

CAIRNGORMS PRIORITY SPECIES INFORMATION

GOLDENEYE (*Bucephala clangula*)



Strathspey is the core UK area for this rare and localised breeding duck. It breeds close to lochs and rivers in forests with mature trees to provide nesting holes. It first nested in Scotland in 1970, and since then birds have been attracted to nest in specially designed boxes put up on trees close to water. Significant numbers over winter. Goldeneye eat

insect larvae, small fish, plants and mussels.

Locally important issues:

- Availability and suitability of nest sites. Many artificial sites have been successfully used in the area.
- Increase in predation of nest sites by American mink or pine martin
- Potential competition of nest sites with non-native mandarin ducks.

TWITE (*Carduelis flavirostris*)



Twite use a mosaic of heather moorland, in-bye pasture and arable ground to feed and nest in. Nationally the population has declined through a combination of loss of heather, over-grazing, upland afforestation and agricultural intensification. These agricultural changes have resulted in grassland monocultures, reduced weed

populations, a change from hay to silage and a loss of root fodder crops and winter stubbles.

Locally important issues:

- Not fully understood, but the reduction in arable stubbles and turnips in the uplands resulting in the loss of autumn and winter feeding areas is thought to be relevant.

HEN HARRIER (*Circus cyaneus*)



Of the UK's birds of prey, this is the most intensively persecuted. Its effect on the number of grouse available to shoot is the cause of modern conflict and threatens its survival in some parts of the country. Moors managed for grouse shooting are particularly attractive to hen harriers because they have vegetation of mixed ages. They require old, deep (35-60cm) heather to breed in. Young conifer plantations are also used. They generally avoid grasslands for breeding but are used for foraging, since they support high numbers

of birds and mammals that are the harriers' main prey. They winter in open countryside, lowland farmland, marshland and conifer plantations. Many apparently suitable moorland areas in the Cairngorms are devoid of breeding hen harriers. It is the most threatened raptor in Britain and is the subject of regular detailed survey work in the area.

Locally important issues:

- Deliberate and illegal persecution on grouse moors.

SCOTTISH CROSSBILL (*Loxia scotia*)



Most usually found in Scots pine, spruce and larch trees, especially mature forest or old plantations, where it eats the seeds from the conifers. Despite much recent research, the taxonomic status of Scottish crossbill, Britain's only endemic bird, is still uncertain. The reasons for any historical decline or recent threat are largely unknown,

with only two key issues identified.

Locally important issues:

- Historical decline and habitat loss of native Caledonian pine woodlands. This species can also use planted conifer woodland.
- Habitat requirements are poorly understood.

Action would emphasise the importance of native Caledonian pinewood for the species. There is also the need to research, develop and encourage regular population monitoring of Scottish crossbills and their food supply.

BLACK GROUSE (*Tetrao tetrix*)



Black grouse are largely dependant upon suitable management of moorland, farmland and woodland edge habitats, including various stages of rotation in conifer woodlands. The Cairngorms are one of the main strongholds for the species in Britain. The UK population has declined dramatically, mainly due to detrimental changes to several components of its habitat. It

is currently the subject of local ongoing research and conservation management across the Cairngorms National Park area, where numbers are believed to be less than 2000.

Locally important issues:

- Habitat deterioration as a result of inappropriate grazing regimes (mainly by deer and sheep) and agricultural improvement has removed key food plants such as blueberry, heather and birch scrub and their associated insects for chicks. This may also lead to fragmentation and isolation of habitats and subsequently small isolated black grouse populations.
- The shading out of suitable understorey in maturing productive conifer woodlands with high planted tree density.
- Drainage and over-grazing of wetland mires destroys important plant and invertebrate food. Tall vegetation around boggy ground on moorlands is very important. Loss of wet flushes through drainage in afforested areas reduces key invertebrate food supplies for chicks.
- Reseeding of traditional hay meadows and losses of upland arable production may have removed important sources of autumn and winter food.
- Poor or inappropriate muirburn.
- Fragmentation of black grouse habitat often leads to small populations which are unlikely to persist.
- Collision with deer fences and with overhead power/telephone cables.
- Predator control. Foxes and crows may significantly reduce breeding success.
- Human disturbance during the breeding season (especially in late April-early May), particularly by birdwatchers may now be a contributory factor to poor breeding success. This threat is likely to increase as populations elsewhere decrease and more visitors come to the Cairngorms to see black grouse.
- Loss of traditional cattle grazing from rough hill ground and woodlands which formerly created or maintained suitable wet flushes and/or open areas.

CAPERCAILLIE (*Tetrao urogallus*)



Capercaillie can thrive in well-managed native and non-native productive conifer woodlands and the Cairngorms are the last main stronghold for this species in Britain. Partners are urgently tackling most of the issues across the area following on from the EU LIFE Capercaillie project.

Locally important issues:

- An increase in adverse weather conditions during the breeding seasons.
- Collision with deer fences (now being tackled by partners).
- Historical loss of suitable habitats resulting in small isolated populations that are susceptible to chance events and extinction. It is unclear how relevant this is to the Cairngorms because of the size of the remaining 'meta-population'.
- Snaring. Accidental captures in fox and rabbit snares under canopy can kill capercaillie.
- Predator control. Foxes and crows can significantly reduce breeding success.
- Habitat deterioration as a result of inappropriate grazing regimes (both over and under grazing) may reduce the suitability of understorey vegetation, especially a reduction in blueberry cover.
- Human disturbance during the breeding season, particularly by birdwatchers at the lek sites may now be a contributory factor to poor breeding success. This threat is likely to increase as populations elsewhere decrease and more visitors come to the Cairngorms to see the remaining capercaillie.

REDSHANK (*Tringa tetanus*)



Strathspey is the top mainland site in Britain and Ireland for breeding farmland waders, including redshank. Redshank require wet areas and local farmland traditionally managed for livestock, particularly cattle. They eat insects, earthworms, molluscs and crustaceans. The numbers breeding on farmland are declining, due to the following issues.

Locally important issues:

- Main populations now in relatively isolated pockets.

- Inappropriate grazing management (inc. both over and undergrazing).
- Threat from loss of wet ground conditions through cultivation and drainage.

LAPWING (*Vanellus vanellus*)



As stated above, Strathspey is the best breeding farmland wader area in Britain. Lapwing need bare ground or short vegetation for nesting from mid March-June, preferring spring sown cereals, root crops, permanent unimproved pasture, meadows and fallow fields with an abundance of soil and ground invertebrates. Lapwing also require rushy areas of pasture and

damp grassland areas or small shallow muddy pools as feeding areas for chicks.

Locally important issues:

- The use of fertilisers and pesticides.
- Rolling and harrowing in nesting season.
- Loss of habitats created by spring cereal production.
- Retention of low intensity pastoral farming/hay production or late silage.
- Threat from loss of wet ground conditions through drainage.

NORTHERN BROWN ARGUS (*Aricia artaxerxes*)



The northern brown argus occurs on well-drained, and usually base-rich, sites on thin soils that are usually south facing and up to 350 m altitude. Its larvae feed on common rock rose and the species distribution is governed by that of its food plant. Primarily occurring on limestone grassland, it is also associated with coastal valleys and quarries, limestone pavement and outcrops.

The lightly grazed or ungrazed grassland habitat often has a profusion of the larval foodplant, nectar sources such as thyme and bird`s-foot trefoil, and patches of bare ground resulting from grazing, landslips, footpaths or rock outcrops. In Scotland, the northern brown argus is also found on sites with relatively low pH dominated by heathers, but these are always well-drained. Due to its dependence on common rockrose, it occurs in many discrete sites less than 1ha in size and is consequently vulnerable to both local and widespread habitat change.

Locally important issues:

- Inappropriate grazing regimes. Both over-grazing and under-grazing can cause problems to the habitat.
- Loss of key habitat components, namely lightly grazed south facing slopes with the food plant common rockrose.
- Afforestation.

Proposed action should include survey/monitoring. The requirements of the species should be taken into account in the delivery of action for lowland calcareous grassland.

PEARL BORDER FRITILLARY (*Boloria euphrosyne*)



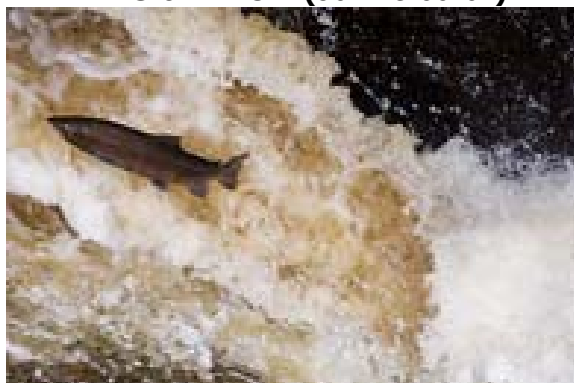
This species occurs in bracken (*Pteridium aquilinum*) and scrub mosaics, woodland edge and open woodland. Coppice woodland and young conifer plantations can also support colonies, and wayleaves can also be a valuable habitat in closed canopy woodland. The main larval foodplant is common dog-violet (*Viola riviniana*), but almost all sites are sunny, south-facing, and have a bracken component.

Locally important issues:

- Scrubbing over of woodland glades and edges, eg where woodland regeneration programmes exclude grazing animals.
- Over-grazing in open woodland, especially by sheep.
- Cessation of grazing on unimproved grassland and abandonment of traditional bracken and gorse management

The Scottish Diurnal Lepidoptera Project is mapping all known records and developing habitat management guidelines for the sites in Scotland where it occurs. Proposed action would aim to encourage sympathetic habitat management and where feasible, encourage restoration of suitable habitats throughout the butterfly's former range to aid restoration programmes.

ATLANTIC SALMON (*Salmo salar*)



There is no simple reason why salmon are declining in the UK, although it is widely accepted that marine survival (or rather mortality) is the area of greatest concern. The relative importance of the following factors probably varies between rivers and even between years.

Locally important issues:

- Over fishing at sea.
- Climatic/oceanographic changes.
- Pollution (eg industrial waste, agricultural chemicals and sewage) is implicated in declines elsewhere.
- Physical obstacles, such as dams, can block the migration routes on rivers and burns.
- Destruction and deterioration of suitable spawning and nursery areas through inappropriate drainage, river engineering activities and fishery management.
- Inappropriate riparian management.
- The direct (eg escaped and diseased fish) and indirect (eg infestations by sea lice) impacts of marine fish farming have been implicated in the decline of West Coast stocks. The impacts (if any) on East Coast stocks are less clear.
- Increase in predation has been blamed for exacerbating the decline.

TWINFLOWER (*Linnaea borealis*)



Although often thought of as a native pine woodland specialist, twinflower populations can do well in appropriately managed planted Scots pine woodlands and some upland heath sites. It is a creeping woody perennial which is shallow-rooting and susceptible to drought. It freely regenerates vegetatively, producing clonal groups which may be self-incompatible. It requires slight

shade to flower well.

Locally important issues:

- Unsympathetic mechanical harvesting of timber and ground preparation for replanting.
- Excessive grazing by deer and sheep.
- Reproductive isolation of populations consisting of single clones.
- Shade resulting from dense tree regeneration and a lack of thinning.

WOOLLY WILLOW (*Salix lanata*)



Woolly willow is one of a number of bushy willows found only in mountain areas. In other parts of the world these willows form high altitude montane scrub above the tree line but in Britain are usually present only as relict scattered bushes found on ledges inaccessible to grazing animals, on cliffs and in stream

gorges. The woolly willow is further restricted by its requirement for calcareous soils. Vegetation mapping suggests that significant areas of land were occupied by willow scrub with woolly willow before the vegetation was modified by the influence of man. It now occurs in only 12 locations in Scotland. It is part of an important but overlooked habitat that should occur as part of the natural zonation on a mountainside.

The woolly willow is aptly named as the silvery-green, oval leaves have a thick coat of hairs, and grow to five centimetres in length. Like all willows, this species is dioecious, occurring as either male or female. Female catkins are insect-pollinated.

Locally important issues:

- Grazing has removed it from accessible ground, making it restricted to small niches on very steep areas, where it is more vulnerable to chance events such as erosion, rock falls and snow avalanches.
- The lack of recruitment in the very small remaining populations, especially where single sex populations are isolated are threats to survival.

ASPEN BRACKET FUNGUS (*Phellinus tremulae*)



The aspen bracket fungus *Phellinus tremulae* was only discovered in the UK as recently as 1999. Recent surveys suggest that the distribution of this fungus coincides with that of its host tree aspen.

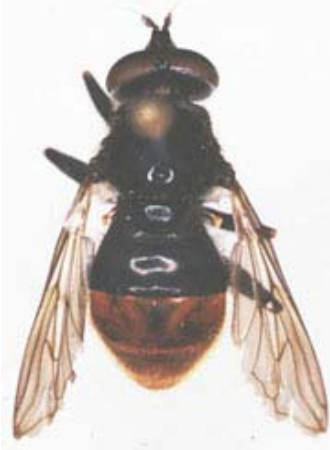
Locally important issues:

- Appropriate grazing is critical to the survival of aspen suckers and the future supply of suitably aged trees for fungal

colonisation.

- Dead wood should be left in situ to enable colonisation by other rare, aspen specific fungi.
- Air pollution can damage such fungi.

PINE HOVERFLY (*Blera fallax*)



Blera fallax, the recently named pine hoverfly, is a hoverfly of native pine woodland and planted conifer woodland, where the larvae feed in wet rot holes associated with secondary decay of dead pine wood. Apparently, it is restricted to Scots pine woodlands in the Cairngorms. Most historical records are from Strathspey, centred on the area between Kingussie in the south and Grantown in the north. Recent surveys have shown that the distribution has declined, with the only remaining populations on Speyside. Factors causing the decline are currently not well known, but are thought to include the

following

Locally important issues:

- Large scale clear-felling. The issue of felling coupe sizes is hopefully soon to be the subject of new research.
- Paucity of breeding sites. Suitably large pine stumps with wet pockets of decay are thought to be severely limited and inhibits the recovery of the species.
- Potential threat of over-collecting by entomologists.
- Unsympathetic mechanical harvesting of timber and ground preparation for replanting
- Chemical treatment of stumps.

Proposed action would ensure that all occupied habitat is appropriately managed, eg through site management agreements. Where possible, increasing the available habitat at known sites and in adjacent areas, attempting to link up existing fragments of habitat. Increase the number of breeding sites.

NORTHERN DAMSELFLY (*Coenagrion hastulatum*)



Northern damselflies occur in only three places in the UK: Strathspey, Deeside and Perthshire. It breeds in several different micro-habitats including shallow bogs, open and overgrown ponds and in sheltered areas of larger lochs, where suitable vegetation and an abundance of invertebrate food is available.

Locally important issues:

- Habitat loss of emergent vegetation through shading caused by natural regeneration of trees.
- Water level changes.
- Isolation of colonies.

Targeting a linked network of appropriate wetland habitat/pond creation sites could effectively extend the range of this species.

NARROW-HEADED WOODANT (*Formica exsecta*)



The importance of wood ants to the forest ecosystem is well known. They affect the distribution and abundance of other ants and many other ground-dwelling, underground and canopy species, provide an

important food source for predators, disperse a significant number of seeds (particularly for ancient woodland plants), may affect the growth of trees, are vital element in nutrient cycling in forests and create physical disturbances to forest soils. Perhaps more than any above-ground woodland invertebrate, wood ants can be considered to be 'keystone' species in the forest ecosystem.

Locally important issues:

- Historic loss of semi-natural habitats in Scotland, eg native pine woodland.
- Inappropriate grazing (both over and undergrazing).
- Forest succession resulting in shading over of nests.
- Development of nest sites for footpaths, roads etc.

ASPEN HOVERFLY (*Hammerschmidtia ferruginea*)



Aspen hoverfly is a flagship species representing the entire fauna of deadwood or saproxylic diptera of aspen. The larvae of *Hammerschmidtia ferruginea* are found in wet decaying cambium that builds up under the bark of recently fallen or dead standing trees, and large branches of aspen with a diameter of at least 30 cm. Wet decaying cambium builds up for about

four years in any one branch or tree before the bark cracks and it dries out. Population sizes have never been monitored, but the number of larvae present in individual pieces of fallen wood is generally under 50, and they may be vulnerable to over collecting. Only aspen stands which extend over 4.5 ha are large enough to maintain the continuity of fresh inputs of suitably sized fallen timber needed for *H. ferruginea*. Most aspen stands in Scotland are small, less than 1.5 ha. In the Highlands, only 14 aspen stands extend over 4.5 ha and *H. ferruginea* is virtually absent from the numerous smaller stands, particularly those beyond 1 km of the core stands.

Locally important issues:

- Small size and isolation of aspen stands. General expansion of the aspen resources and where possible the creation of an aspen habitat network is crucial.
- Removal of dead standing and fallen timber. Constant supply of suitable dead aspen wood in key sites is essential.
- Insufficient regeneration. Appropriate grazing is critical to the survival of aspen suckers.



FRESHWATER PEARL MUSSEL (*Margaritifera margaritifera*)

The survival of the globally threatened freshwater pearl mussel is inextricably linked to the status of its host fish

populations (Atlantic salmon and brown/sea trout), which in turn, may benefit significantly from the important role mussels play in the aquatic ecosystem:

Locally important issues:

- Illegal pearl fishing.
- Poor water quality, especially nutrient enrichment. There is a lack of important

information on pollution threshold tolerance levels of juvenile freshwater pearl mussels.

- 'In stream' habitat removal and alteration through development, drainage schemes, flow regulation, river engineering and fisheries management.
- Conifer planting, exacerbating the effects of river acidification.
- A decline in populations of host salmonid fish.
- Introduced *Ranunculus* weed and the chemical used to control it may become a significant issue on the River Spey.
- Severe flooding incidents.

MASON BEE (*Osmia inermis*)



© Mike Edwards

The Mason bee (*Osmia inermis*) has only recently been recognised as a separate species from *Osmia uncinata*. Consequently, this species has been under-recorded and poorly researched. Nevertheless, the following issues are thought to be the main threats:

Locally important issues:

- Loss of herb rich grasslands with short swards (containing plenty of the pollen rich Bird's-foot trefoil) through agricultural intensification, commercial afforestation or cessation of grazing.
- The species has a boreal-alpine distribution and could be negatively affected by climate change.

ALPINE SULPHUR TRESSES (*Alectoria ochroleuca*)



© Frank Dobson

This lichen grows on exposed heather/crowberry wind-clipped heaths usually between 690 and 830m asl. In the UK it is only known from the Cairngorms.

Locally important issues:

- Likely disturbance through recreational pressure. The lichen is vulnerable to trampling by walkers and skiing.

- The effects of grazing animals
- Predicted climate change
- Lack of knowledge on UK distribution (under-recorded).

RIVER JELLY LICHEN (*Collema dichotomum*)



This aquatic lichen grows on submerged rocks in partial shade in fast-flowing intermediate and upland streams. It is intolerant of polluted conditions and has declined across its whole range. The rivers, Isla, Ericht, North Esk, and Don contain some of the world's most important remaining populations.

Locally important issues:

- Eutrophication of burns and rivers leading to the species being replaced by algae.
- Increase silt load in rivers and burns.
- Water acidification.
- Reduced water levels caused by water abstraction.

BLUNT-LEAVED BRISTLE MOSS (*Orthotrichum obtusifolium*)



This very rare moss is an epiphyte on wayside trees and in aspen woodlands. Formally common on elm, the species has been recently discovered on at least two new aspen sites in the Cairngorms and the Cairngorms are now the UK stronghold for this rare species.

Locally important issues:

- Removal of host trees through road improvements.
- Ignorance about the species and its ecological requirements.
- Historically, the species became extinct due to a combination of atmospheric pollution and collecting.



BALTIC BOG MOSS (*Sphagnum balticum*)

A species of lowland raised bog and blanket bog. It is a species of wet parts of the bog, often partly or completely submerged or growing as a floating mat. It was known from only one site in the Cairngorms (Loch Muick), but it was recently discovered in Blanket bog at Abernethy. These issues have been

identified nationally and it is unclear how many of the following issues are relevant in a Cairngorms context.

Locally important issues:

- Direct afforestation and planting in the vicinity of Baltic bog moss sites with associated effects in the acidity of run-off water and site hydrology.
- Peat cutting and associated effects on site hydrology.
- Drainage of peatland sites.
- Inappropriate collecting of Sphagnum for horticultural purposes.

OBLONG WOODSIA (*Woodsia ilvensis*)



A small rare fern found on rocks, crags and scree above 350m asl. Less than 100 plants are known to remain in the UK and it is found at two sites in the Cairngorms (Caenlochan and Glen Feshie).

Locally important issues:

- Poorly understood. The factors causing the loss or decline are not properly known, but are thought to probably include:
 - Predicted climate change.
 - Collection by botanists
 - Small size of the population makes it prone to detrimental catastrophic chance events.

All known colonies are within SSSIs; three are within NNRs.

WATER VOLE (*Arvicola terrestris*)



The UK's fastest declining animal species has recently been found in small but important upland refuge areas (predominantly burns and blanket bog) across the Cairngorms. It is the subject of detailed survey work in the area.

Locally important issues:

- Predation by American mink. This is considered to be the most important threat to the long-term survival of the water vole populations in the Cairngorms. American mink have wiped out most of the water vole populations from the main stems of all the Cairngorms rivers, leaving small, but important populations in the headwaters of upper tributaries and on areas of adjacent blanket bog habitats.

- The loss, disturbance and fragmentation of riparian habitats are thought to be important in other areas, but its relevance in the Cairngorms is thought to be minimal.

RED SQUIRREL (*Felis sylvestris*)



© Niall Benvie

Red squirrels can thrive in a wide range of native and non-native productive conifer woodlands. Red squirrels are widespread in the Cairngorms and this area is now one of the last strongholds for this species in Britain.

Locally important issues:

- Invasion and spread of the introduced non-native grey squirrel – inadvertently helped by the establishment of large seeded broadleaved trees.
- Habitat fragmentation and resultant isolation of red squirrel populations.
- Disease. The *parapox* virus is lethal to red squirrels and is carried by grey squirrels, which remain unaffected.

SCOTTISH WILDCAT (*Felis sylvestris*)



© Peter Cairns/www.toothandclaw.org.uk

Widespread, but uncommon across the Cairngorms. Despite deliberate persecution the species has benefited from the recent expansion in woodland cover across the area.

Locally important issues:

- Illegal persecution in some areas.
 - Hybridisation with domestic cats threatens the genetic integrity of populations and the legal protection that the wildcat receives.
- A large-scale conservation project to tackle these problems is now underway in the Cairngorms.

KENTISH GLORY (*Endromis versicolora*)



The ecological requirement for this day-flying moth is for young silver birch *Betula pendula*, of not more than about two or three metres in height, in extensive but open stands.

In a large forest complex, felled areas become colonised by young birch and are then suitable habitats for perhaps ten years until re-planted conifers become dominant again. If this process

continues in a staggered rotation (in adjacent areas) a permanent population of the moth is ensured.

Locally important issues

- Habitat loss through succession on birch woodland or other activities which prevent birch regeneration on moorland edges (eg over-grazing and burning).

Potential action would limit 'weeding' of colonist birch so as always to leave a reservoir of suitable habitat.

DARK-BORDERED BEAUTY (*Epione paralellaria*)



This very rare moth is associated with suckering aspen of not more than c1 meter high in open areas and is only known from three Scottish locations, all of which are in the Cairngorms.

Locally important issues:

- Insufficient regeneration. Appropriate grazing is critical to the survival of aspen suckers.

- Lack of important basic

information on lifecycle.

- Small size and isolation of aspen stands. General expansion of the aspen resources and where possible the creation of an aspen habitat network crucial.
- Continued management of wayleaves.

Proposed action would ensure that all occupied sites are appropriately managed. Aspen suckers and saplings are very sensitive to grazing by livestock or rabbits. Where possible, increase the available habitat at known sites and adjacent areas, and attempt to link up existing fragments of habitat. Consider reintroducing populations of the dark-bordered beauty to former sites.

COUSIN GERMAN (*Protolampra sobrina*)



This moth species initially uses blaeberry and heather before overwintering on extensive areas of low young scrubby birch to complete its life cycle. It is associated with birch woods and old Caledonian pine forest with widely spaced trees. In the UK it has a scattered distribution in the central Scottish Highlands, where it is known from fewer than 15 ten km squares,

although it is almost certainly under-recorded. Most of the records of this moth are from Rannoch and Aviemore, but there are also records from other parts of Strathspey and from the Dee Valley.

Locally important issues:

- Inappropriately grazed management of birch (and mixed Scots pine-birch) woodland.
- Inappropriate muirburn.
- Raise the profile of the importance of this essentially transitional habitat stage for the species.

Proposed action would focus on monitoring. It is likely that this species will benefit from the action plans for other species of Scottish pinewoods, including the Scottish wood ant *Formica aquilonia* and twinflower *Linnaea borealis*. The requirements of the species should be considered in the implementation of native pine woodland action plans. Any management should aim to keep significant areas of extensive open areas of young regenerating birch habitat in a transitional stage (perhaps by coppicing the young birch at intervals of a few years).

NETTED MOUNTAIN MOTH (*Macaria carbonaria*)



A moth of Bearberry *Arctostaphylos* heath on Deeside, Badenoch and Strathspey. The netted mountain moth inhabits open moorland and mountainsides. The larva feeds by night on the foliage of bearberry, resting by day on the underside of a leaf. The larval period coincides with the time when young shoots are available, and the adults fly between April and early June when these

shoots are forming.

Locally important issues:

- Inappropriate moorland management including neglect.
- Changes to traditional muirburn. Without regular muirburn *Calluna* may shade out *Arctostaphylos*.
- Over-grazing.