

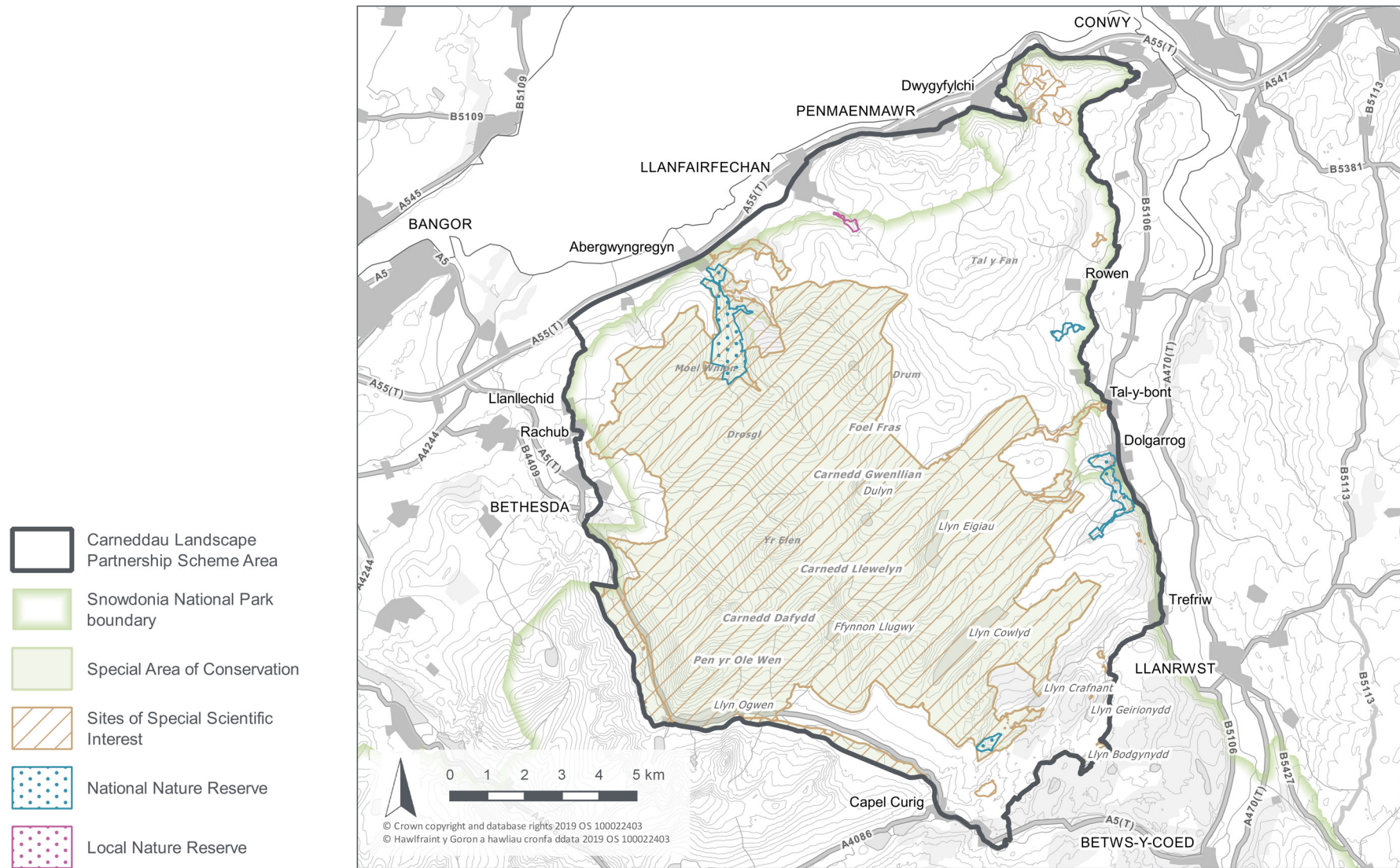


PARTNERIAETH TIRWEDD Y  
**CARNEDDAU**  
LANDSCAPE PARTNERSHIP

# Statement of Significance

Habitats and species

# Natural environment designations



# Statement of significance

## Habitats and species

### Designations

The uplands of Eryri support some of the largest tracts of semi-natural habitat in Wales. Whilst much of this habitat is degraded or in poor condition as a result of factors including land management practices, pollution and recreation pressure, there are still areas of high biodiversity value, with habitats and species of national and international importance. Just over 50% of the project area (approximately 110 square kilometres) falls within the protected sites network. The largest of these are the Eryri SAC and SSSI, which include the highest summits and ridges of the Carneddau massif.

Special Conservation Area	National Nature Reserve	Site of Special Scientific interest	Principal habitats for the designation
Eryri	Cwm Glas Crafnant	Eryri	SAC: Mountain heaths and willow scrub; Upland heath; Inland rock outcrops and scree; Blanket Bog; Upland fen, flush and swamp; Oligotrophic and Dystrophic lakes; Mesotrophic Lakes; Upland Oak Woods; Upland calcareous grassland SSSI additional to SAC: Marshy Grassland; Broadleaved woodland; Glacial and cold climate landforms and deposits; Ordovician rock exposures
Coedydd Aber	Coedydd Aber	Coedydd Aber	SAC Woodland and Hedgerows; SSSI additional to SAC: Upland ash woodland
	Coed Gors Wen	Coed Gors Wen	Broadleaved woodland
	Coed Dolgarrog	Sychnant Pass	Lowland dry heathland
		Coed Merchlyn	Broadleaved woodland
		Ceunant Dilyn	Broadleaved woodland
		Coed Dolgarrog	Broadleaved woodland
		Mwyngloddiau a Chreigiau Gwydyr	Geological features (Outcrops of the Ordovician Igneous rock, Mineral bearing mine spoil)
		Cors Geuallt	Geological feature (Pleistocene/ Quaternary sediments)

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### Species

A review of species data for the Carneddau was undertaken for the LPS by Cofnod (North Wales Environmental Information Service). Full details are presented in the report and appendices '*Carneddau Biological Record Audit Cofnod 2018*'. At the time of review there were 101,612 records, representing 5,798 different species.

Flowering plants, moths, flies, beetles, lichen, moss, spiders and birds are the top eight groups, in terms of number of species per group. The top groups in terms of numbers of records are, highest to lowest: birds, flowering plants; moths; mosses; butterflies; flies; mammals and; liverworts. The representation and distribution of records shows that there are major biases in the data relating to where recording has taken place and the interests and expertise of recorders; for example, there are a high number of records for the area around the Pencychnant Conservation Centre.

Individual species were scored against their designation and conservation status to give an overall 'Designation Score' for each species; the criteria used are described in the report '*Production of key summaries of ecological data. Alex Turner. Eryri Ecology 2018*'. The highest scoring species are shown in the table. Because they are biased by national or international designation criteria, the scores do not always reflect the priority species for the Carneddau at a local level. For example, for birds, the following species did not score highly enough against designation criteria to be included in the table but are more important locally than the score implies: Dotterel; Ring Ouzel; Snow Bunting; Whinchat. Some entire groups are not represented even though they include nationally important species. Waxcap fungi are an example of this and are discussed below with ffridd habitat.



Splendid Waxcap © John Harold

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## Habitats and species

Species group	Number of species	Particular species included
Amphibians	2	Common Toad; Great Crested Newt
Bird	24	Chough; Corncrake; Hen Harrier; Lapwing; Pied Flycatcher; Red Grouse; Skylark; Song Thrush; Starling; Twite; Wood Warbler
Bony fish	2	Atlantic Salmon; Eel
Clubmoss Stag' Horn Clubmoss	1	Marsh Clubmoss
Conifer	1	Scots Pine
Fern	6	Forked Spleenwort; Northern Buckler-fern; Pillwort; Holly Fern; Alpine Woodsia
Flowering plant	27	Hair Sedge; Alpine Mouse-ear; Chamomile; Mountain Avens; Eyebright; Beautiful Hawkweed; Common Cudweed; Snowdon Lily; Marsh Gentian; Thread Rush; Welsh Poppy; Cat-mint; Tasteless Water-pepper; Lesser Butterfly-orchid; Alpine Meadow-grass; Glaucous Meadow-grass; Alpine Cinquefoil; Small-white Orchid; Rock Stonecrop; Grey-leaved Whitebeam; Rock Whitebeam; Corn Spurrey; Alpine Penny-cress; Suffocated Clover; Thyme-Leaved Speedwell; Wood Bitter-vetch
Insect*	25	Butterfly species (High Brown Fritillary; Pearl-bordered Fritillary; Small Pearl-bordered Fritillary; Small Heath; Marsh Fritillary; Grayling; Wall; White- letter Hairstreak); Fly species (Fungus gnat); Beetle species (Water scavenger beetle)
Lichen* Cladonia portentosa	10	Lungwort; Bladder Stalks
Liverwort	3	Fragile Frillwort; Western Featherwort; Pale Scalewort
Moss	3	Muehlenbeck's Thread-moss; Brown Grimmia; Drooping-leaved Beard-moss
Reptile	4	Slow-worm; Grass Snake; Adder; Common Lizard
Mammal	13	Water Vole; Hare; Otter; Hazel Dormouse; Polecat; Bat species (Noctule Bat; Common Pipistrelle; Soprano Pipistrelle; Brown Long-eared Bat; Greater Horseshoe Bat; Lesser Horseshoe Bat); Red Squirrel

\* Species names have not been included where scientific (Latin) names alone were provided in the report, not common names; in many cases this will be because these are rare and/or obscure species.

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Bell heather © Mike Raine



Common Lizard © Mike Raine



Epinotia mercuriana moth on Montane Heath © John Harold



Eyebright © Mike Raine

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Hutchins Hollywort © Des Callaghan



Sundew © Mike Raine



Twite © Elaine Thomas



Dormouse © SNPA

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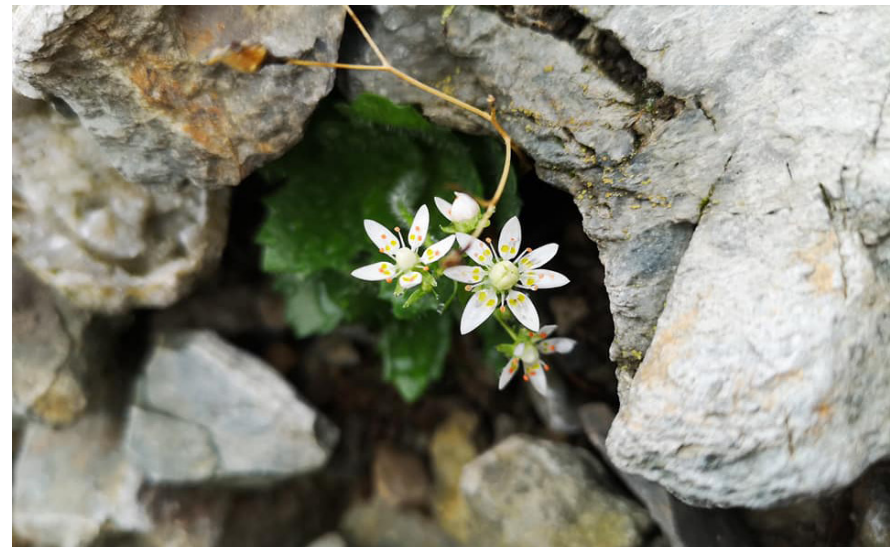
Beautiful Hawkweed, Craig yr Ysfa © Alex Turner



Leveret (baby Hare) © SNPA



Small Heath butterfly © Mike Raine

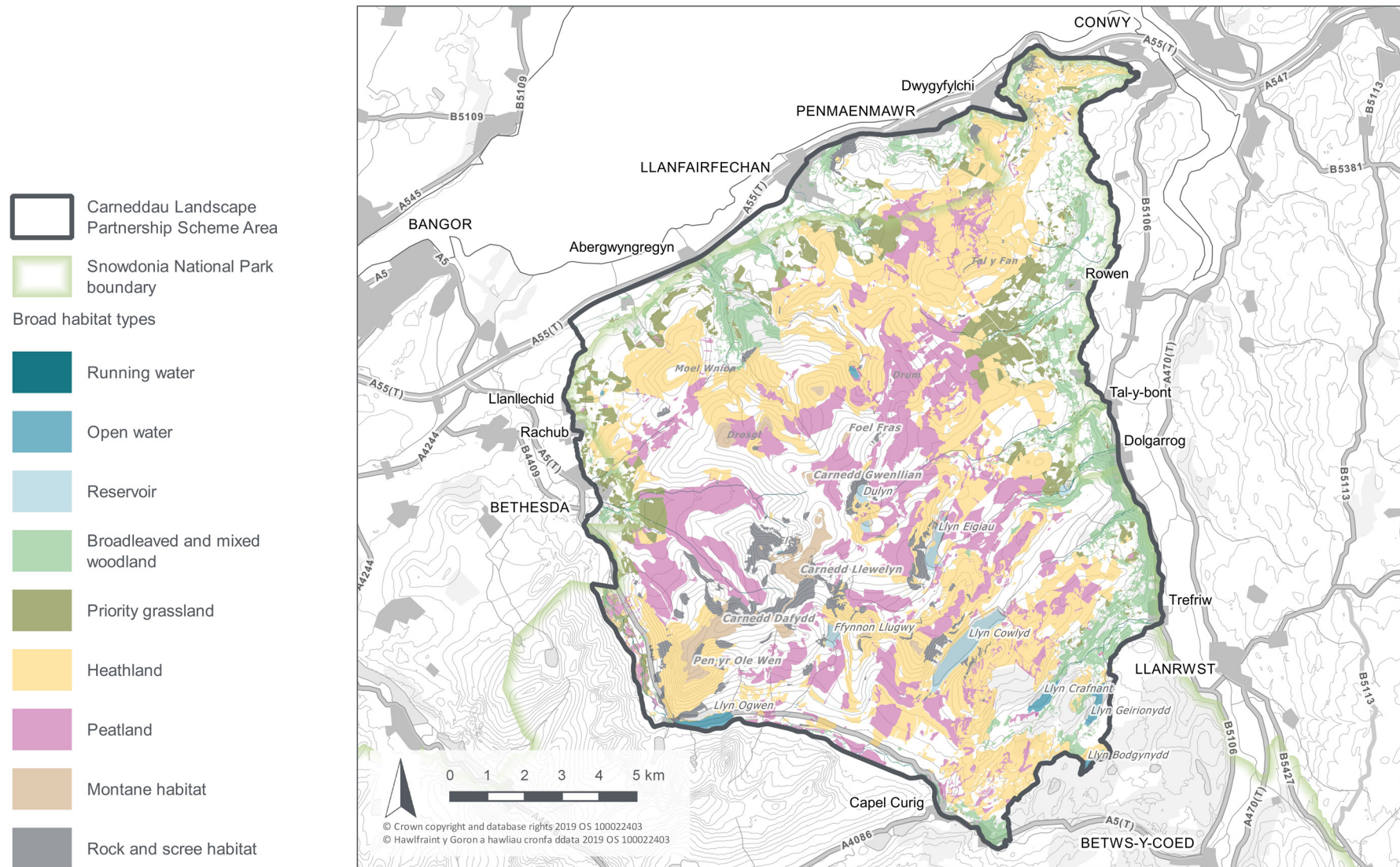


Starry saxifrage © Mike Raine





# Broad habitat types in the Carneddau



# Statement of significance

## Habitats and species

### Habitats

A detailed habitat map of the Carneddau was produced as part of the supporting documents reviewing the ecology of the area. Upland Framework mapping by NRW (and its predecessor Countryside Council for Wales) in 2007 and 2016 was used as a basis, but this only covered 80% of the LPS area. UK biodiversity action plan Priority Habitat types were used as the basis for the mapping, but the original list was updated and expanded to: encompass the lowland habitats; distinguish lowland, upland and transition characteristics of some habitats and; add some non-BAP Priority Habitats which are nevertheless significant for the Carneddau. The table shows the list used for the mapping; UK BAP Priority Habitats are distinguished by names with capitalised first letters.



Fast running bryophyte-rich mountain stream, Cwm Bychan © Alex Turner

### Habitat types used for mapping (capitals indicate UK BAP Priority Habitats)

Deep Peat vegetation	upland acid grassland	Lowland Mixed Deciduous Woodland
Lowland Acid Grassland	upland acid grassland-upland Heath transition	Upland Oak Woodland
Lowland Heathland	upland heathland	Upland Mixed Ash Woodland
Lowland Heathland-Woodland transition	upland heathland-woodland transition	Wet Woodland
Lowland Meadows	upland marshy grassland	Hedgerows
Lowland Marshy Grassland	upland marshy grassland-heathland transition	scrub
Lowland Marshy Grassland-Woodland transition	upland marshy grassland-woodland transition	mixed woodland
Purple Moor-grass and Rush-pasture	Montane Heath	coniferous woodland
improved grassland	Rock and Scree	Fen, Flush and Swamp vegetation
Upland Calcareous Grassland	Purple Moor-grass and Rush Pasture	freshwater vegetation

Nine broad habitat groups were identified as particularly significant to the Carneddau LPS: Woodland, hedges and scrub; Grassland; Heathland; Peatland; Montane heath; Cliff, rock and scree; Lakes, streams and rivers; Ffridd. They are described in the following section along with some of the key or iconic species that are associated with them.

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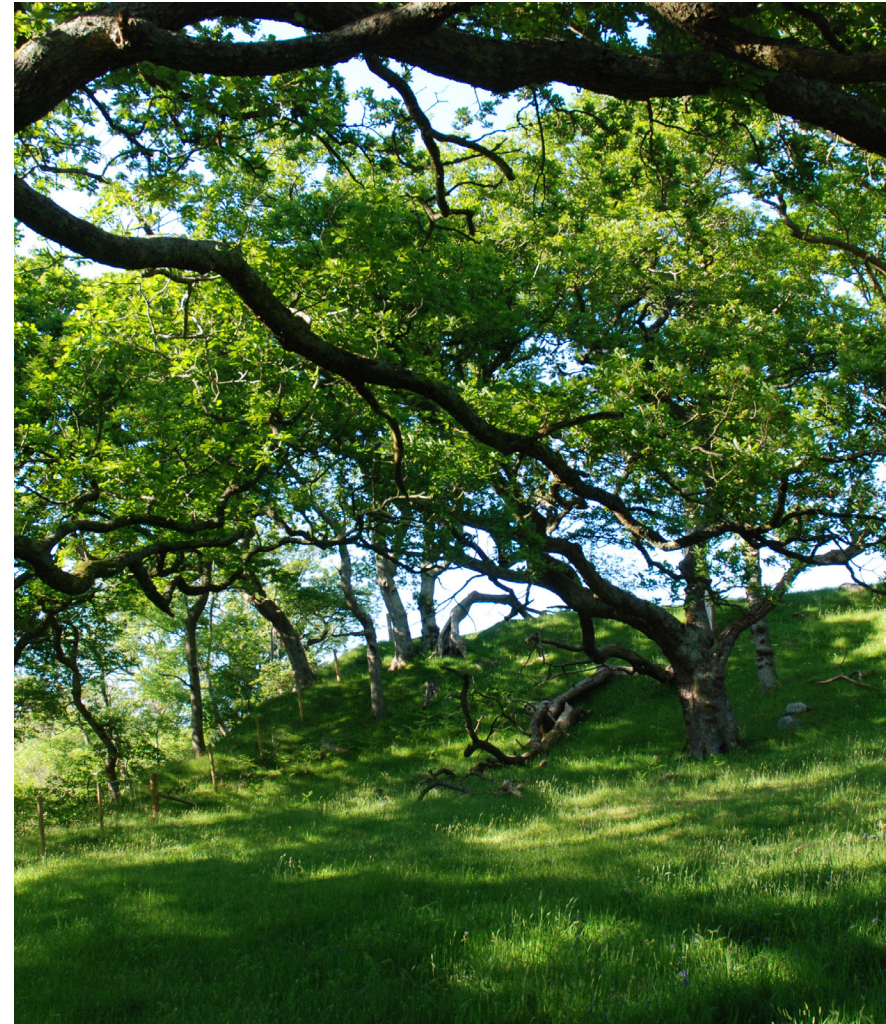
## Habitats and species

### Woodland, hedges and scrub

Woodland covers only 10% of the project area and of this only 12% of this area lies within the uplands. 36% is conifer or mixed conifer and broadleaved plantations. Oak woodland and mixed deciduous woodland found in both the uplands and lowlands are the dominant broadleaved woodland types within the project area. These woodlands typically have a canopy consisting of Sessile Oak and Downy Birch, with a mix of other species including Ash, Hazel, Wych Elm and on wetter ground Alder.

The ground flora typically includes species such as Sweet Vernal Grass, Wood Sorrel, Sanicle and Male Fern. On more acid soils Heather and Bilberry may be found in the ground layer. Upland oak woodland sites such as Coedydd Aber have a rich lower-plant flora, including rare mosses and lichens. Small areas of upland ash woodland occur on base-rich rock in the Dulyn, Eigiau and Cowlyd upland valleys. They are a mix of Ash, Hazel, Wych Elm and have a ground flora consisting of species such as Dog's Mercury, Enchanter's Nightshade and Wood Anemone. Wet woodlands are found along valley bottoms and on moist slopes. They are typically dominated by Alder and Ash and can have a rich ground flora, where not grazed, including Yellow Pimpernel, Meadowsweet, Remote Sedge and Tufted Hair Grass.

The woodlands in the project area support important breeding birds including: Wood Warbler; Pied Flycatcher and; Greater Spotted Woodpecker. The woodlands and hedgerows are also important for mammals including foraging bats (such as the Lesser Horseshoe Bat, Whiskered Bat and Soprano Pipistrelle Bat) and Hazel Dormice. On the open mountains, there are few trees but where the grazing pressure is low enough (or was low historically) or on inaccessible ledges Hawthorn, Rowan and Birch can get a foothold.



Oak woodland, Coedydd Aber © John G Roberts

# Statement of significance

## Habitats and species

### Grassland

Grassland habitats occupy a larger proportion (35%) of the Carneddau Landscape Partnership area than any of the other main habitat types.

### Upland Grassland

89% of the grassland in the uplands is unimproved acid grassland dominated by grasses such as Common Bent and Sheep's Fescue. This typically short, species-poor grassland is most extensive on the mountain common land where there has been heavy grazing. Where grazing pressures have been high over a long period less palatable species such as Mat Grass and Heath Rush dominate often forming a dense mat. Flowering plants are scarce although Tormentil and Heath Bedstraw can survive relatively heavy grazing. Lighter grazing favours Bilberry and mosaics of heath and grassland. There is a large area of upland marshy grassland in the Dulyn, Eigiau and Cowlyd areas, in which, although it is dominated by Juncus rush, some flowering plants including Marsh Bedstraw, Marsh Willowherb and Devil's-bit Scabious persist. Upland calcareous grassland is the least extensive grassland habitat, with only 1 hectare recorded (mainly Tal y Fan and Creigiau Gleision, Cwm Cowlyd) on basic (alkaline) volcanic rocks. Where steep slopes, rocks and ledges have protected them from grazing, they support diverse plant species including: Mossy Saxifrage; Eyebright; club mosses; Mountain Avens, Wild Thyme and sedges.

Open acid grassland is important for a number of bird species including Chough, Wheatear, Meadow Pipit and Skylark.

### Lowland Grassland

Improved grassland forms 64% of the grassland resource below the limit of agricultural enclosure. Improved grassland is managed for grazing and silage production and high fertility is maintained by the input of chemical fertilizers. It is usually species-poor and dominated by perennial Rye Grass and White Clover varieties. Acid grassland is the

most extensive semi-natural lowland grassland, dominated by grasses Common Bent and Sheep's Fescue, with a limited number of flowering plants such as Tormentil.

Purple Moor-grass and Rush Pasture, similar to upland marshy grassland occurs over damp clay soils, and is dominated by rushes, but with other plants including some orchid species, Marsh Thistle, Wild Angelica and Greater Bird's-foot Trefoil. The only species-rich lowland grassland habitat is neutral meadow. This is very scarce covering only 2% of the area and is mainly found in the Bethesda and Llanllechid area. It is usually managed as either permanent pasture or as hay meadows.

Characteristic species include: Crested Dog's Tail; Sweet Vernal Grass; Red Fescue; Bird's-foot Trefoil; Black Knapweed and; Red Clover. Hares were once common on farmland but now are less common. Some bat species such as Natterer's Bat and Noctule Bat forage on lowland grassland, particularly unimproved grassland, which is rich in insect life. Twite is particularly important in the enclosed grasslands on Nant y Benglog and Nant Ffrancon. Other birds associated with the enclosed grasslands are Skylark, Chough and Starling. For reptiles, unimproved grasslands are important for Adder and Slow-worm.

### Heathland

Heathland occupies the second largest area of the LPS area (about 25%) after grassland. When the heather comes into flower in late summer, parts of the Carneddau (such as Nant Ffrancon, Cwm Crafnant and Tal y Fan) become a haze of purple. On the Conwy coastal hills, the combined flowering of Heather and Western Gorse provides a splash of vivid gold and purple. The dominance of these dwarf-shrub species defines the heathland habitat. The majority of the heathland (94%) in the project area lies within the upland boundary, a very small proportion is found in the ffridd on the lower slopes.



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### Habitats and species

On the higher slopes, Common Heather is typically the dominant species along with Bilberry and Crowberry. Bell Heather, with bright pink flowers, is much less common and is mostly found on lower slopes such as on the Conwy coastal hills, where Common Juniper is also present. Bilberry is often dominant in the lower-lying heath in the LPS and is an indicator of heavy grazing which has reduced the proportion of heather.

Heath variations and species associated with them include: upland dry heath (flowering-plants Tormentil, Heath Bedstraw and mosses); oceanic heath on shady north and east facing slopes particularly around Llyn Cowlyd and Llyn Crafnant (mosses including deep red Bogmoss) and; wet heath (Cross-leaved Heath, Common Heather, Deer Grass).

Key animal species include: birds - Red Grouse, Merlin, Ring Ouzel, Twite, Hen Harrier and Short-Eared Owl; mammals - Hares. Amphibians and reptiles - Adder, Grass Snake, Slow-worm, Common Lizard; butterflies - Small Heath butterfly and Ashworth's Rustic moth (whose caterpillar feeds on heather and bilberry).

#### Peatland

The rocky slopes of the Carneddau are generally too steep for the development of deep peat. However, on small plateaux and basins and on more gently sloping terrain peat has been able to form and supports a range of blanket bog, flush and fen vegetation. The largest areas of deep peat are found to the east of Drum. Extensive areas of flush and fen are found along the Afon Caseg and Afon Llafar above Bethesda. Peatland habitats account for 15% of the LPS area, predominantly in the uplands.

The blanket bog vegetation is dominated by species of Sphagnum moss, Common Cotton Grass and Hare's Tail Cotton Grass, with Deer Grass, Heather, Cross-Leaved Heath, Bog Asphodel. Round-Leaved

Sundew occur frequently. On the commons, where grazing pressure has been higher, bog tends to be species-poor with little Sphagnum moss and a high proportion of grazing tolerant species such as Heath Rush. There are areas of bare peat and peat hags in a number of locations particularly on the saddle between Llwytmor and Foel Fras and on Gledrffordd.

Flushes and springs cover small areas individually but occur widely in the uplands. Mountain springs can have a variety of small herbs such as Round-leaved Crowfoot and Starry Saxifrage often with a carpet of moss or liverwort species. Water-flushed ground is found on sloping terrain and along streams and river valleys. It is species-rich where the ground is acidic, with including Sphagnum bog mosses, small sedges (e.g. Star Sedge), Bog Pondweed, Cross-leaved Heath, Bog Asphodel and Round-Leaved Sundew. Less common species such as White Beak Sedge and Marsh Clubmoss are found in a few locations, for example in Nant y Benglog.

Peatlands also occur in the fringes of the uplands, for example lowland raised bogs along the flat bottom of Nant Ffrancon.

Key animal associations for peatland are Water Vole and Common Frog.

#### Montane heath

Montane Heath is a tundra like habitat that on the highest ground of the Carneddau and is comparable to vegetation found in the arctic. It can cope with the severe exposure, thin soils and low temperatures of the high peaks and ridges, conditions which prevent plants that would out compete it from growing. The Carneddau has 67% of the total amount of this habitat in Wales. The vegetation includes a range of plant communities dominated by dwarf-shrubs, lichens and mosses. The vegetation clings to the rocks and bare soils and is so stunted in size that it is easy to miss it.

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The summit heath is dominated by Woolly Fringe-moss, Stiff Sedge, Dwarf Willow and stunted Bilberry along with montane bryophytes and lichens. Dwarf Willow carpets the ground with neat round leaves. Despite growing to only 2cm tall, it is a true tree. Tiny arctic-alpine tundra tree species like this are adapted to survive extreme exposure or burial in snow. Alpine and boreal heath is found at lower altitudes to the summit heath. Within this vegetation, dwarf-shrub species are more common including a ground-growing variety of Common Heath, Mountain Crowberry, Cowberry, Bilberry along with species such as Alpine Clubmoss, Fir Clubmoss, Woolly Fringe-moss, Stiff Sedge and Reindeer lichens.

The principal locations for Montane Heath are on the following mountains: Carnedd Dafydd, Pen yr Ole Wen, Carnedd Llewelyn, Garnedd Uchaf, Yr Aryg, Foel Grach, Llwytmor, Drosgl, Foel Fras, Pen Llithrig y Wrach and Pen yr Helgi Ddu. It accounts for around 2% of the LPS area.

#### **Cliff, rock and scree**

Glaciation left the Carneddau with an impressive array of rock features from deep cwms and sheer cliffs to scree fields and erratic boulders. Throughout the mountains there are distinctive habitats associated with these rock habitats and many arctic-alpine type species can be found here. Plants thrive in these locations where they are protected by inaccessibility to grazing livestock and people. On moist ledges, tall herb vegetation is found with Globe Flower, Alpine Saw, Roseroot, Welsh Poppy and Wild Angelica. Vegetation found in crevices and fissures includes arctic-alpines such as Mossy Saxifrage, Beautiful Hawkweed and the iconic Snowdon Lily and. Other characteristic species include ferns such as Wilson's Filmy Fern, Brittle Bladder-fern and Maidenhair Fern. Most of the scree habitat is found around the main Carneddau ridge from Braich Ty Du to Yr Elen. Its characteristic plants are Parsley Fern, Wavy Hair Grass and lichen and bryophyte-rich vegetation.

#### **Lakes, streams and rivers**

There are numerous fast flowing mountain streams radiating from the slopes of the Carneddau massif. These include the Afon Caseg to the west, the Afon Bedol to the south, the Afon Dulyn to the east and, to the north, the Afon Rhaeadr-Fawr which cascades down the impressive 37-metre high Aber falls. The streams are typically cool, well-oxygenated and oligotrophic (poor in plant nutrients) because of the acidic ground of their catchments. The largest river within the LPS area is the Afon Ogwen which flows north from Llyn Ogwen tumbling down the Ogwen falls to the flat-bottomed Nant Ffrancon to Bethesda. In Nant Ffrancon it flows through areas of improved grassland, patches of marshy grassland and flush, wet woodland and lowland raised mire. The river channel has been dredged and straightened but in recent years some sections have been restored by placing rocks back in the channel.

The river and streams support populations of 'salmonid' fish. The upper reaches of the Afon Ogwen are particularly important spawning grounds and nursery habitat for Salmon and Sea Trout. Non-migratory Brown Trout is found in lakes and rivers such as the Afon Llugwy. Eel are found in the rivers of the north coast.

The mountain lakes and reservoirs are largely oligotrophic apart from Llyn Anafon which is more mesotrophic (contains more nutrients) and is more species-rich as a result. Its plants include both submerged and floating species including Water Lobelia, Quillwort, Shoreweed and rare Pondweed species.

The rivers, streams and lakes of the Carneddau are especially important for lower plants such as lichens and bryophytes (mosses and liverworts). Ffynnon Lloer is the richest lake in Wales for rare bryophytes including Muehlenbeck's Thread-moss and Capillary Wing-moss and lichens (such as Tarn Lecanora). The streams and rivers of the Carneddau are also the richest in Snowdonia and Wales for lichens.





# Statement of significance

## Habitats and species

### Ffridd

Ffridd is a cultural habitat which represents the boundary between the uplands and the more fertile and intensively managed lowlands; it is an area where periodic shifts in agriculture have created a diverse mosaic of habitats. For example, during periods of low intensity grazing, trees and heathland may establish whilst at times of heavier grazing grasslands may spread. Critically these areas are not uniformly managed or agriculturally improved to any extent.

In areas of the Carneddau characterised by ffridd the habitat mix includes: heathland 35%, grassland 20%, bracken 9%, fen flush and swamp 7%, semi-improved grassland 6%, mixed woodland 5%, marshy grassland 5%, blanket bog 5%, broadleaved woodland 5%, freshwater 2% and rock 1%.

The ffridd is particularly important for grassland fungi which thrive in old pastures where the ground has not been disturbed by ploughing or had chemical fertiliser applied to it. These include exotic looking waxcaps, pink-gills, corals, clubs and spindles fungi. The mosaic character of ffridd makes it important for a range of species including birds such as Tree Pipit, Whinchat, Linnet and Yellowhammer and in Nant Ffrancon and Nant y Benglog, Twite.



Ffridd pasture © John G Roberts



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