass present
8	28475	74904	M32 springhead
9	28683	74800	M10/Mx base/neutral sedge mire area with broad-leaved cottongrass, marsh arrowgrass, jointed rush, common butterwort, carnation sedge, common sedge, common cottongrass
10	28791	74792	Mx neutral sedge mire with M10 elements and M23a marshy grassland with meadowsweet, wild angelica, tawny sedge.
11	28813	74612	M32 springhead with wet M15a heath below it.
12	28879	74651	Springheads within a M15a(M10) mire area
13	28926	74595	Strip of soft rush running down slope with M32 elements within it.
14	29013	74551	Area of M10/11 base-rich mire vegetation mixed in with more wet M15a heath. Species present include tawny sedge, dioecious sedge, common yellow-sedge, carnation sedge and common butterwort along with yellow saxifrage

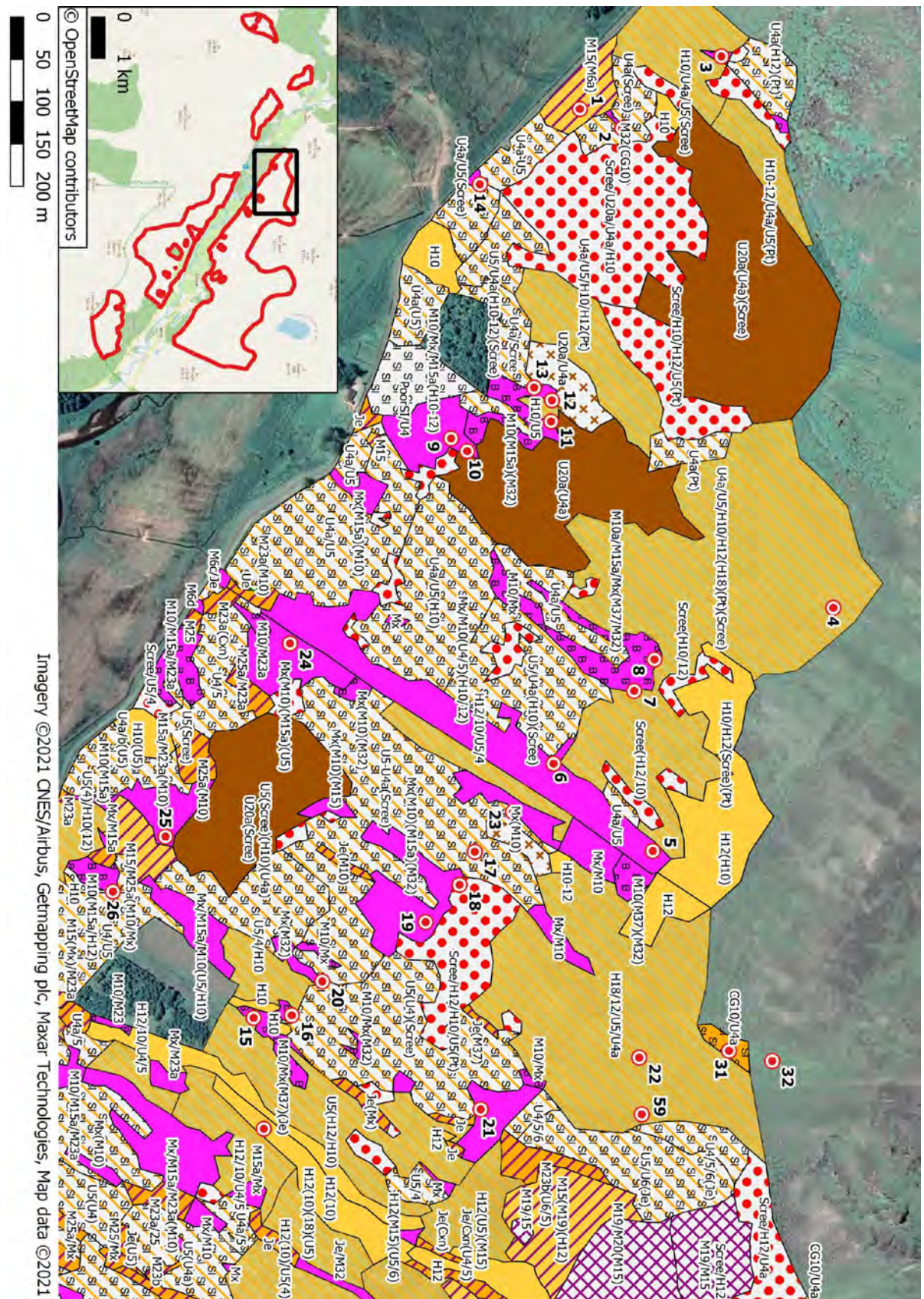
15	29042	74510	M32 springheads with M10 base-rich vegetation
16	29058	74521	Springheads with M10 mire vegetation
17	29141	74476	Springhead at top of more base-rich vegetation
18	29155	74470	Springhead at top of more base-rich vegetation
19	29164	74427	Small area of M10 base -rich mire with springhead
20	29174	74419	Springhead with M10/11 vegetation below, including yellow saxifrage, tawny sedge.
21	29199	74397	Springhead
22	29242	74389	Extensive area of M10 and Mx neutral sedge flushes in amongst boulder scree which also supports golden-scaled male-fern and blaeberry-dominated H18 heath vegetation. Merges into purple moor-grass (M25) vegetation downhill.
23	29328	74430	M10 base-rich mire with marsh arrowgrass, tawny sedge, common butterwort, <i>etc.</i> surrounded by sharp-flowered rush-dominated acid mire (M6d) as well as marshy grassland (M25 & M23a).
24	28750	74645	Small Mx neutral sedge mire
25	28671	74593	Steep unbrowsed burnside tall herb vegetation, with meadowsweet, water aven, marsh thistle, cuckooflower, wild angelica, common valerian, globeflower, herb-robert, lady's-mantle present alongside rowan trees.

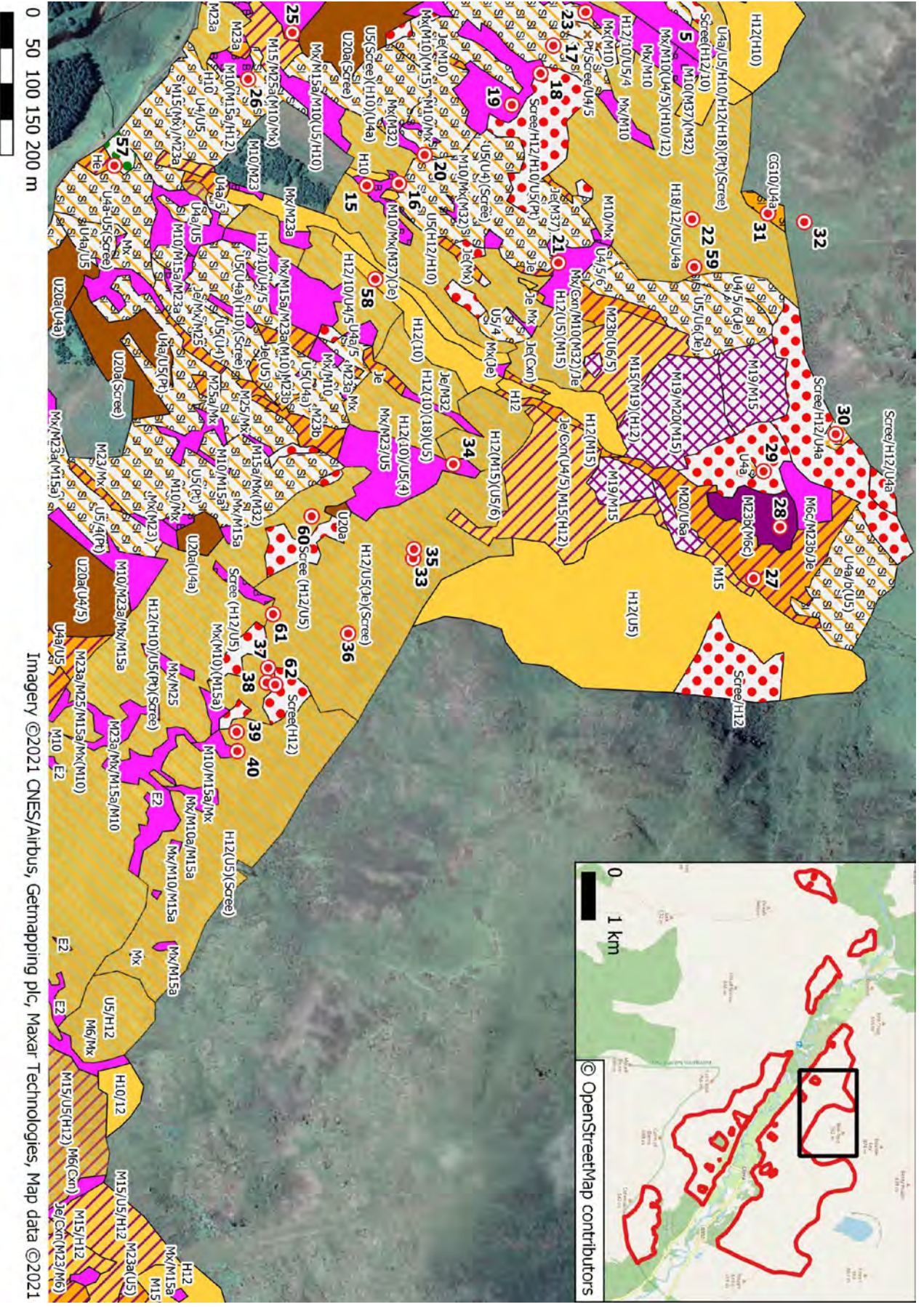
2. Bontyre

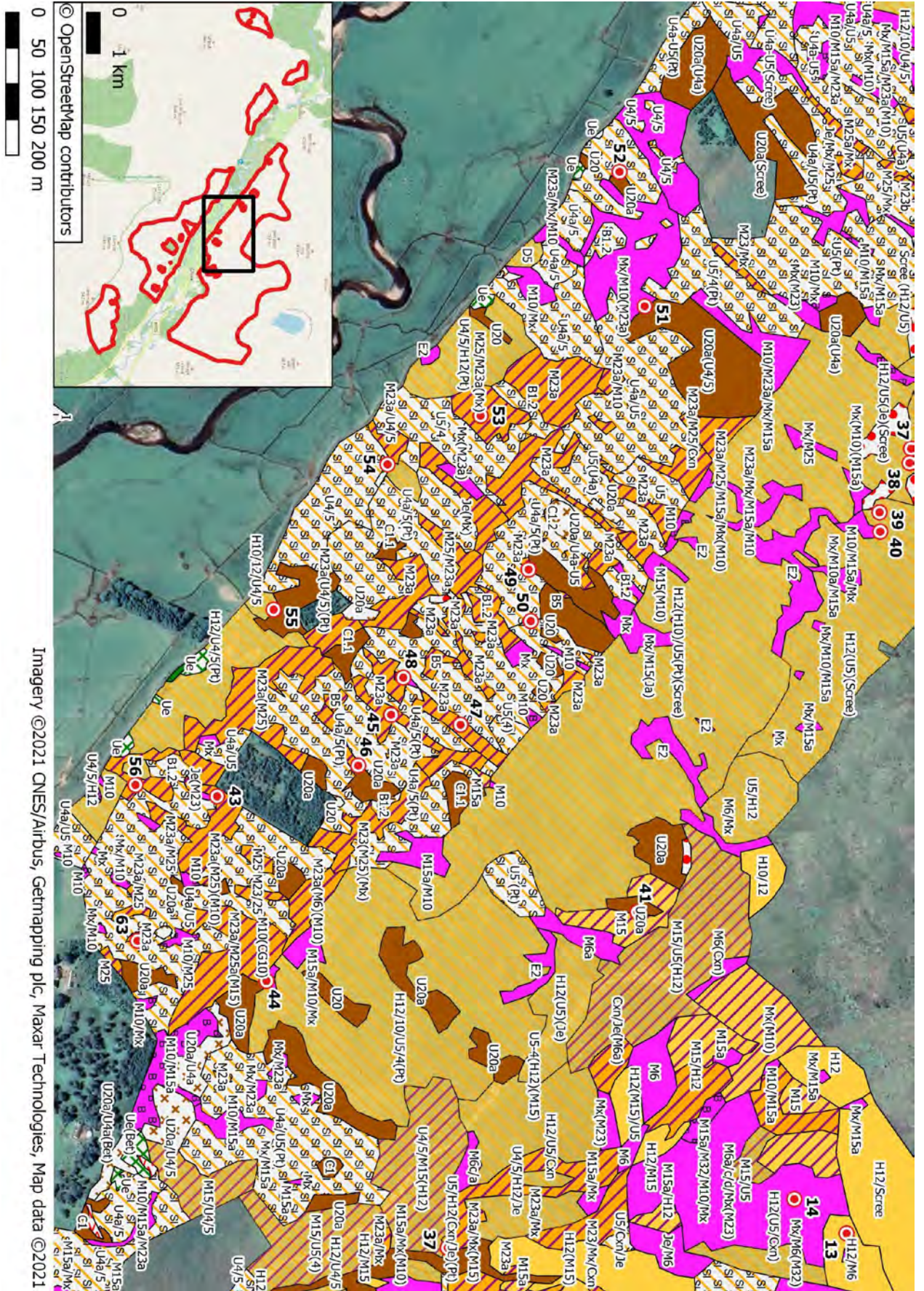
Phase 1 (NVC) Map and Target Notes



6.4. Bontyre Phase One/NVC Habitat Map







Glen Clova Vegetation Survey 2020/2021

Bontyre Target Notes

Target Note Number	NO_Grid_Ref_ (Eastings)	NO_Grid_Ref_ (Northings)	Comments
1	29739	75061	Area of M15 wet heath mixed in with M6 acid flush patches and U5 acid grassland, with abundant purple moor-grass, cross-leaved heath, heath rush, <i>Sphagnum capillifolium</i> moss and locally abundant star sedge. Occasional common cottongrass, ling heather, matgrass, wavy hair-grass and viviparous fescue present along with <i>Polytrichum commune</i> moss.
2	29762	75111	M32b springhead with opposite-leaved saxifrage, blinks, <i>Philonotis fontana</i> moss and crested dog's-tail grass present, with base flushing into adjacent U4a acid grassland with result that some grassland similar to CG10 community.
3	29677	75228	M32/M10 flush area
4	30328	75360	2 Snipe present
5	30615	75147	Top of M10 flush strip downhill with several M32b springheads in locality, with small area of calcareous grassland in an area otherwise surrounded by dry heath (H12) and acid grassland communities (U5 and U4a)
6	30512	75030	Large wide strip going all the way downhill and uphill, with strips of M10 vegetation and large patches of Mx neutral sedge mire with M15a wet soligenous mire elements, with common sedge, star sedge, jointed rush, heath rush, devil's-bit scabious, quaking grass, purple moor-grass, carnation sedge, common yellow-sedge, cross-leaved heath and common cottongrass present. These wet strips around streams divide patches of both U4a and U5 acid grassland as well as H10 and H12 dry heath communities, resulting in a mosaic of many plant communities. Occasional small patches of calcareous grassland also present nearby.

7	30426	75125	Top of large flush area with M37 and M32 springheads merging into a M10/Mx neutral sedge mire (with much common, star and carnation sedges) and M15a soligenous wet heath complex below and downhill
8	30389	75149	Top of M10a (Mx/M15a) flush complex with M32b springhead.
9	30128	74909	M37 spring with <i>Palustriella commutata</i> and <i>Philonotis fontana</i> mosses present.
10	30143	74928	M32 springhead
11	30108	75027	M32b springhead
12	30083	75028	M32b springhead
13	30068	75007	M32 springhead
14	29828	74943	M32b springhead
15	30812	74676	Small M10 springhead by stream
16	30809	74721	M37/M32 springhead above M10/Mx neutral sedge mire strips below, along with frequent soft rush.
17	30616	74937	Springhead
18	30655	74919	M32b springhead at edge of flush complex, with M10 elements, Mx neutral sedge mire and M15a soligenous wet heath mire over a wide area downhill.
19	30699	74879	M32 springhead above Mx neutral sedge mire with M15 & M10 elements downhill over a wide area.
20	30769	74757	M32 springhead
21	30920	74944	Large flush complex, with M32 springheads merging into larger Mx neutral sedge mire and common sedge-dominated patches, often alongside star sedge, sharp-flowered rush, purple moor-grass, quaking grass and heath rush, and with locally abundant soft rush.
22	30859	75131	Small springhead amongst H12 dry heath and U5 mat grass mosaic.
23	30569	74982	Flushed area of U5 grassland mixing in with Mx neutral sedge mire and some M10 base flush elements.

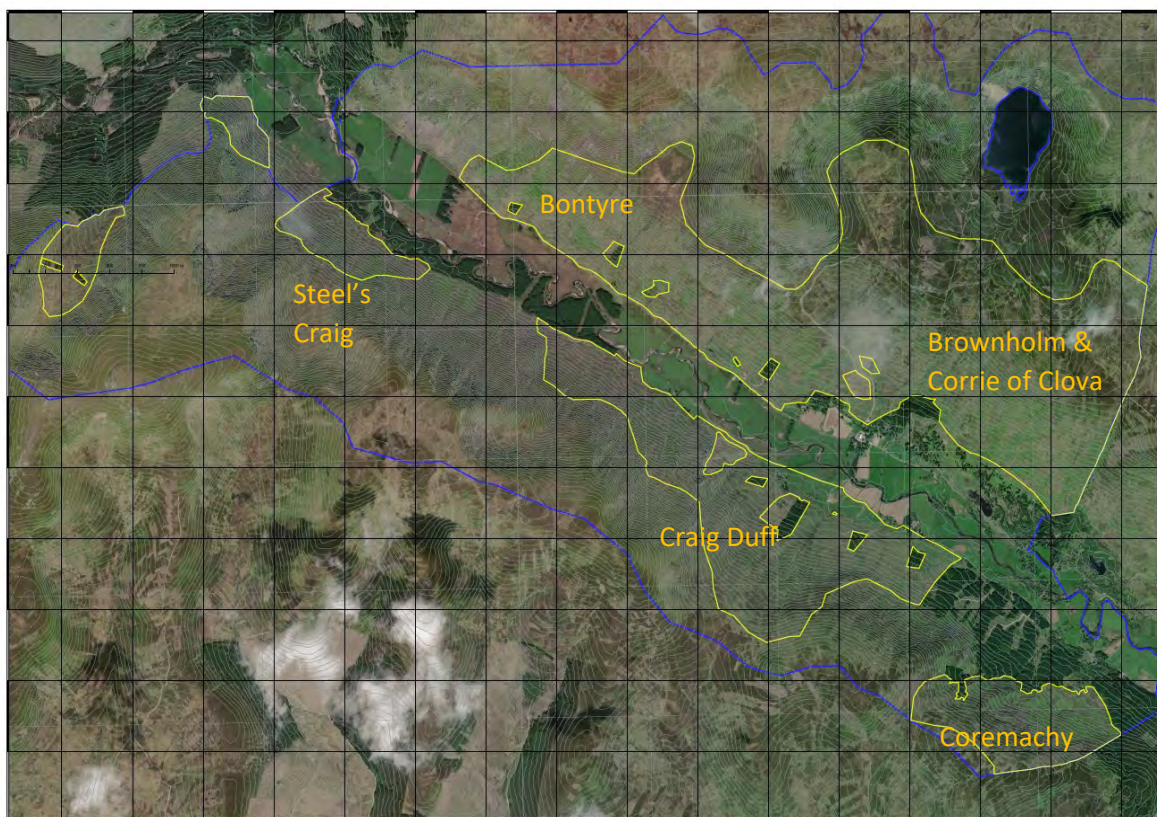
24	30370	74719	Large Mx neutral sedge mire complex merging into M15a soligenous wet heath mire and M10a base flush vegetation, with M23a marshy grassland present too where sharp-flowered rush is more dominant. Species present include common sedge, star sedge, carnation sedge, common yellow-sedge, jointed rush, quaking grass, bog asphodel, cross-leaved heath, purple moor-grass, devil's-bit scabious, fairy flax, marsh thistle, meadow buttercup, <i>Calliergonella cuspidata</i> moss, slender St. John's wort (rare), common cottongrass and rare <i>Sphagnum capillifolium</i> moss.
25	30598	74572	M32 springhead flowing into M10 base vegetation and M23a (M15) marshy areas below.
26	30663	74510	M32 springhead above flush complex, with heavily browsed M15a wet heath and H12 dry heath vegetation along with M10 base flush elements.
27	31362	75217	Large area of species-poor and very wet marshy grassland (M23b) with occasional more acidic flush elements (M6c). Soft rush dominates the vegetation with frequent marsh violet, creeping and meadow buttercup and occasional cuckooflower.
28	31290	75254	Area of very wet heavily browsed M17 blanket bog on deep peat, with M19 elements present. Species present include abundant hare's-tail cottongrass, <i>Polytrichum commune</i> , <i>Sphagnum capillifolium</i> , <i>Sphagnum fallax</i> mosses along with frequent cross-leaved heath, deer grass, occasional ling heather, wavy hair-grass and blaeberry and locally frequent common sedge and star sedge.
29	31212	75231	Area of big boulder debris along with H12 dry heath vegetation. Peregrine falcon heard in vicinity.
30	31160	75332	U4a acid grassland merges into CG10 calcareous grassland (with occasional locally frequent thyme but only occasional alpine lady's mantle)

31	30851	75237	Localised CG10 calcareous grassland at stream base.
32	30863	75288	M10 base flushes by stream
33	31334	74741	M10/Mx flush strip
34	31202	74797	Mx neutral sedge mire area
35	31321	74742	M10/Mx mire area
36	31439	74650	Springhead amongst H12 dry heath/U5 acid grass mosaic with rock debris.
37	31487	74538	Mx neutral sedge mire area
38	31507	74536	Mx neutral sedge mire area
39	31576	74494	Springhead within dry heath/acid grass mix with some bracken nearby.
40	31603	74495	Top of Mx neutral sedge mire with M15a and M10 elements, with carnation sedge, star sedge, fairy flax, cross-leaved heath, purple moor-grass, bog asphodel, etc.
41	32135	74156	Mx neutral sedge mire patch
42	30311	75499	Top of springhead with calcareous grassland patch, including <i>Alchemilla angusensis</i> (probable - tbc)
43	31973	73569	M10 strip with few-flowered spike-rush.
44	32231	73638	M10 area with common rock-rose, thyme, fairy flax present in adjacent calcareous grassland
45	31859	73812	Very wet Mx neutral sedge mire area
46	31930	73766	Small M10 springhead
47	31873	73909	Springhead
48	31807	73829	M10 flush with dioecious sedge, common yellow-sedge, common butterwort, etc.
49	31656	74004	M32 springhead
50	31728	74007	Mx neutral sedge springhead
51	31288	74166	Large springhead with Mx/M10 neutral sedge mire. Species present include marsh arrowgrass and few-flowered spike-rush.
52	31100	74131	Small area of calcareous grassland with common rock-rose, mountain everlasting and

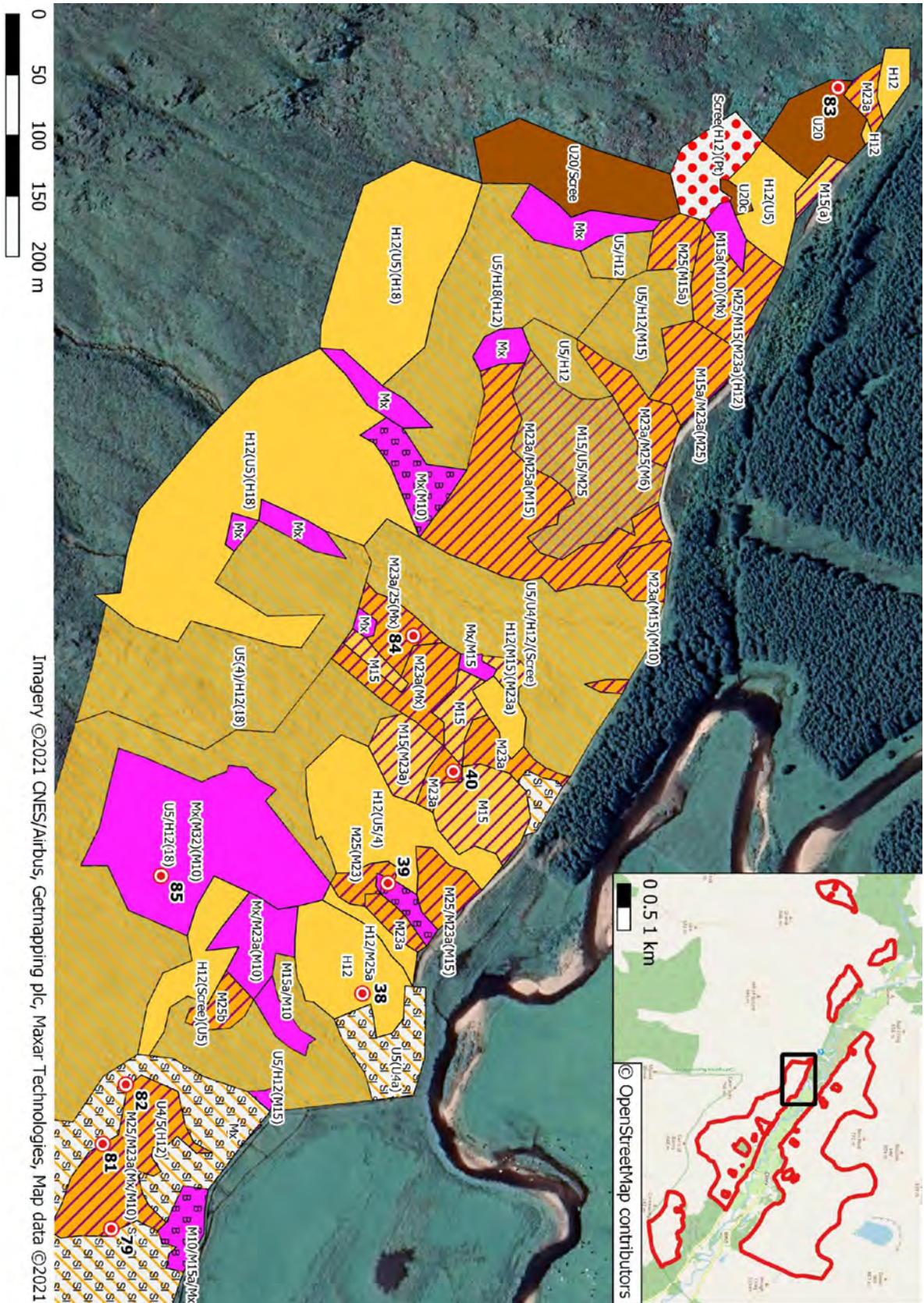
			bird's-foot trefoil.
53	31441	73937	Very wet Mx neutral sedge mire area
54	31509	73807	Mature ash, oak and cherry
55	31712	73648	Locally abundant mountain everlasting
56	31957	73455	M10 flush area.
57	30784	74323	Small group of mature oak and ash trees.
58	30943	74688	More species-rich area by burn, including starry saxifrage, marsh hawk's-beard, mossy saxifrage, <i>etc.</i>
59	30926	75134	Adder (and a worried frog!)
60	31275	74599	Small springhead.
61	31412	74545	M32b springhead
62	31510	74548	M32b springhead
63	32175	73458	M10 springhead patch

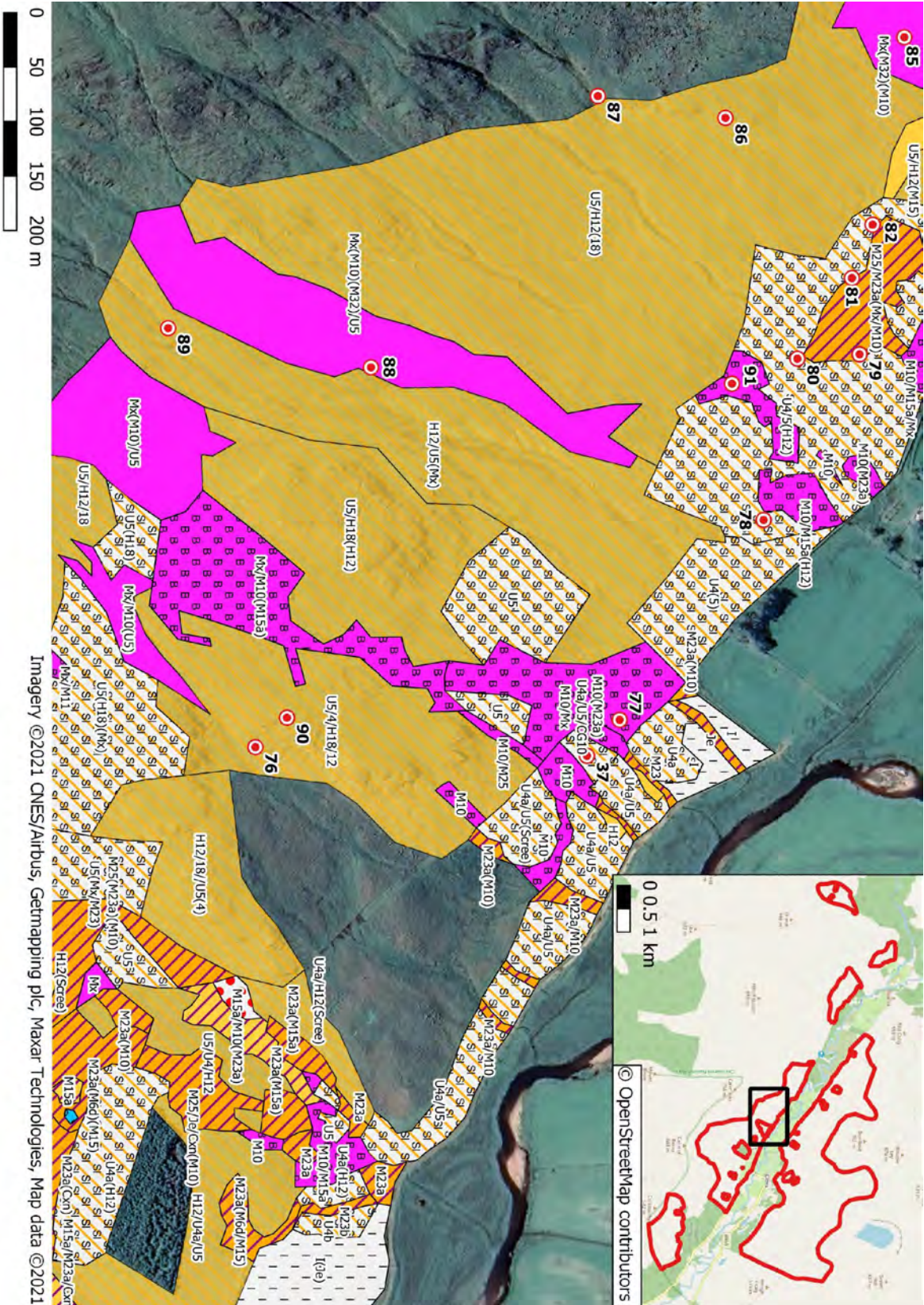
3. Craig Duff

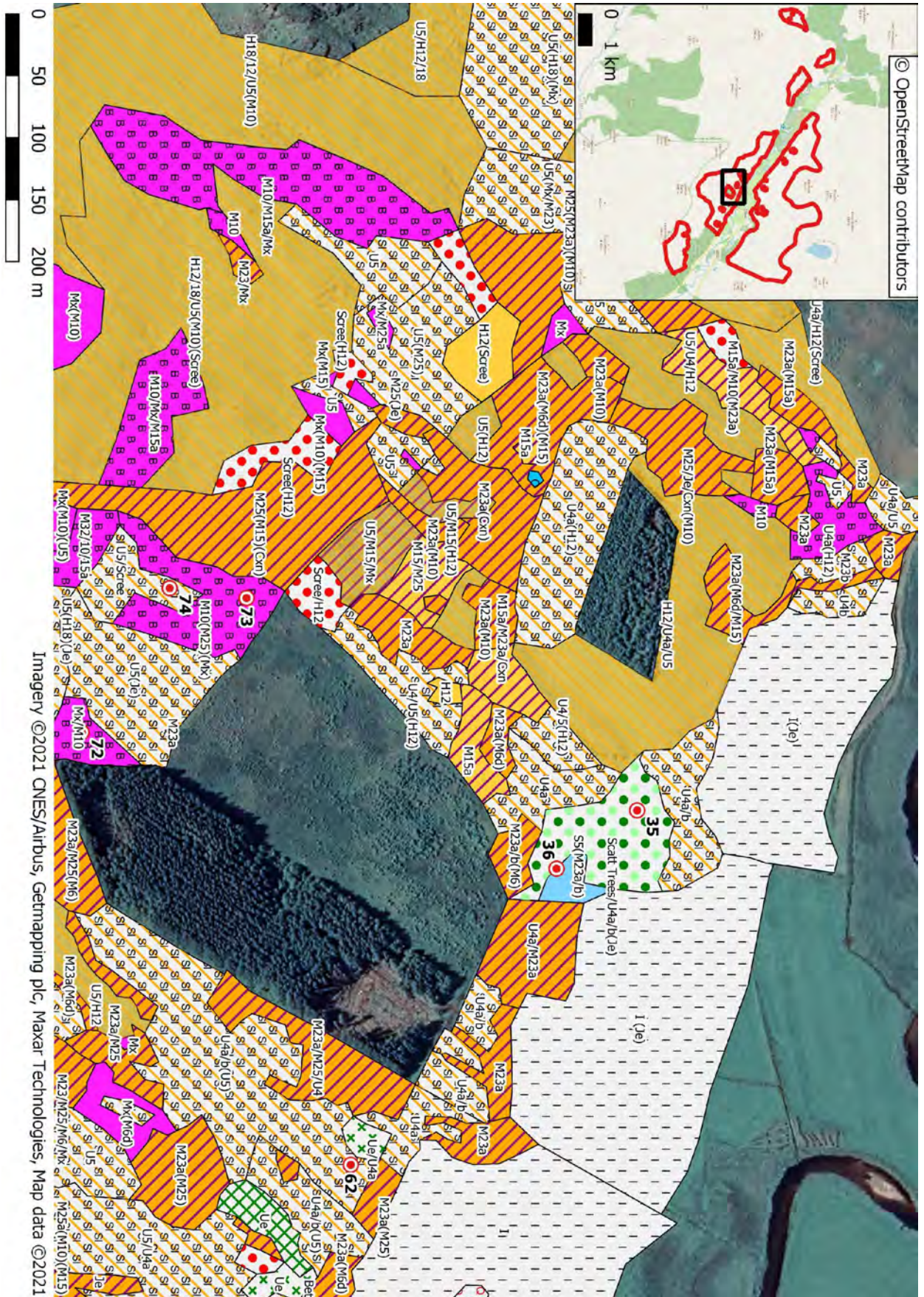
Phase 1 (NVC) Map and Target Notes

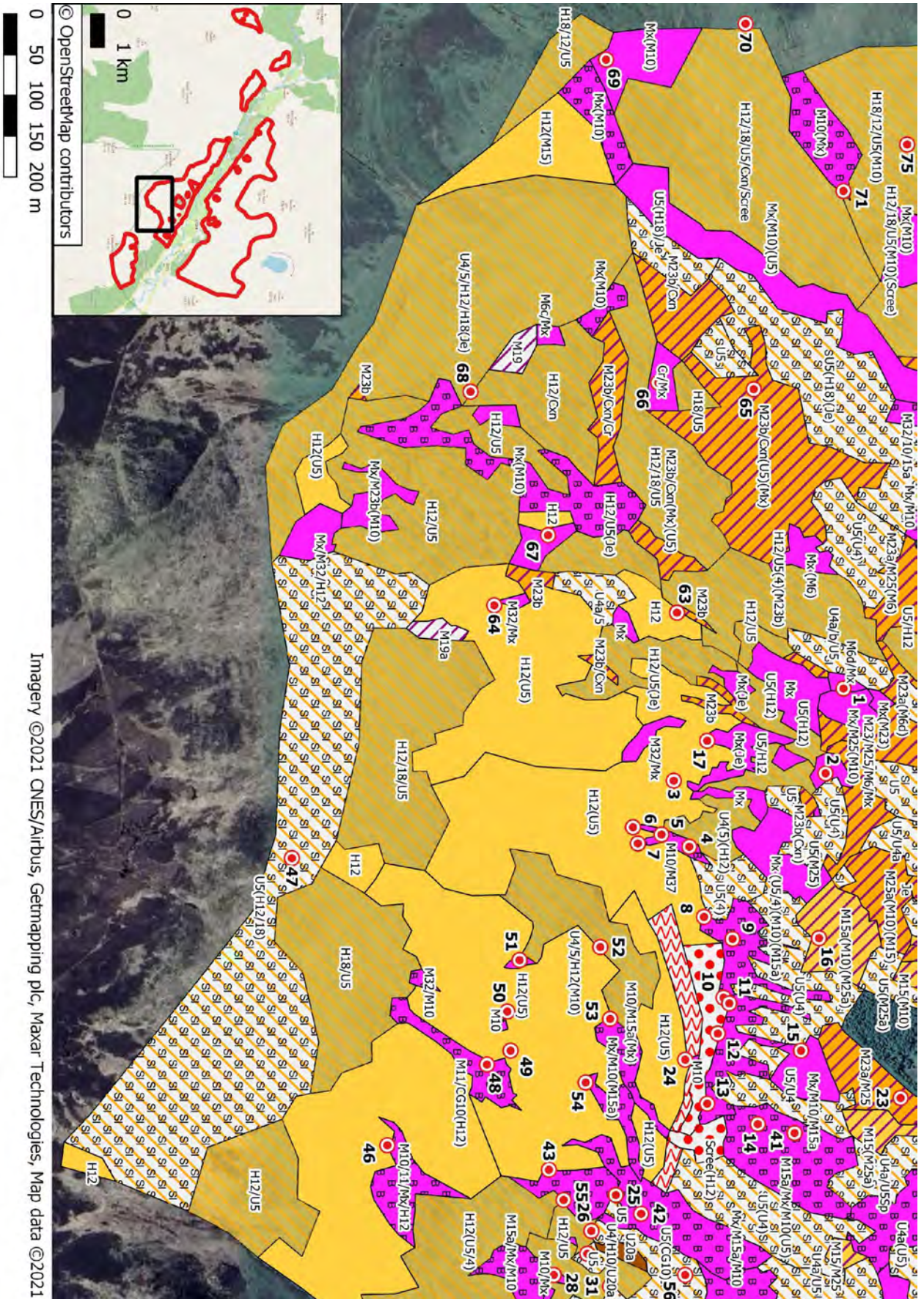


6.2. Craig Duff

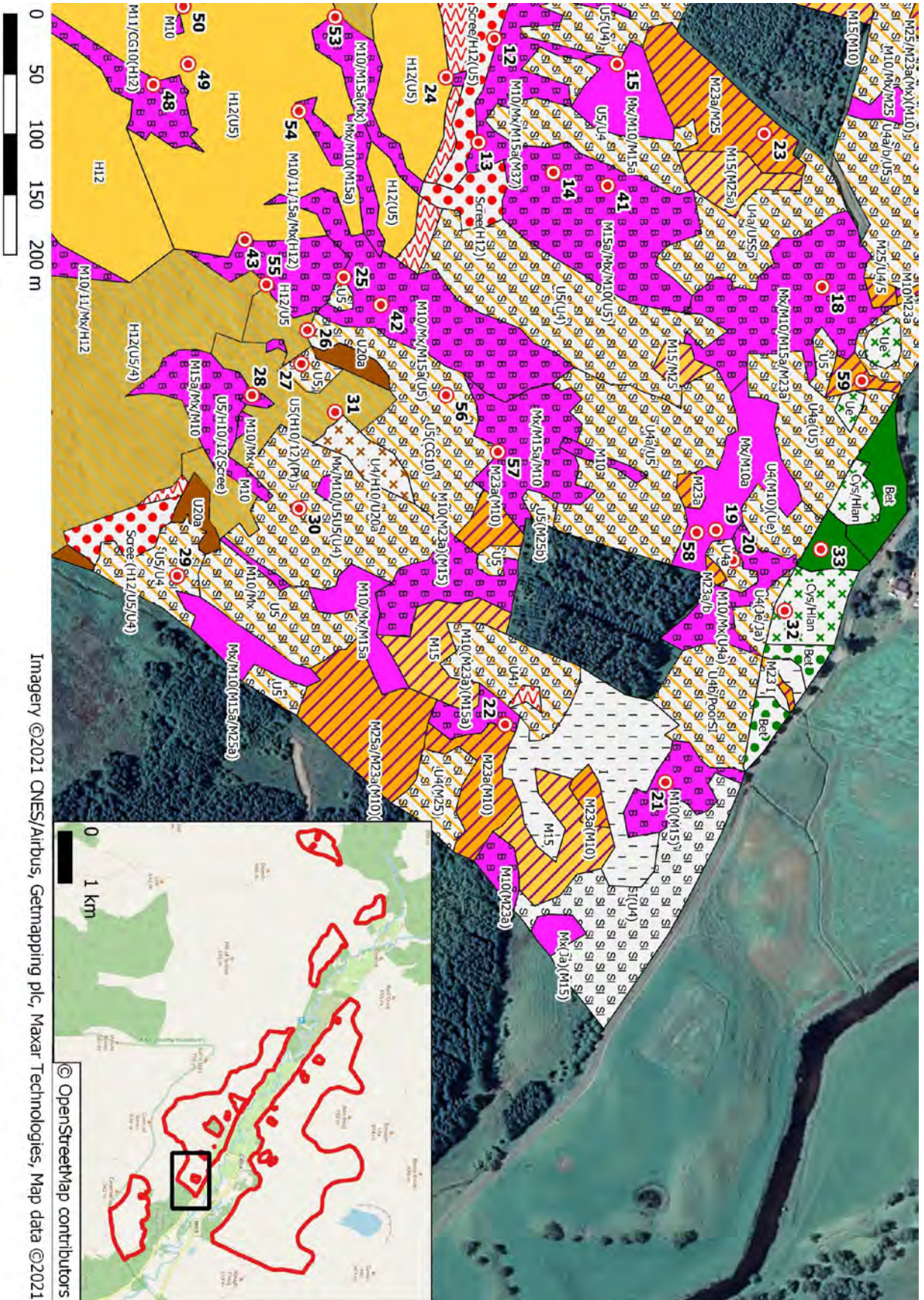








Imagery ©2021 CNES/Airbus, Getmapping plc, Maxar Technologies, Map data ©2021



Craig Duff Target Notes

Target Note Number	NO_Grid_Ref_ (Eastings)	NO_Grid_Ref_ (Northings)	Comments
1	32183	72242	Large complex area of wetland, with several plant communities merging into each other, including neutral Mx sedge mire areas, dominated by common sedge, with some star sedge and carnation sedge, merging into species-poor sharp-flowered and soft-rush dominated M23a and M23b marshy grassland, itself merging into purple moor-grass dominated areas (M25) to the east. In addition, there are significant acid flush areas with M6d sharp-flowered rush communities over Sphagnum and Polytrichum mosses. Finally, there are narrow areas with some base-flushing and some association with M10 basic flush communities, with jointed rush, quaking grass and common yellow-sedge. Snipe present with Golden eagle above flying over glen to NE.
2	32287	72220	M10 base flush with carnation sedge, jointed rush, common yellow-sedge, lesser clubmoss, quaking grass, devil's-bit scabious, purple moor-grass, cross-leaved heath and bog asphodel.
3	32296	72034	Very small M37 seepage with willow. Nearby H12 dry heath heavily browsed.
4	32377	72053	Small stream with M10 vegetation, with jointed rush, alpine lady's mantle, carnation sedge and common yellow-sedge and occasional yellow saxifrage.
5	32362	72019	M37/M10 vegetation, with Palustriella commutata moss, common butterwort and occasional yellow saxifrage.
6	32353	71984	Spring with M32b & M37 elements, with Palustriella commutata as well as Dichodontium palustre mosses along with opposite-leaved saxifrage and blinks. Wood sorrel nearby. Surrounded by heavily-browsed H12 dry heath.
7	32373	71990	M32b springhead, with opposite-leaved saxifrage and blinks along with some Palustriella commutata moss, carnation sedge, jointed rush, water aven and lady's-mantle.
8	32463	72071	M37 springhead going downhill into M10 vegetation, including occasional yellow saxifrage. Willow in area heavily browsed.
9	32490	72106	M10 base flush strip (closest to M10a) with tawny sedge, common yellow-sedge, carnation sedge and bulbous rush amongst more wet heath-type vegetation (M15a) with purple moor-grass, cross-leaved heath, bog asphodel,

			Sphagnum capillifolium moss, heath rush, crowberry and ling heather.
10	32562	72095	M37 seepage with common butterwort.
11	32569	72102	Top of large M10/M15a flush system going downhill and covering a wide area, with tawny sedge, yellow saxifrage, jointed rush, common yellow-sedge strips amongst patches of purple moor-grass, cross-leaved heath, ling heather, bog asphodel and Sphagnum capillifolium moss.
12	32606	72088	Part of larger M10 flush area with M32 patch, with Philonotis fontana moss towards top end.
13	32692	72075	M37 springheads in area along with M10 vegetation below.
14	32717	72137	M10/M15a flushed mire system covering a large area and heading downhill.
15	32627	72190	Large Mx neutral/acid sedge mire area, with M10 and M15 elements. Species present include common cotton-grass, common and star sedges, carnation sedge, bog asphodel, tormentil, purple moor-grass, quaking grass, tawny sedge (tbc), bulbous rush, jointed rush, heath rush and devil's-bit scabious as well as some fairy flax.
16	32489	72212	Large area dominated by wet heath (M15) vegetation, mixing in with some M25 purple moor-grass dominated areas and with M10 elements present. Very low-growing willow locally frequent, considered probable tea-leaved willow (<i>Salix phylicifolia</i>).
17	32247	72075	M32b springhead
18	32812	72360	Large wetland complex in area, with strips of open base-rich M10 vegetation in places, with abundant jointed rush, merging into more Mx neutral sedge mire, wet heath (M15a) type vegetation and sharp-flowered rush dominated marshy grassland (M23a) across the lower areas of ground. Species present include broad-leaved cottongrass, tawny sedge, dioecious sedge, bottle sedge and quaking grass.
19	33014	72272	M10 base flush patch with some yellow saxifrage.
20	33039	72286	M10a base flush mixing with Mx neutral sedge mire in places. Some of this vegetation in areas badly damaged by tracks nearby.
21	33223	72230	Badly eroded/damaged area with M10-type vegetation
22	33175	72097	Lots of tracks and bare soil present. Much badly degraded vegetation in area.

23	32685	72312	Small pool with spring going in and out of it, with pondweeds present.
24	32638	72048	Small M32 springhead with M10 vegetation above small stream.
25	32804	71963	M10/Mx neutral sedge mire area with occasional yellow saxifrage. Top of wide strip of such vegetation, including some M15a type wet heath, heading downhill.
26	32848	71933	M37 springheads present amongst H12 dry heath
27	32876	71928	M10/M15a patch.
28	32902	71887	M10(M15a) vegetation around the top of stream.
29	33052	71825	Small M10 base flush
30	32996	71926	Base flushing through acid grassland
31	32916	71956	M10 spring head
32	33081	72329	General area of mature even-aged birch interspersed with open glades with tall grassland dominated by Yorkshire fog and bent grasses and creeping buttercup, with scattered broom.
33	33030	72359	Mature wet woodland, with frequent mature birch and willows over a varied ground flora, including soft rush, tufted hair-grass, purple moor-grass, tamarisk moss, creeping buttercup and Polytrichum mosses, with rare common valerian present. Considered to have elements of W4 and W7 woodland vegetation. Worth re-visit in spring. To the west, there is much broom in more open areas and more even-aged mature birch.
34	32517	72467	Old Ash tree by boulder debris and spring with much soft rush.
35	32042	72799	Scattered mature trees, including larch, fir (noble fir?), beech, ash, birch, Scot's pine over heavily grazed U4a/b acid grassland with soft rush.
36	32089	72734	Small pond with abundant emergent vegetation, including abundant reed sweet-grass merging into soft rush and sharp-flowered rush dominated vegetation (M23a/b)
37	31444	73190	Base-rich grassland, with CG10 patch amongst more acid areas, with M10 base flush strips
38	30882	73647	Heavily browsed H12 dry heath - ling heather plants with topiary forms.

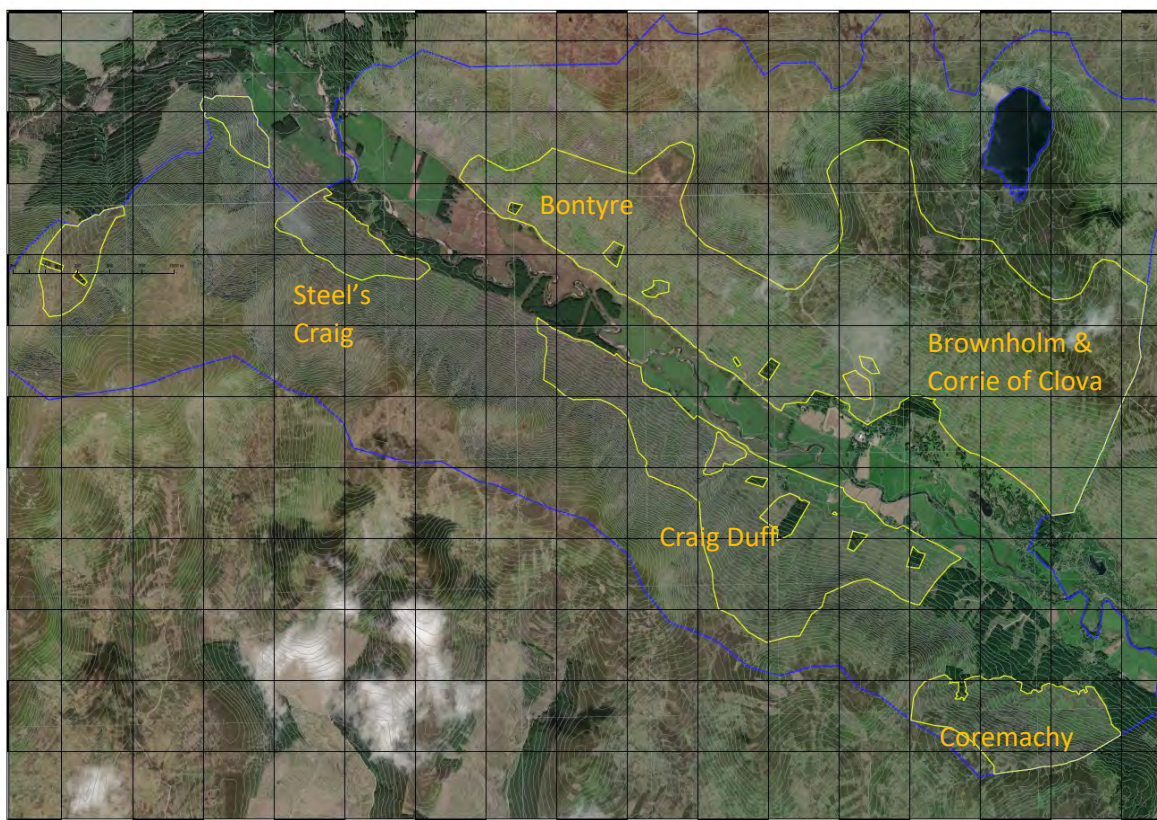
39	30791	73668	Mixed wetland plant communities with M10 base flush strips through M23a and M25 marshy grassland vegetation.
40	30699	73722	M10 patch amongst wet heath and marshy grassland area.
41	32728	72182	Broad-leaved cottongrass present
42	32827	71994	Broad-leaved cottongrass & Marsh arrowgrass present
43	32773	71881	Springhead with M10/M11 strips
44	32972	71703	M32 springhead
45	32944	71654	Mx neutral sedge mire
46	32743	71683	Species-rich area with M32b springhead, M11 base mire slipping into CG10 calcareous grassland. Species present include thyme, lesser clubmoss, alpine bistort, limestone bedstraw.
47	32391	71566	M32b springhead
48	32644	71805	Towards top of large species-rich area going NE downhill. Base-rich flushes merging into species-rich CG10 calcareous grassland. Species present include yellow saxifrage, alpine lady's-mantle, lady's-bedstraw, thyme, fairy flax, mountain everlasting, wild pansy (unconfirmed mountain pansy), wild strawberry, etc.
49	32627	71834	M10 base flush within dry H12 heath area
50	32579	71830	M10 base flush within dry H12 heath area
51	32516	71845	Top centre of M10 flushes and M32 springhead. Snipe present.
52	32500	71944	Small M10 flush
53	32588	71956	Mx/M10 flush area with wet M15a areas all across slope and downhill, with eared willow and wood horsetail
54	32666	71926	Mx/M10 flush area heading NE downhill, with carnation sedge, tawny sedge, marsh arrowgrass and common butterwort.
55	32810	71899	M32 springhead with M11/M10 base rich flushes. Snipe present.
56	32902	72048	U5 acid grassland with CG10 elements within it, including common rock-rose, mountain everlasting, alpine bistort, quaking grass, fairy flax and a very little thyme.

57	32949	72091	Broad-leaved cottongrass frequent in area along with few-flowered spike-rush, locally abundant scottish asphodel [NO 32973 72103], dioecious sedge, quaking grass, creeping willow, etc. M10 base-rich channels running through wet M15a heath.
58	33016	72256	Locally abundant broad-leaved cottongrass
59	32890	72393	Locally abundant broad-leaved cottongrass and few-flowered spike-rush
60	32689	72612	Large patch of spignel on roadside bank (blind corner!)
61	32907	73459	Locally frequent broad-leaved cottongrass
62	32328	72568	One spignel plant present
63	32090	72038	M32 springhead
64	32081	71814	M32b springhead with starry saxifrage and bog stitchwort
65	31816	72132	M10 base-flush area
66	31808	72015	Very wet swamp area with bottle sedge, wood horsetail, soft rush, carnation sedge, common sedge, common cottongrass and tormentil but only a very little Sphagnum moss.
67	31995	71880	Edge of extensive area of Mx/M10 sedge mire and base flushes. Several Snipe flushed up in area.
68	31819	71785	Mx neutral sedge mire
69	31412	71951	Top of M10/Mx/M15a flushed area.
70	31368	72122	M32b strip
71	31573	72242	Northern bedstraw patch
72	31979	72351	Scottish asphodel and broad-leaved cottongrass present in Mx/M10 base mire area around edge of woodland and track.
73	31871	72484	Broad-leaved cottongrass locally abundant in M10 base mire area.
74	31863	72422	Northern bedstraw patch
75	31516	72320	Ring Ouzel flew to NW towards crags

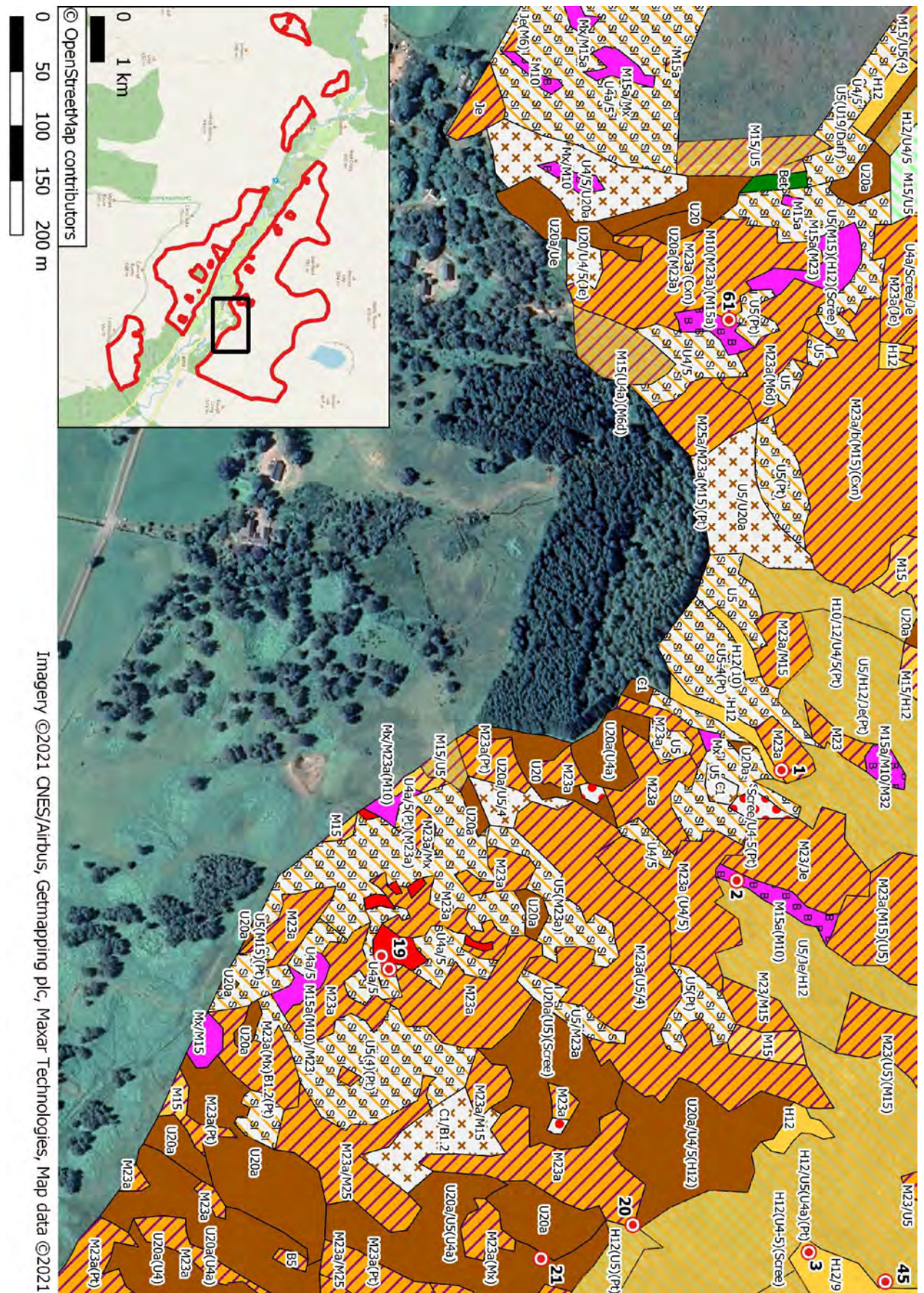
76	31436	72886	Two juniper bushes on crag, with brittle fern nearby. Eared willow dotted around flushes in area.
77	31411	73220	Alpine bistort, fragrant orchid, quaking grass present
78	31228	73352	M10 base flush area
79	31076	73440	Springhead.
80	31080	73383	M32b springhead and Snipe present.
81	31006	73433	M32b springhead/M10 patch
82	30957	73452	M32b springhead/M10 patch
83	30135	74039	M10 flushed area
84	30587	73689	M10 flushed area
85	30785	73481	Big area of Mx neutral sedge mire with wet M15a areas. Species present include scottish asphodel, dioecious sedge, tawny sedge, etc.
86	30859	73317	Calling pair of Peregrine falcons on crag nearby to south-west. Also small M11 flush on steep slope.
87	30839	73200	M32b springhead above flush area (beside calling Peregrine falcons - see TN 86).
88	31088	72992	Large area of neutral Mx sedge mire uphill and downhill with base elements. Species present include carnation sedge, common sedge, marsh horsetail, wood horsetail, tawny sedge, common butterwort, common cottongrass, devil's-bit scabious, glaucous sedge, star sedge, purple moor-grass, tormentil, bog asphodel, dandelion, meadow buttercup and cross-leaved heath and marsh thistle (but not M15a vegetation)
89	31052	72806	M32b springhead with M11 flush.
90	31409	72915	M32b springhead with M10 flush
91	31103	73323	Springhead (Mx mire)

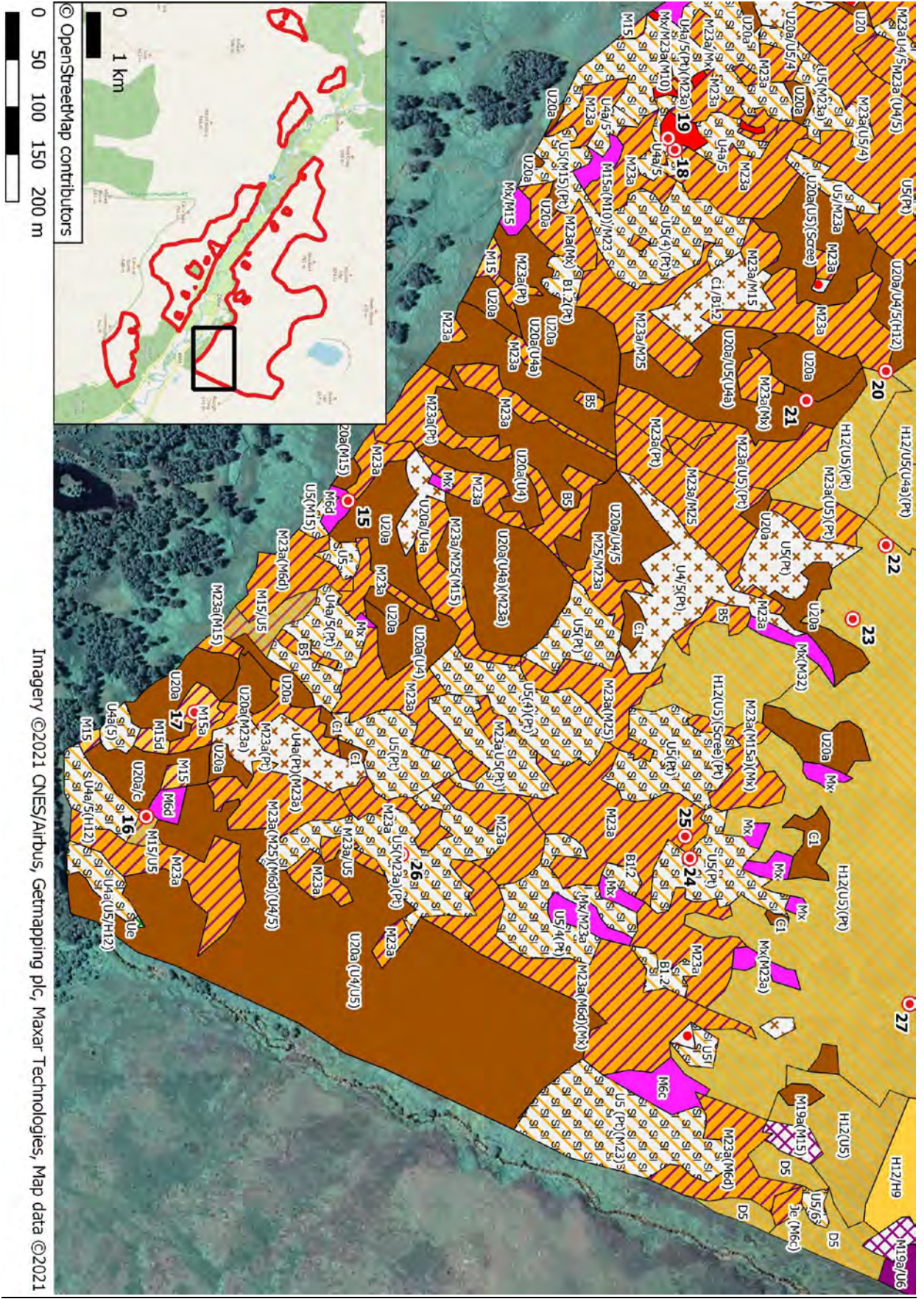
4. Brownholm and Corrie of Clova

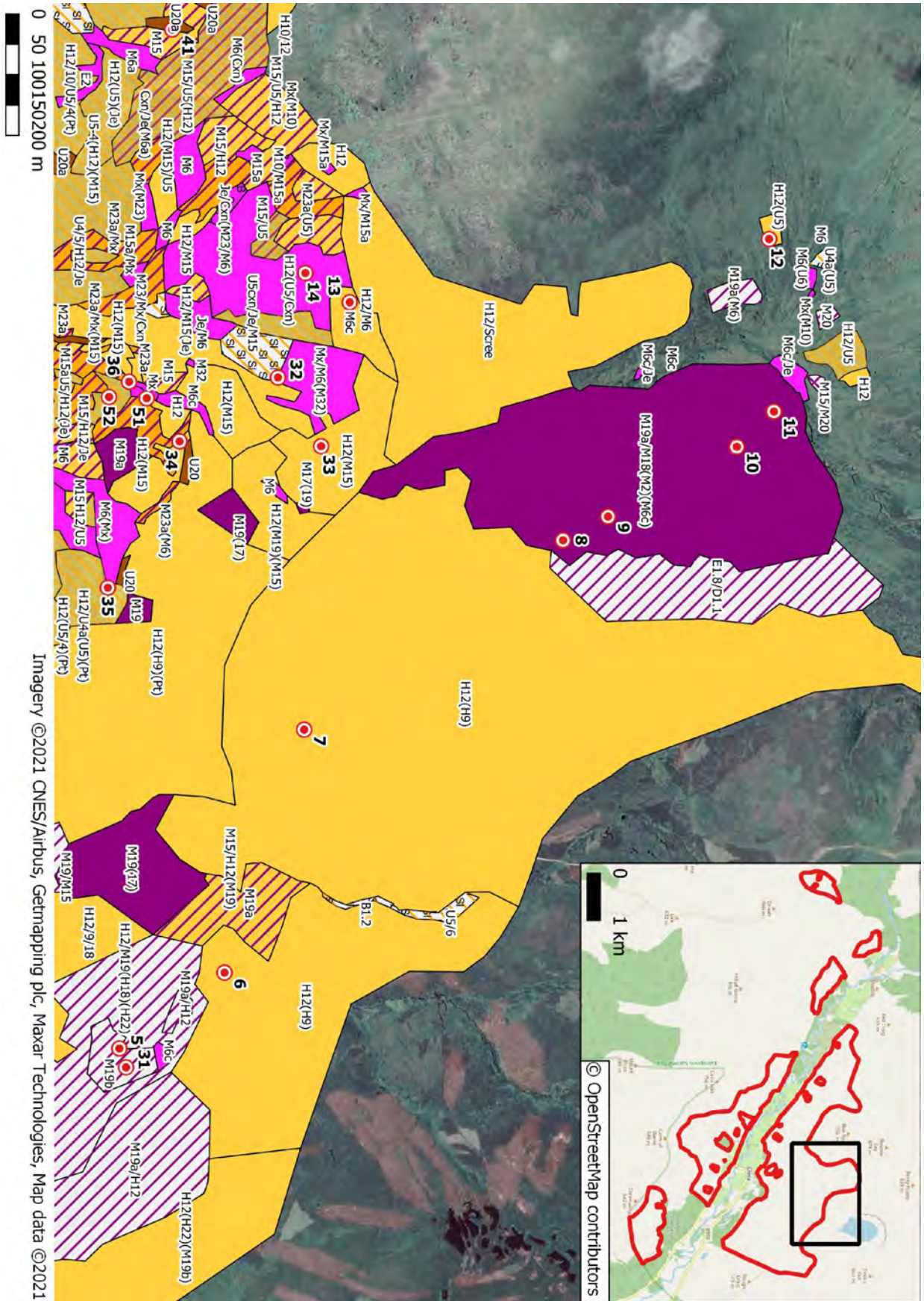
Phase 1 (NVC) Map and Target Notes

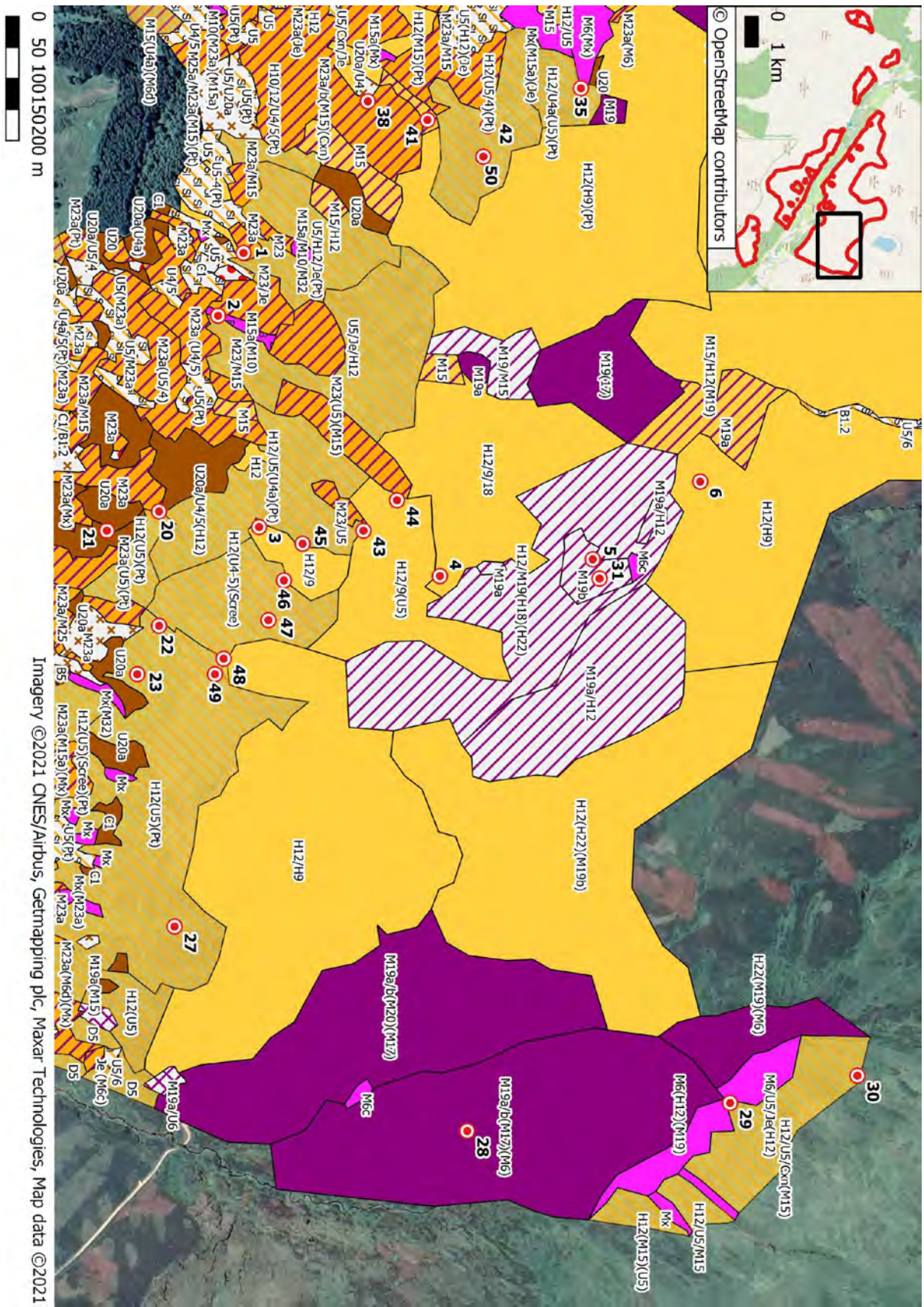


6.5. Brownholm and Corrie of Clova









Brownholm and Corrie of Clova Target Notes:

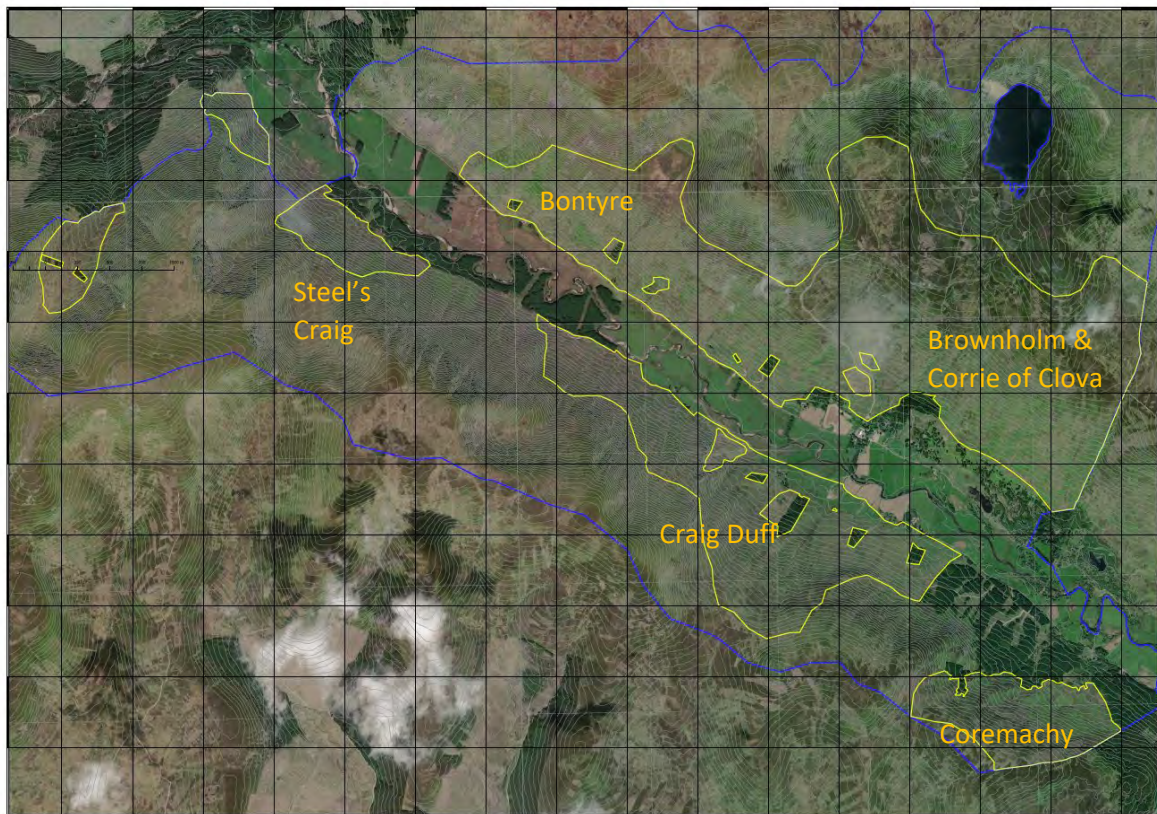
Target Note Number	NO_Grid_Ref_ (Eastings)	NO_Grid_Ref_ (Northings)	Comments
1	33319	73507	M32 springhead patch
2	33420	73466	M10a flush strip with M15a elements
3	33760	73532	2 male black grouse present in area
4	33839	73823	Many red deer in area (up to 100+ spotted later in month in general vicinity). Much bare soil in vicinity.
5	33812	74069	Much M19 dry modified bog in area, merging into H12 dry heath where mineral soils exist. Bog has been subject to past burning. Hare's-tail cottongrass abundant along with ling heather, <i>Sphagnum capillifolium</i> , <i>Sphagnum fallax</i> and <i>Pleurozium schreberi</i> mosses. Crowberry, cross-leaved heath, heath rush and <i>Polytrichum</i> moss occasional along with odd bit of <i>Sphagnum papillosum</i> moss and patches of common cottongrass.
6	33687	74242	Small area of H16 dry heath mixing in with H12 dry heath. Ling heather dominant along with frequent bearberry, cowberry, crowberry and abundant <i>Cladonia</i> lichens. Bell heather occasional along with locally frequent blaeberry and rare stag's-horn clubmoss. Red grouse seen in area.
7	33287	74373	Badly burnt moorland area with much bare soil. Where vegetation has regenerated, it is largely dominated by ling heather but also locally abundant cowberry and blaeberry (but little else).
8	32976	74799	Area of M19a blanket bog on deep peat. One staf and 25 female red deer in area.
9	32937	74873	Very wet blanket bog (M18) on deep peat, with abundant hare's-tail cottongrass, cross-leaved heath, <i>Sphagnum</i> moss species (inc. <i>S.papillosum</i> , <i>S. capillifolium</i> , etc.), and frequent common cottongrass and bog asphodel, occasional ling heather, heath rush and rare crowberry. Much M19a bog in vicinity along with occasional acid flush and bog pool.

10	32822	75085	Localised peat hagg on deep M19a blanket bog.
11	32764	75146	Localised area of M18 blanket bog, with frequent <i>Sphagnum magellanicum</i> moss along with rare cloudberry.
12	32480	75138	Heavily browsed H12 dry heath
13	32584	74448	Small M10 base flush area.
14	32536	74375	A complex area with many different plant communities present and in mosaic with each other. Acid flushes (M6c&d) and Mx neutral sedge mires are abundant, merging into M23a marshy grassland, dry (H21, H12) & wet heath (M15) in places alongside U5 acid grassland.
15	33872	72803	M10/Mx spring area
16	34205	72590	Mixed M15 wet heath and acid grassland area with locally abundant creeping willow
17	34095	72641	M15 heath heavily grazed but with frequent creeping willow
18	33501	73148	M10 flush area with tawny sedge, quaking grass and common butterwort
19	33489	73141	Small area of CG10 calcareous grassland on steep/rocky area, with common rock-rose, thyme, mouse-ear hawkweed, bird's-foot trefoil, ribwort plantain, etc.
20	33735	73371	M32 springhead
21	33766	73287	M32 springhead with Mx neutral sedge mire below.
22	33919	73371	M32b springhead with rivulet stream going downhill
23	33997	73336	Springhead
24	34249	73164	M32b springhead
25	34226	73159	M32b springhead with others between TN24 and this point.
26	34245	72859	M32 springhead with Mx neutral sedge mire below.
27	34403	73396	M32b springhead/flushed area

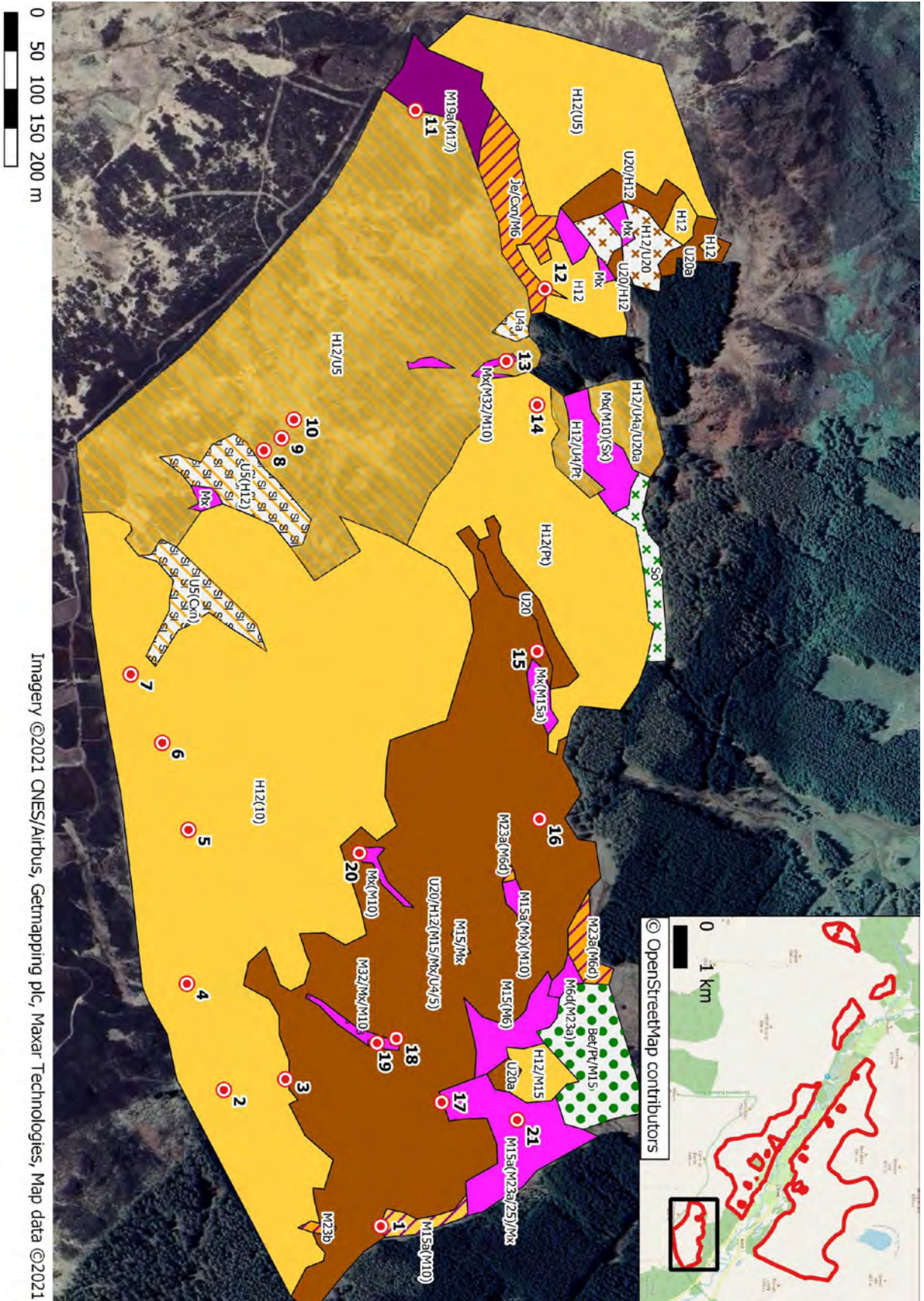
28	34732	73867	Centre of large M19(M17) blanket bog area (with ~65 Red deer in immediate area). Much heather beetle damage.
29	34687	74290	Common lizard present
30	34643	74495	M6 acid mire strip
31	33843	74080	Drains through bog worth being considered being blocked.
32	32708	74330	M10 flush area.
33	32821	74401	Large downy willow clump – probably one bush.
34	32813	74168	M32b springhead
35	33054	74050	Female Ring ouzel alarm call then flew south out of sight over slope. Nearby habitat looked suitable for nesting.
36	32715	74085	M10 flush area.
37	32604	73891	M10/M15a small flush area
38	33075	73707	Springhead
39	32853	73879	Very wet Mx neutral sedge mire area and small stream.
40	32669	73914	M10 flush strip
41	33105	73803	Springhead with Snipe nearby and 2 Curlew flying just above.
42	33115	73900	Springhead
43	33766	73700	Springhead
44	33717	73754	Big springhead area
45	33787	73602	M32 springhead
46	33846	73572	Springhead
47	33910	73547	Springhead
48	33972	73475	M32 springheads
49	33997	73461	M32 springheads
50	33164	73893	Male Black grouse flushed up and flew off.
51	32742	74114	M32 springhead
52	32740	74052	Common lizard present

5. Coremachy

Phase 1 (NVC) Map and Target Notes



6.3. Coremarchy Phase One/NVC Map



Imagery ©2021 CNES/Airbus, Getmapping plc, Maxar Technologies, Map data ©2021

Coremachy Target Notes:

Target Note Number	NO_Grid_Ref_ (Eastings)	NO_Grid_Ref_ (Northings)	Comments
1	34547	70890	M10 flush by M15a wet heath, with rare yellow saxifrage
2	34370	70686	Mx neutral sedge mire with star sedge, glaucous sedge, carnation sedge, common cotton-grass, bulbous rush, purple moor-grass and mat-grass, etc.
3	34356	70766	Not visited but from aerial, looks a likely flush/sedge mire area
4	34232	70638	Top of M10(Mx) flush strip which runs downhill, with tawny sedge, star sedge, glaucous sedge, rare yellow saxifrage, common yellow-sedge, carnation sedge, dioecious sedge, few-flowered spike-rush, brown mosses and mat-grass.
5	34032	70640	Top of M10 flush amongst H12 dry heath, with rare yellow saxifrage, glaucous sedge, etc. Narrow strip that runs downhill for ~ 50m.
6	33919	70606	Mx neutral sedge mire (M10) with star sedge, glaucous sedge, carnation sedge, heath rush (& possible few-flowered spike-rush <i>to be confirmed</i>)
7	33830	70565	U6 acid grassland (heath rush and mat-grass abundant) merging into base-rich flushed area with glaucous sedge, jointed rush, carnation sedge. Snipe present.
8	33539	70738	M32 springhead with M10/Mx vegetation
9	33523	70761	M32 springhead with M10/Mx vegetation
10	33499	70777	Mx neutral sedge mire
11	33097	70935	Edge of M19(M17) blanket bog and associated pools downhill from it. Haggling present.
12	33329	71103	Mx sedge mire patch surrounded by H12 dry heath.
13	33423	71053	M32 springheads
14	33480	71093	M32 springhead
15	33800	71093	M10/Mx flushed area by stream

16	34018	71096	M10(Mx) area with rare yellow saxifrage.
17	34386	70969	M15a/Mx very wet mire area alongside stream
18	34303	70910	M32 springhead
19	34309	70885	Mx/M10 flush area with 2 Snipe feeding within it
20	34062	70862	Centre of Mx neutral sedge mire area with M10 elements which heads downhill in narrow strip over a large distance. Patch of melancholy thistle found under bracken ~ 40m to the north of NO 34113 70899
21	34409	71067	Very wet area with elements of several plant communities present, including M10 base-rich mire, M15a very wet mire, neutral sedge mire and marshy grassland. Species present include marsh arrowgrass and tawny sedge.

Appendix 2: Glen Clova Plant Species List

Glen Clova Plant Species List

English name	Latin name
Alpine bistort	<i>Bistorta vivipara</i>
Alpine lady's-mantle	<i>Alchemilla alpina</i>
Angelica	<i>Angelica sylvestris</i>
Ash	<i>Fraxinus excelsior</i>
Bearberry	<i>Arctostaphylos uva-ursi</i>
Beech	<i>Fagus sylvatica</i>
Beech fern	<i>Phegopteris connectilis</i>
Bell heather	<i>Erica cinerea</i>
Bird's-foot-trefoil	<i>Lotus corniculatus</i>
Birch	<i>Betula spp.</i>
Blaeberry	<i>Vaccinium myrtillus</i>
Blinks	<i>Montia fontana</i>
Bog asphodel	<i>Narthecium ossifragum</i>
Bog stitchwort	<i>Stellaria uliginosa</i>
Bottle sedge	<i>Carex rostrata</i>
Bracken	<i>Pteridium aquilinum</i>
Broad-leaved cottongrass	<i>Eriophorum latifolium</i>
Bulbous rush	<i>Juncus bulbosus</i>
Carnation sedge	<i>Carex panicea</i>
Chickweed-wintergreen	<i>Lysimachia europaea</i>
Common bent grass	<i>Agrostis capillaris</i>
Common butterwort	<i>Pinguicula vulgaris</i>
Common cottongrass	<i>Eriophorum angustifolium</i>
Common dog-violet	<i>Viola riviniana</i>
Common marsh-bedstraw	<i>Galium palustre</i>
Common rock-rose	<i>Helianthemum nummularium</i>

Common sedge	<i>Carex nigra</i>
Common sorrel	<i>Rumex acetosa</i>
Common valerian	<i>Valeriana officinalis</i>
Common violet	<i>Viola riviniana</i>
Common yellow-sedge	<i>Carex demissa</i>
Cowberry	<i>Vaccinium vitis-idaea</i>
Cloudberry	<i>Rubus chamaemorus</i>
Creeping bent grass	<i>Agrostis stolonifera</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping willow	<i>Salix repens</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Cross-leaved heath	<i>Erica tetralix</i>
Crowberry	<i>Empetrum nigrum</i>
Cuckooflower	<i>Cardamine pratensis</i>
Deergrass	<i>Trichophorum germanicum</i>
Devil's-bit scabious	<i>Succisa pratensis</i>
Dioecious sedge	<i>Carex dioica</i>
Downy willow	<i>Salix lapponum</i>
Eyebright	<i>Euphrasia spp.</i>
Fairy flax	<i>Linum catharticum</i>
Fen bedstraw	<i>Galium uliginosum</i>
Few-flowered spike-rush	<i>Eleocharis quinqueflora</i>
Flea sedge	<i>Carex pulicaris</i>
Fragrant orchid	<i>Gymnadenia borealis</i>
Glaucous sedge	<i>Carex flacca</i>
Globeflower	<i>Trollius europaeus</i>
Golden-scaled male-fern	<i>Dryopteris affinis</i>
Gorse	<i>Ulex europaeus</i>
Greater bird's foot trefoil	<i>Lotus pedunculatus</i>

Green ribbed sedge	<i>Carex binervis</i>
Hard fern	<i>Blechnum spicant</i>
Hare's tail cottongrass	<i>Eriophorum vaginatum</i>
Hazel	<i>Corylus avellana</i>
Heath bedstraw	<i>Galium saxatile</i>
Heath grass	<i>Danthonia decumbens</i>
Heath lousewort	<i>Pedicularis sylvatica</i>
Heath spotted-orchid	<i>Dactylorhiza maculata</i>
Heath rush	<i>Juncus squarrosus</i>
Heath wood-rush	<i>Luzula multiflora</i>
Herb-robert	<i>Geranium robertianum</i>
Jointed rush	<i>Juncus articulatus</i>
Lady's bedstraw	<i>Galium verum</i>
Lady's-mantle spp.	<i>Alchemilla angusensis (tbc)</i>
Lemon-scented fern	<i>Oreopteris limbosperma</i>
Lesser clubmoss	<i>Selaginella selaginoides</i>
Lesser twayblade	<i>Neottia cordata</i>
Limestone bedstraw	<i>Galium sternerii</i>
Ling Heather	<i>Calluna vulgaris</i>
Marsh arrowgrass	<i>Triglochin palustris</i>
Marsh cinquefoil	<i>Potentilla palustris</i>
Marsh hawk's-beard	<i>Crepis paludosa</i>
Marsh horsetail	<i>Equisetum palustre</i>
Marsh lousewort	<i>Pedicularis palustris</i>
Marsh marigold	<i>Caltha palustris</i>
Marsh thistle	<i>Cirsium palustre</i>
Marsh violet	<i>Viola palustris</i>
Mat grass	<i>Nardus stricta</i>
Meadow buttercup	<i>Ranunculus acris</i>

Meadowsweet	<i>Filipendula ulmaria</i>
Meadow vetchling	<i>Lathyrus pratensis</i>
Melancholy thistle	<i>Cirsium heterophyllum</i>
moss/liverwort	<i>Scapania spp</i>
moss	<i>Calliergonella cuspidata</i>
moss	<i>Dichodontium palustre</i>
moss (pleurocarpous)	<i>Hylocomium splendens</i>
moss (pleurocarpous)	<i>Hypnum jutlandicum</i>
moss	<i>Palustriella commutata</i>
moss	<i>Philonotis fontana</i>
moss (pleurocarpous)	<i>Pleurozium schreberi</i>
moss	<i>Polytrichum commune</i>
moss (pleurocarpous)	<i>Rhytidiadelphus loreus</i>
moss (pleurocarpous)	<i>Rhytidiadelphus squarrosus</i>
moss	<i>Thuidium tamarascum</i>
Mossy saxifrage	<i>Saxifraga hypnoides</i>
Mountain everlasting	<i>Antennaria dioica</i>
Mouse-ear hawkweed	<i>Pilosella officinarum</i>
Nettle	<i>Urtica dioica</i>
Northern bedstraw	<i>Galium boreale</i>
Oak	<i>Quercus spp.</i>
Opposite-leaved golden saxifrage	<i>Chrysosplenium oppositifolium</i>
Pondweed	<i>Potamogeton spp.</i>
Purple moor-grass	<i>Molinia caerulea</i>
Quaking grass	<i>Briza media</i>
Ragged-robin	<i>Silene flos-cuculi</i>
Red fescue	<i>Festuca rubra</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Rowan	<i>Sorbus aucuparia</i>

Scottish asphodel	<i>Tofieldia pusilla</i>
Scot's pine	<i>Pinus sylvestris</i>
Selfheal	<i>Prunella vulgaris</i>
Sharp-flowered rush	<i>Juncus acutiflorus</i>
Sheep's fescue	<i>Festuca ovina</i>
Sheep's sorrel	<i>Rumex acetosella</i>
Slender St.John's-wort	<i>Hypericum pulchrum</i>
Sneezewort	<i>Achillea ptarmica</i>
Soft rush	<i>Juncus effusus</i>
Sphagnum moss	<i>Sphagnum capillifolium</i>
Sphagnum moss	<i>Sphagnum cuspidatum</i>
Sphagnum moss	<i>Sphagnum fallax</i>
Sphagnum moss	<i>Sphagnum magellanicum</i>
Sphagnum moss	<i>Sphagnum papillosum</i>
Spignel	<i>Meum athamanticum</i>
Star sedge	<i>Carex echinata</i>
Stag's-horn clubmoss	<i>Lycopodium clavatum</i>
Starry saxifrage	<i>Micranthes stellaris</i>
Sweet vernal grass	<i>Anthoxanthum odoratum</i>
Tawny sedge	<i>Carex hostiana</i>
Tormentil	<i>Potentilla erecta</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
Velvet bent	<i>Agrostis canina</i>
Viviparous fescue	<i>Festuca vivipara</i>
Water aven	<i>Geum rivale</i>
Water horsetail	<i>Equisetum fluviatile</i>
Wavy hair-grass	<i>Deschampsia flexuosa</i>
White clover	<i>Trifolium repens</i>
Wild pansy	<i>Viola tricolor</i>

Wild strawberry	<i>Fragaria vesca</i>
Wild thyme	<i>Thymus polytrichus/drucei</i>
Willowherbs	<i>Epilobium spp.</i>
Wood horsetail	<i>Equisetum sylvaticum</i>
Wood sorrel	<i>Oxalis acetosella</i>
Yellow saxifrage	<i>Saxifraga aizoides</i>
Yorkshire fog	<i>Holcus lanatus</i>

Appendix 3: EUNIS Habitat Codes

EUNIS and NVC Classifications**Acid Grassland**

NVC Code		EUNIS Habitat Code	
U4	<i>Festuca ovina-Agrostis capillaris-Galium saxatile</i> grassland	E1.72x	all other U4 stands
U5	<i>Nardus stricta-Galium saxatile</i> grassland	E1.71	all other U5 stands
U6	<i>Nardus stricta-Galium saxatile</i> grassland	E3.52	all stands

Calcareous and Neutral Grassland

NVC Code		EUNIS Habitat Code	
CG10	<i>Festuca ovina-Agrostis capillaris-Thymus polytrichus</i> grassland	E1.72#	Upland stands and enclosed stands in upland areas, not on limestone or metalliferous soils

Mire (Bog)

NVC Code		EUNIS Habitat Code	
M2	<i>Sphagnum cuspidatum/fallax</i> bog pool community	D1.21	bog pools in low-altitude blanket bog without <i>Rhynchospora alba</i>
M17	<i>Trichophorum cespitosum – Eriophorum vaginatum</i> blanket mire	D1.21	all stands (not Bog woodland)
M18	<i>Erica tetralix – Sphagnum papillosum</i> raised and blanket mire	D1.21	stands on blanket bogs (not Bog woodland)
M19	<i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire	D1.22	stands on blanket bogs
M20	<i>Eriophorum vaginatum</i> blanket and raised mire	D1.22	stands on blanket bogs

Marshy Grassland

NVC Code		EUNIS Habitat Code	
M23	<i>Juncus effusus/acutiflorus-Galium palustre</i> rush-pasture	E3.41	All stands of M23b <i>Juncus effusus</i> s/c
M23	<i>Juncus effusus/acutiflorus-Galium palustre</i> rush-pasture	E3.42	All stands of M23a <i>Juncus acutiflorus</i> s/c

M25	<i>Molinia caerulea</i> - <i>Potentilla erecta</i> mire	D1.21	Stands on blanket bogs (peat >50 cm)
-----	------------------------------------------------------------	-------	--------------------------------------

Flushes, Springs and Basin mires

NVC Code		EUNIS Habitat Code	
M6	<i>Carex echinata</i> - <i>Sphagnum fallax/denticulatum</i> mire	D2.22	All stands
M10	<i>Carex dioica</i> - <i>Pinguicula vulgaris</i> mire	D4.15	Stands lacking arctic-alpine spp
M11	<i>Carex viridula</i> ssp. <i>oedocarpa</i> - <i>Saxifraga aizoides</i> mire	D4.19	stands lacking arctic-alpine spp
M32	<i>Philonotis fontana</i> - <i>Saxifraga stellaris</i> spring	D2.2C	All stands
M37	<i>Palustriella commutata</i> - <i>Festuca rubra</i> spring	D4.1N	All stands

Wet dwarf-shrub heath

NVC Code		EUNIS Habitat Code	
M15	<i>Trichophorum germanicum</i> - <i>Erica tetralix</i> wet heath	F4.11	Wet heath stands (<50 cm peat, majority of stands)
M15	<i>Trichophorum germanicum</i> - <i>Erica tetralix</i> wet heath	D1.21	Stands on non-montane blanket bog (>50 cm peat)

Dry dwarf-shrub heath

NVC Code		EUNIS Habitat Code	
H9	<i>Calluna vulgaris</i> - <i>Deschampsia flexuosa</i> heath	F4.22	all stands
H10	<i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath community	F4.25	non-montane stands that are not on coastal cliffs, shingle or dunes
H12	<i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath	F4.21	Sub-montane (most) stands
H16	<i>Calluna vulgaris</i> - <i>Arctostaphylos uva-ursi</i> heath	F4.22	sub-montane stands
H18	<i>Vaccinium myrtillus</i> - <i>Deschampsia flexuosa</i> heath	F4.21	non-montane (most) stands

H22	<i>Vaccinium myrtillus</i> – <i>Rubus chamaemorus</i> heath	F4.21	at lower altitudes
-----	-------------------------------------------------------------	-------	--------------------

Tall Herb and Fen

NVC Code		EUNIS Habitat Code	
U19	<i>Oreopteris limbosperma</i> - <i>Blechnum spicant</i> community	E5.5B	all stands
U20	<i>Pteridium aquilinum</i> - <i>Galium saxatile</i> community	E5.31	All stands