



NEAR SCHIEHALLION, PERTSHIRE

## DEFINITION

Upland heath lies below the montane zone (which begins above the potential woodland limit at c.600m) and above the upper edge of enclosed agricultural land, usually around 300 - 400 metres, but descending to near sea level in north western Scotland. Upland heather moorland is usually found in areas with over 100 cm of precipitation per annum and where nutrient poor acid soils are composed of peaty podsols or shallow peat. Variation in the vegetation communities is broadly linked to climate, but is also linked to factors such as altitude, aspect, slope, maritime influences and management practices, including grazing pressure and burning regimes. This habitat is often found in mosaics with acid and neutral grasslands.

Upland Heath is generally dominated by dwarf shrubs, for example Ling heather *Calluna vulgaris*. Mixtures of Cross-leaved heath *Erica tetralix*, Purple moor grass *Molinia caerulea*, and Sphagnum bog mosses may dominate other communities, particularly in the wetter north and west of the country. Of the 3.7 million hectares of upland dwarf shrub habitat in the UK, 1.6 million ha. are of less than 50% heather dominance. Upland heath contains mosaics of dry heath, wet heath and blanket bog.

## CURRENT STATUS AND EXTENT OF HABITAT

At the last estimate heather moorland as a single feature was, at 94,500 ha., by far the most extensive single upland habitat in Tayside and represented some 12% of the whole area. A further 128,800 ha. of heather moorland also occurred in mosaics with peatland, rough grassland and montane habitats, with Heather being the primary feature over 75% of this mosaic area. This total area of 223,300 ha. represents some 9% of the total Scottish area of upland heath and some 5% of the UK figure.

In the forty years prior to 1988, however, the area of heather moorland in Tayside had actually declined by 35% and further significant losses in both area and quality will certainly have occurred since then. These losses are likely to be reflected across all upland heath types and mosaics.

## KEY SITES

Forest of Clunie (SSSI SPA) and neighbouring areas.  
 Drummochter Hills (SSSI SPA)  
 Angus Glens Grouse Moors  
 Strathbraan Glenqueich and Logiealmond Grouse Moors  
 Kynachan, Strathtummel  
 Forest of Atholl  
 Forest of Alyth

## NATURE CONSERVATION IMPORTANCE

The dwarf shrub heaths which make up upland heathland have international conservation significance and are largely confined to the British Isles and the western seaboard of Europe. In Tayside upland heath is mainly dominated by Heather but is characterised also by dwarf shrubs such as Crowberry *Empetrium nigrum* and Blaeberry *Vaccinium myrtillus*, together with grasses such as Mat grass *Nardus stricta* and Sheep's fescue *Festuca ovina*. These heaths are derived from former woodland and scrub with dwarf shrub-rich ground flora. This ground flora has survived the removal of the trees and under low intensity land use and management continues to provide a refuge for the associated species of the original woodland ground layer. Thus woodland plants such as Wood anemone *Anemone nemorosa* can still be seen over wide areas of moorland. Significant areas of upland heath have been converted to rough grassland and to woodland, both native and exotic.

In Tayside, as elsewhere, upland heath is prime habitat for an important suite of birds including Black grouse *Tetrao tetrix*, Red grouse *Lagopus lagopus*, Twite *Carduelis flavirostris*, Golden plover *Pluvialis apricaria* and Ring ouzel *Turdus torquatus* as well as the more wide-ranging species such as Hen harrier *Circus cyaneus* and Merlin *Falco columbarius*. Some areas of upland heath are very rich in bryophytes and lichen communities.

Upland watercourses can provide a valuable refuge for Water voles *Arvicola terrestris* if Mink *Lutreola vison* are not present. The Scottish population of Water vole declined an alarming 85% between 1990 and 1998.

### Ring Ouzel *Turdus torquatus*

The Ring Ouzel is the only thrush that is a summer visitor to Britain. Its upland breeding habit has earned it the alternative name of 'mountain blackbird'; its behaviour is certainly similar to its lowland cousin. Its loud piping song is audible over very long distances.



## Upland Heath

U2

## KEY SPECIES

P = UK Priority species C = UK species of conservation concern

Mammals	Mountain hare	<i>Lepus timidus</i>	C
	Wild cat	<i>Felis silvestris</i>	C
Birds	Black grouse	<i>Tetrao tetrix</i>	P
	Red grouse	<i>Lagopus lagopus</i>	C
	Hen harrier	<i>Circus cyaneus</i>	C
	Merlin	<i>Falco columbarius</i>	C
	Ring ouzel	<i>Turdus torquatus</i>	C
	Twite	<i>Carduelis flavirostris</i>	C
	Golden plover	<i>Pluvialis apricaria</i>	C
	Golden eagle	<i>Aquila chrysaetos</i>	C
	Curlew	<i>Numenius arquata</i>	C
	Short-eared owl	<i>Asio flammeus</i>	C
	Peregrine falcon	<i>Falco peregrinus</i>	C
	Stonechat	<i>Saxicola torquata</i>	C
Amphibians and Reptiles	Adder	<i>vipera berus</i>	C
Invertebrates	a mason bee	<i>Osmia inermis</i>	P
	Northern brown argus	<i>Aricia artaxerxes</i>	P
	Mountain ringlet	<i>Erebia epiphron</i>	C
	Pearl-bordered fritillary	<i>Boloria euphrosyne</i>	P
	Grey scalloped bar	<i>Dyscia fagaria</i>	C
	Northern arches	<i>Apamea zeta</i>	C
	Rannoch brindled beauty	<i>Lycia lapponaria</i>	C
	Slender striped rufous	<i>Coenocalpe lapidata</i>	C
	Broom-tip moth	<i>Chesias rufata</i>	C
	Small dark yellow underwing	<i>Anarta cordigera</i>	C
	Large heath	<i>Coenonympha tullia</i>	P
	Narrow-headed wood ant	<i>Formica exsecta</i>	
Plants	Juniper	<i>Juniperus communis</i>	P
	Heath cudweed	<i>Gnaphalium sylvaticum</i>	C
	Marsh clubmoss	<i>Lycopodiella inundata</i>	P
	Issleri's clubmoss	<i>Diphasiastrum issleri</i>	C

## NATIONAL BIODIVERSITY CONTEXT

There is a UK Broad Habitat Statement for upland heathland. This gives the following conservation direction:

*Maintain the extent, enhance the quality and restore upland dwarf - shrub heath as part of upland mosaics and transitions of semi - natural and natural habitats appropriate to soils and climate.*

Tayside Biodiversity Partnership



Measures, identified on a UK basis to be considered further include:

- Encourage sympathetic management of upland heath for wildlife, structural diversity and rich lower plant communities.
- Promote demonstrations and advice on good muirburn practices.
- Encourage studies to investigate the effects of acid deposition.
- Encourage measures which reverse habitat fragmentation.
- Reduce grazing pressure from red deer and sheep by reducing numbers.
- Protect from inappropriate development by identification in relevant development plans and in Indicative Forestry Strategies.

## CURRENT FACTORS CAUSING LOSS OR DECLINE

Four main activities impact on upland heath in Tayside. All are closely linked and play essential and complementary roles in determining and maintaining the area, quality and diversity of upland heath. The key factor is their balance and integration.

### Agriculture

Stock grazing, largely by sheep, is necessary to prevent woodland regeneration and thereby to maintain upland heath. Excessive grazing, especially in winter, when accompanied by excessive burning leads to conversion of dwarf shrub heath to rough grassland. In some areas grazing and burning pressures have increased owing to higher overall stocking rates encouraged by production incentives. Most heavy grazing in Tayside has resulted from long term shifts away from hefted blackface flocks which distributed grazing pressure across an entire holding to more intensive systems using less hardy crosses in which flocks are concentrated onto more accessible areas. This has focused grazing trampling and burning onto lower moorland where large areas have been converted to rough grassland or where Heather has been badly suppressed. Remoter areas within holdings with correspondingly lower agricultural use are left unmanaged and may suffer increased deer pressure or conversion to woodland.

### Grouse Shooting and Muirburn

Traditional management for Red grouse involves burning Heather on a rotation of 8 - 10 years in small strip fires distributed evenly across an entire holding. This regime, when balanced with well-distributed grazing produces an intimate mix of different age classes of Heather which, together with other features such as wet flushes, is necessary for commercial grouse production. Coupled with poorly managed and poorly distributed muirburn practices and frequent large scale fires on the moorland edge, such a rotation is too short to create optimum conditions for many key plant and bird species of upland heath.

The biodiversity value of intensive grouse moors, can in some cases, also be compromised by the persecution of key predator species such as the Hen harrier. Much upland heath supports less intensive or non-commercial grouse shooting with a good range of key species. The two approaches are complementary in biodiversity terms.

Grouse shooting is currently the main economic and cultural incentive for the conservation and management of upland heath in Tayside. Because of the investment required in habitat management and legal predator control, however, its commercial importance has declined over wide areas in relation to intensive sheep farming and forestry with the resulting long-term decline in habitat area and quality.

### Forestry and Woodlands

Since the 1970s large areas of upland heath in Tayside have been converted to either exotic or new native woodlands in response to attractive incentives and a decline in grouse shooting. The scale and location of some of these woodlands have fragmented quite large areas of upland heath, compromising the management of the surviving fragments both for commercial grouse and for key species. Many woods also have sharply-defined edges and are surrounded by deer fencing. This adversely affects key species such as Black grouse which need a gradual transition from woodland to heath. These woodlands represent not only a loss of heathland area, but also a wider and more serious loss of heathland quality.

Recent new woodlands have been much better integrated with adjacent habitats through greater attention to site, scale, species and design. Many of these new woodlands have also integrated commercial objectives by balancing exotic conifers with native species, whilst many older commercial woodlands are being restructured under the Woodland Grant Scheme for greater integration. Collisions with deer fences cause considerable mortality amongst such species as Black grouse so any new deer fencing must now be justified in applications for the Woodland Grant Scheme. Where fences are considered necessary to protect young woodland from deer, but are also in sensitive areas for Black grouse, they must be clearly marked in an acceptable manner to reduce collision rates.

### Black Grouse

At dawn, throughout much of the year, male Black Grouse gather at favoured sites (leks) to display. They engage in mock fights, raising their lyre-shaped tails and inflating their blue necks. Invariably, but not always, they are watched by the grey/brown females.



RSPB

### Red Deer

A long-term increase in Red deer numbers in Tayside has led to some localised heavy grazing within the traditional Red deer range. The extent of this is unclear. There has also been a long-term expansion of the Red deer range which has impacted on important areas of upland heath on the lower fringes of the Grampians, particularly in winter. The expansion appears to have been driven by deer population pressure, expansion of forestry onto traditional wintering areas and the vacuum left in many areas by the removal of hefted sheep flocks.

### MAIN THREATS TO KEY SPECIES

Water Vole	Loss and fragmentation of habitats Disturbance of riparian habitats Pollution of watercourses and poisoning by rodenticides	
	UK Importance of Tayside population:	moderate
Black Grouse	Inappropriate grazing removes key food plants such as blaeberry, heath and birch scrub Poor muirburn practices Habitat fragmentation leads to isolated populations Collisions with deer fences Loss of under-storey food plants in mature conifer plantations	
	UK Importance of Tayside population:	high

Red Grouse	Loss of habitat and fragmentation to grassland or conifer woodland	
	UK Importance of Tayside population:	moderate
Merlin	Afforestation on grouse moors	
	UK Importance of Tayside population:	moderate
Hen Harrier	Deliberate and illegal persecution on grouse moors	
	UK Importance of Tayside population:	moderate
Ring Ouzel	Threats not properly understood	
	UK Importance of Tayside population:	high
Mason Bee	Loss of herb-rich upland grasslands or moorland with short swards Inappropriate grazing regimes, including cessation of grazing or grouse-moor management Direct loss of habitat owing to afforestation Climate change	
	UK Importance of Tayside population:	high – restricted to one site in Tayside (only other site known in the UK)
Netted Mountain (a moth)	Inappropriate moorland management, including neglect Poor muirburn practices Over-grazing	
	UK Importance of Tayside population:	high
Mountain ringlet (a butterfly)	Inappropriate grazing regimes (both over-grazing and under-grazing can cause problems to habitat) Climate change Inappropriately sited new woodlands	
	UK Importance of Tayside population:	moderate
Large Heath (a butterfly)	Inappropriate grazing regimes (both over-grazing and under-grazing can cause problems to habitat) Site drainage for agricultural improvement or new woodlands Direct habitat loss through peat extraction	
	UK Importance of Tayside population:	moderate
Marsh Clubmoss	Habitat loss, including drainage or improvements to unmade trackways Cessation of traditional management practices, including grazing Climate change and atmospheric pollution Inappropriately sited new woodlands	
	UK Importance of Tayside population:	moderate
Juniper	Excessive grazing (which prevents establishment of young bushes) Insufficient grazing which reduces area suitable to juniper regeneration or allows other tree species to out-shade new growth Direct clearance of stands Excessive burning which may destroy both mature bushes and regeneration	
	UK Importance of Tayside population:	moderate

**OPPORTUNITIES AND CURRENT ACTION**

Upland heath is unique among major terrestrial habitats in having no obvious dedicated public funding mechanism. Outwith designated sites positive management is almost entirely dependent on funding by private sporting owners whose activities make public support problematic.

- Rural Stewardship Scheme - incentives for sympathetic management of stock. Overall budget too low to outweigh effects of mainstream supports.
- SSSI and SPA designations of key heathland areas like the Forest of Clunie with supporting management incentives and monitoring.
- Cairngorms Partnership Board lottery bid for moorland demonstration sites.
- Woodland Grant Scheme - incentives and constraints which integrate woodland with upland heath.
- SNH conservation grants for both designated and non-designated sites, especially the Community Grant Scheme and the new Natural Care programme.
- Development of demonstration moors on SSSIs and within Cairngorm Partnership Area with European and other support.
- Moorland Working Group - national partnership of statutory agencies, conservation, landowning and sporting bodies to promote effective and legal management of grouse moors.
- Tayside Indicative Forestry Strategy - provides for planned woodland expansion based on criteria which includes conservation of upland heath (to be revised).
- Independent Study Groups, including the Raptor Study Group and the Black Grouse Study Group monitor key species and indicator species across the area.

Opportunities taken for promoting and developing good montane and moorland practice for biodiversity may increase appropriate tourism and recreation and foster a greater understanding of the role of traditional and appropriate management in shaping the surrounding landscape.

**OBJECTIVES AND TARGETS**

	Objectives	Targets
1	Ensure the quality of important upland heathland habitat in Tayside is retained and improved.	No net loss in area of good quality upland heath habitat by 2010 Restoration or improvement of 20,000 ha. of upland heath by 2010
2	Determine the condition of key upland heath habitats in Tayside by 2006	Complete survey of condition of key upland heath habitats by 2006
3	Set up programme to raise awareness of contribution of upland heath to biodiversity, particularly regarding provision of dedicated management incentives.	Set up awareness programme by 2003.

**Stakeholders**

- Landowners, land managers and advisors, statutory bodies and local authorities, Deer Commission for Scotland, tourists and local users, members of the public.

**ACTION FOR BIODIVERSITY**

		Action - Upland Heath	Deliverers		To take place by								Meets Objective No.
			Lead Partners	Partners	02	03	04	05	06	07	11	16	
<b>LBAP Ref.</b>	<b>A</b>	<b>Policy and legislation</b>											
U2	1	Ensure that the policies of all Partners do not result in deterioration of the quality of upland heath.	SNH	TBP	#	#	#	#	#	#	#	#	
U2	2	Ensure that local authorities are fully aware of the biodiversity importance of upland heath and of identifiable habitat trends.	PKC AC SNH	TBP	#	#	#	#	#	#	#	#	
U2	3	Ensure that these habitat trends are fully considered in Structure, Local and Subject Plans, particularly any revision to the Indicative Forestry Strategy.	PKC AC SNH	TBP	#	#	#	#	#	#	#	#	
	<b>B</b>	<b>Site safeguard and management</b>											
U2	1	Ensure no net loss of area of upland heath on designated sites of national or international importance by 2010.	SNH	FC RSPB							#		
U2	2	Improve quality of upland heath on designated sites by implementing and developing Natural Care incentives by 2010.	SNH		#	#	#	#	#	#	#		
U2	3	Promote upland heath as a priority habitat under the Rural Stewardship Scheme where appropriate.	FWAG SAC RSPB		#	#	#	#	#	#	#	#	
U2	4	Promote restructuring of woodlands under Woodland Grant Scheme to integrate with the upland heath.	FC	SNH RSPB	#	#	#	#	#	#	#	#	
U2	5	Prioritise management actions on sites following survey/audit.	SNH	RSPB FC	#	#	#	#	#	#	#	#	
U2	6	Develop and implement Deer Management Plans in all sub areas of Deer Management Groups, following DCS Guidelines and ensuring that they fully consider targets and actions for upland heath.	Deer Commission for Scotland		#	#	#	#	#	#	#	#	
	<b>C</b>	<b>Advisory</b>											
U2	1	Use Forest of Clunie and sites within Cairngorms National Park as exemplars of good practice.	SNH	RSPB, SEERAD FC, FWAG SAC, CPB				#					
	<b>D</b>	<b>Research and monitoring</b>											
U2	1	Survey all upland heath within the statutory site network to NVC standard.	SNH					#					
U2	2	Ensure that upland heath within the statutory site network meets site condition monitoring targets for favourable conditions.	SNH					#					
	<b>E</b>	<b>Promotion and awareness-raising</b>											
U2	1	Seek common ground between landowners/managers and conservation and other interests over management issues relating to upland heath.	SNH SLF	RSPB FWAG SAC	#	#	#	#	#	#	#	#	
U2	2	Set up awareness programme by 2003 to increase public awareness of upland heath through publications, media and environmental education.	SNH	TBP, RSPB FWAG, SAC, SLF, DCS	#								
U2	3	Monitor and review this plan – ensure this Plan is being delivered annually and review in detail after 5 years.	TBP		#	#	#	#	#	#	#	#	