Cairngorms National Park Partnership Plan, SEA scoping

Baseline information

Topic 6 – Biodiversity, flora and fauna

Contents

Questions for consultation authorities

1. Is there anything missing from the Topic baseline?

2. Are there any errors in what is presented?

3. Are there any new initiatives, research projects, plans, programmes or strategies or other things that will be reporting / implemented over the next 12-18 months that are relevant to the Topic, which may need to be included as the SEA progresses?

Context

The Cairngorms National Park is a nationally and internationally important haven for nature and wildlife. The National Park covers less than two per cent of the UK landmass but is home to 25% of its rare animal, insect, lichen, fungi and insect species. Habitats are rich and varied, from montane alpine habitats high on the Cairngorms plateaux; freshwater and riparian habitats of the renowned salmon rivers the Spey, Dee, Tay and South Esk; peatland habitats important for storing carbon; Caledonian pine woodlands, home of the rare capercaillie; to stands of aspen in Strathspey supporting rare insects and fungi.

The habitats and species that baseline information is provided for have been selected as those identified as priorities in the Cairngorms Nature Action Plan 2019 (https://cairngorms.co.uk/working-together/authority/national-park-strategies/cnap/) for focussed attention and action, plus other habitats that the future NPPP has the potential to have an effect on, either positive or negative, based on the broad topic areas covered in the current NPPP.

Of relevance to the baseline, a number of partnership projects are underway in the Park that seek to enhance biodiversity, flora and fauna. The partnership projects include:

- Peatland Action, focussing on peatland habitats (https://cairngorms.co.uk/discover-explore/landscapes-scenery/peatland/)
- Cairngorms Connect, including measures for freshwater and wetland, woodland and peatland habitats, as well as predator monitoring including raptors (http://cairngormsconnect.org.uk/projects/restoration-projects)
- East Cairngorms Moorland Partnership, including measures for peatland and woodland habitats, raptor and waders, as well as carrying out mountain hare monitoring http://cairngorms.co.uk/wp-content/uploads/2018/02/ECMPStatementofPurpose.pdf).

The environmental assessment of the NPPP will consider in-combination effects with these projects.

Areas protected for nature conservation

Protected areas represent the very best of Scotland's landscapes, plants and animals, rocks, fossils and landforms. Their protection and management seeks to safeguard them, both now and for future generations. With 55 nationally and 42 internationally important areas protected for a nature conservation completely or partially within the National Park boundary, many of which overlap with each other, over half of the National Park is designated as one of more areas protected for nature conservation (figure 1). Data from Scottish Environmental Web (https://www.environment.gov.scot/data/data-analysis/protected-nature-sites/) has been used to provide up to date information on protected areas. It is correct at time of download, being 7 October 2019, and will be checked for changes as the environmental assessment progresses.

Reflecting the diversity of nature in the Park, 18 protected areas are designated solely for bird features/interests, 1 for freshwater habitats, 20 for terrestrial plants/habitats, 7 for geological features (geodiversity is considered further under Topic 4, Soils), with the remainder (51) designated for a combination of these and/or invertebrate and/or mammal features/interests. Annex II of the scoping report provides a table of full details of protected areas, the condition of features/interests and the pressures affecting their condition.

The condition of the protected areas could be considered a reflection of the wider state of biodiversity within the Park. Since the environmental baseline assessment was carried out for the current NPPP in 2015, the number of protected areas in favourable condition has increased from 41% to 52% (table 1).

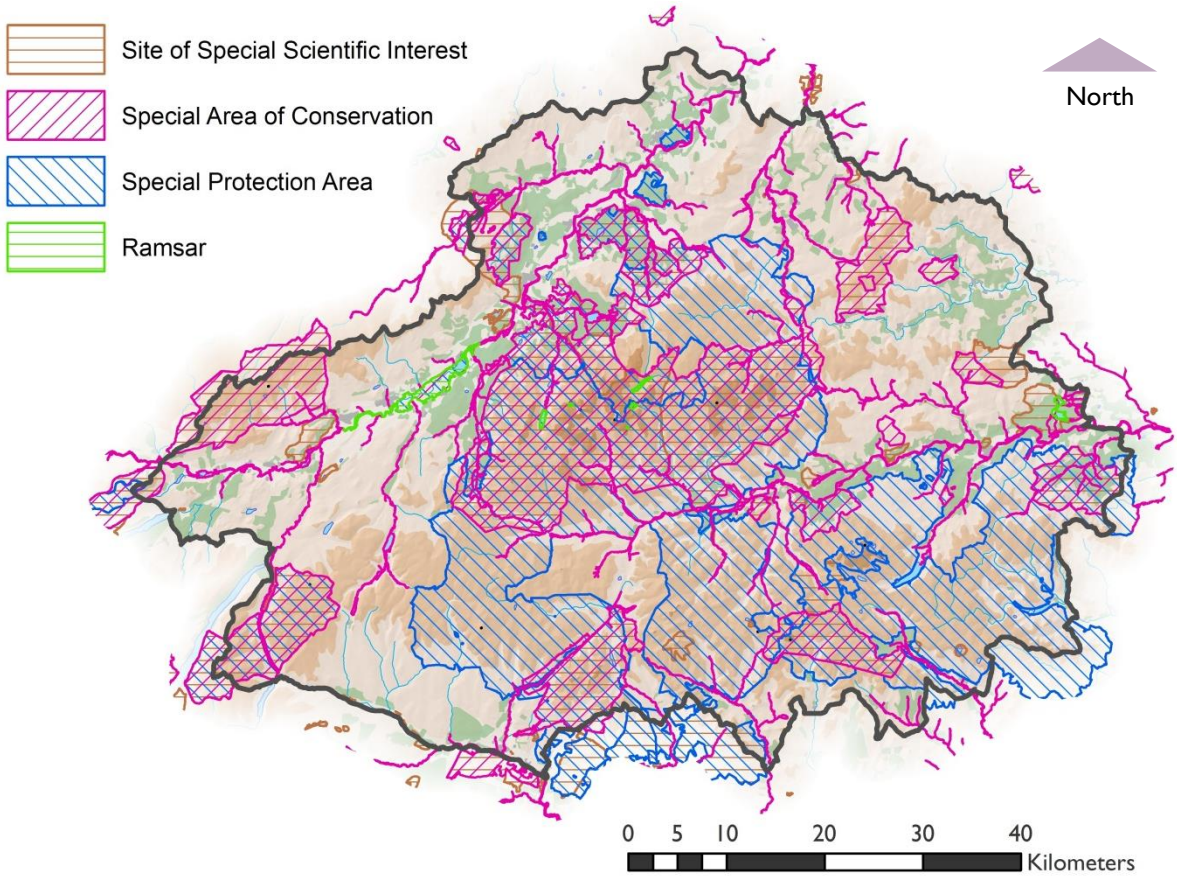

Figure 1 – SNH map of areas protected for nature conservation

Table 1 – changes in protected area condition since 2015

Protected area type	Number completely or partially within the Park	Number in unfavourable condition		Change in condition
		2015	2019	
Site of Special Scientific Interest	55	23	18	9% increase in favourable condition
Special Area of Conservation	23	16	10	26% increase in favourable condition
Special Protection Area	16	9	8	6% increase in favourable condition
Ramsar site	3	2	2	0% no change

A wide range of pressures affect protected areas resulting in unfavourable condition, most of which relate to land/water use and management. A summary of the pressures is presented in table 2.

Table 2 – summary of pressures affecting protected area features/interests

Pressure	Number of features/interests affected
Over/under grazing, trampling, other grazing	175
Agricultural or forestry operations, game/fisheries management	47
Burning	46
Recreation disturbance	44
Invasive species, plant pests and diseases	43
Water management, water quality	29
Natural event	27
Climate change	9
No pro-active management	7
Pro-active on site management, conservation activities	6
Extraction	5
Development	4

Wildlife crime	4
Maintenance activities	3
Flood defence works	2
Air pollution	1
Dumping/spreading of material	1
Inter-specific competition	1

National Nature Reserves

National Nature Reserves (NNRs) are nature reserves with nationally or internationally important habitats and species, where people are also encouraged to visit. The main aims of managing them are to conserve their important habitats and species and to give people the opportunity to enjoy and connect with nature. Most NNRs have some form of visitor facilities that are designed to ensure recreational activities do not adversely affect the wildlife and habitat that exists there.

There are 9 actively promoted NNRs within the National Park. They are managed by a range of organisations (table 3), several of whom are partners in the NPPP which provides an opportunity to contribute to addressing issues identified in the NPPP where these are relevant to the management aims.

Table 3 – organisations managing NNRs in the National Park

NNR	Managed by
Corrie Fee	SNH
Glen Tanar	Glen Tanar Estate
Muir of Dinnet	SNH
Mar Lodge Estate	National Trust for Scotland
Abernethy	SNH and RSPB
Glenmore	Scottish Forestry
Invereshie and Inshriach	SNH
Insh Marshes	RSPB
Craigellachie	SNH

Cairngorms Nature Action Plan (CNAP) priorities

A number of species and habitats important for conservation and tackling the effects of climate change have been identified for landscape scale conservation and priority species management within the CNAP.

The habitats and species identified in the CNAP are listed in table 4, with the CNAP targets for landscape scale conservation presented in table 5. These give an indication of where environmental issues lie and so where the NPPP may be able to contribute, where appropriate. (Other habitat types not specified in the CNAP are nonetheless important for the species it identifies, so are also included in the environmental baseline.)

Table 4 – habitats and species identified for action in the CNAP 2019 – 2024, and the habitat type(s) that they are predominantly associated with

Habitats	native woodlands (particularly Caledonian pine forest supporting capercaillie), moorland and peatlands, freshwater and wetlands (particularly for natural flood management)
Mammals	Scottish wildcat (found in woodland habitat); mountain hare (found in upland habitat)
Birds	capercaillie (found in woodland habitat); curlew (found in wetland and grassland habitat); golden eagle, peregrine falcon, (found in upland habitats); hen harrier (found in upland and grassland habitats)
Invertebrates	Kentish glory, dark bordered beauty, pine hoverfly, wood ants, pinewood mason bee, aspen hoverfly, shining guest ant (reliant on woodland habitats); scabious mining bee (reliant on grassland habitats); Northern silver stiletto fly, Northern February red stonefly, Northern damselfly (reliant on water/wetland habitats)
Molluscs	freshwater pearl mussel (found in freshwater)
Trees, shrubs, plants	aspen, woolly willow, twinflower, one-flowered wintergreen, small cow wheat (found in woodland habitat); marsh saxifrage, alpine blue sow thistle, oblong woodsia (found in upland habitat)
Fungi and lichen	waxcaps (fungi, found in grassland habitat); *Alectoria ochroleuca* (lichen, found in upland habitat); *Hertelidea botryose* (lichen, found in woodland habitat)

Table 5 – CNAP targets for landscape scale restoration/enhancement

TARGETS	
• 5,000 Ha new woodland (including regeneration and montane) • 70% of new woodland to be native species • 750 Ha plantations on ancient woodland sites (PAWS) and native woodlands under active restoration • 20 farms in woodland & grassland projects	• 5,000 Ha peatland restoration • 150 km river and riparian restoration • 50 ponds created or restored, including SUDs ponds • increase in farmland wader populations from the existing 2015 baseline

Given the strategic, broad scale nature of the NPPP, it is not felt appropriate to include baseline data on invertebrates, individual plant species, fungi or lichen. Instead, the environmental assessment will focus on ensuring that the NPPP avoids significant negative effects on their supporting habitats.

The following sections therefore provide baseline information on woodland, upland (incorporating heathland and peatland habitats), lowland, freshwater and wetland habitats (figure 2), along with wildcat, mountain hare, capercaillie, curlew, raptors and freshwater pearl mussel. As wild deer, pests and diseases also influence biodiversity, they are considered as part of the baseline as well.

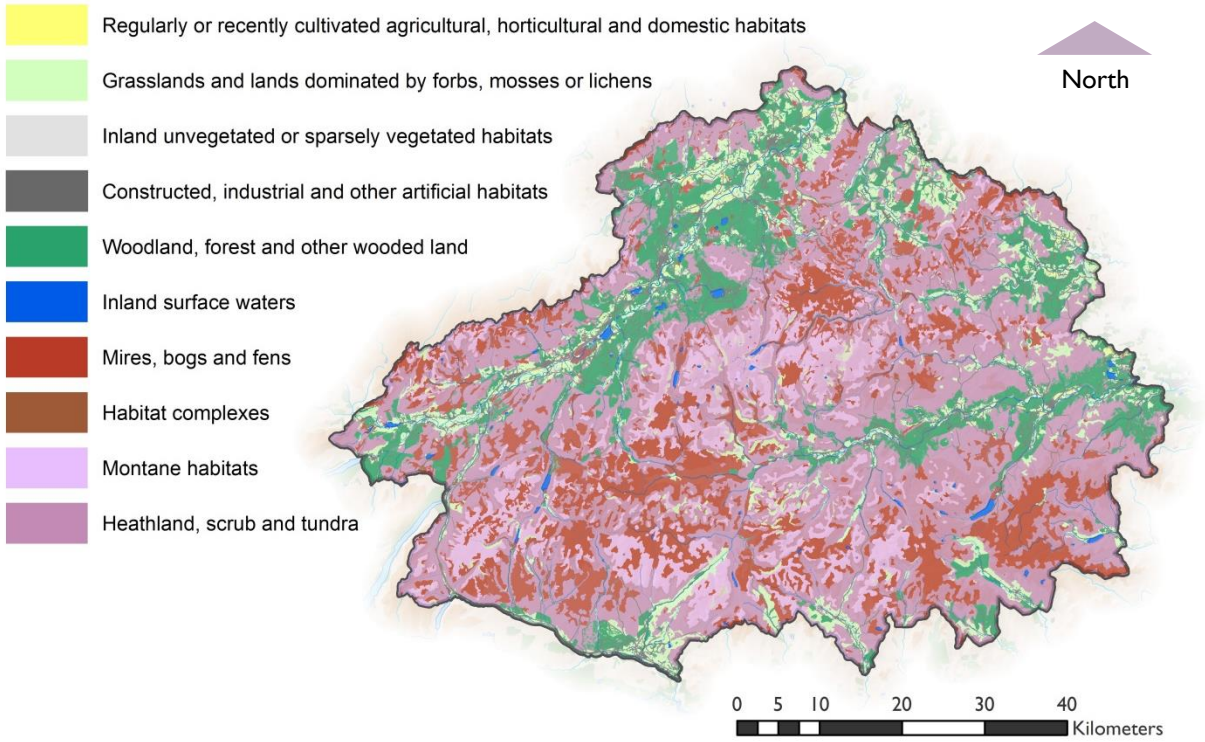

Figure 2 – EUNIS broad habitat types found in the Park

Woodland habitats

The woodlands of the Park are a distinctive feature of the landscape, ecology, economy and cultural heritage. Part of the reason for their importance and distinctiveness stems from the unusually high proportion of native tree species they contain (even commercial woodlands are predominantly Scots pine).

In the Cairngorms National Park, forest and woodland cover is just over 16% (figure 2), while in Scotland as a whole it is 18%. Nevertheless the Cairngorms forests and woodlands are disproportionately significant for rare flora and fauna. Almost all of the Caledonian forest resource of the National Park is internationally significant and protected through Special Areas of Conservation (SAC) designation.

Strathspey, Strath Avon, Glenlivet, Donside, Deeside and the Angus Glens combined contain an extensive, varied and predominantly native network of forest habitats. This is one of the most valuable ecological networks in Britain.

It is also one of the most widely recognised special qualities of the Cairngorms National Park. By providing this network and supporting many of the priority species identified in the CNAP, forests and woodlands make an important contribution to the wider biodiversity in the Park.

The Native Woodland Survey of Scotland (https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss) indicates that while the average proportion of native woodland across all Scottish local authority areas is around 22%, in the National Park the figure is 79%, making it the only area in Scotland where native woodlands form the majority of the woodland resource. As part of this, the Park contains the most extensive tracts of Caledonian forest in Britain, as well as some of the best examples in Scotland of bog woodland, montane willow scrub and stands of aspen. The proportions of the different types of tree cover in the Park are shown in table 6.

Table 6 – National Forest Inventory 2015, provisional estimates of forest cover in the Park (https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/)

	Total area (ha)	**Total area (%)**
Scots pine	36,900	60%
Sitka spruce	5,600	9%
Lodgepole pine	3,000	5%
Larches	2,600	4%
Other conifers	1,600	3%
All conifers	**49,800**	**81%**
Birch	10,200	16%
Other broadleaves	1,900	3%
All broadleaves	**12,100**	**19%**
All species	62,300	100%

Around 340 square km of the National Park's woodlands are identified as being ancient according to the Ancient Woodland Inventory (https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/history-scotlands-woodlands). Although not definitive due to historical mapping issues, the Ancient Woodland Inventory provides an indication of where ancient woodlands can be found in the Park (figure 3).

Ancient woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750. Around 160 square km of ancient woodlands have been identified as being semi-natural. Ancient woodland is of importance for biodiversity, due to its antiquity and lack of significant disturbance to the soil structure. Once destroyed, it cannot be recreated.

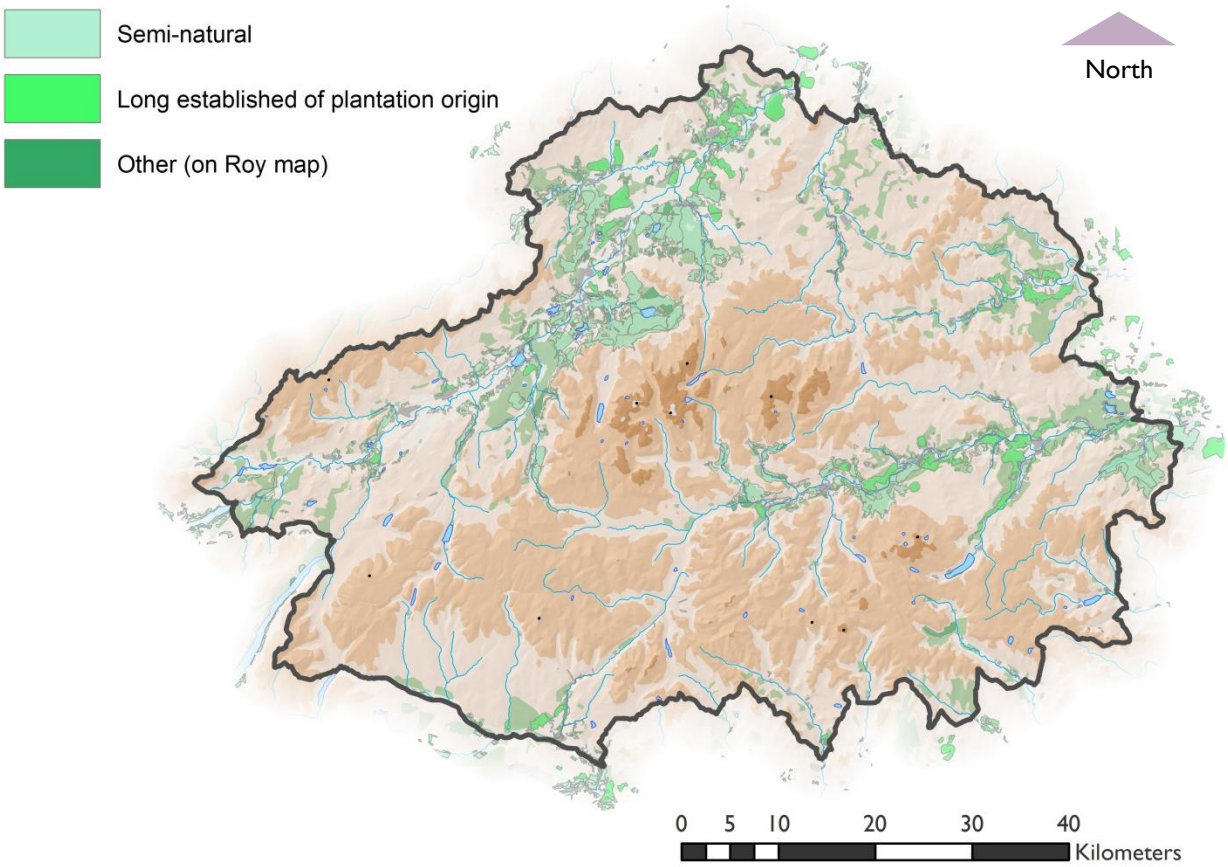

Figure 3 – Ancient Woodland Inventory woodlands in the Park

Over the last 25 years there has been an increased awareness of the multiple benefits that native woodland can deliver and action to restore and expand native woods. Between 2013 and 2015, 890 ha of new native woodland was created in the Park. Of the newly created woodland, around 704ha is adjacent to the existing resource, enhancing biodiversity (and other) value. However, lack of regeneration, poor structural diversity and grazing pressure has resulted in some woodlands suffering from reduced biodiversity value.

Improved connectivity through woodland expansion combined with good management is crucial to enhance habitat that supports species of high conservation value. The Cairngorms Forest Strategy 2018 (https://cairngorms.co.uk/working-together/authority/national-park-strategies/forest-strategy/) identifies significant potential for woodland expansion in the National Park. The Strategy seeks to guide expansion to appropriate locations that complement other land uses and ecological requirements.

Upland habitats

The Cairngorms are considered to be one of the most spectacular mountain areas in Britain and support a rich arctic montane flora, including upland heathland, peatland and montane scrub habitats (figure 2):

- Upland heathland habitat is dominated by stands of dwarf shrubs with a sparse mixture of other species such as grasses, sedges and herbs. The habitat is widespread and tends to be found on land that was previously woodland. In the Cairngorms, it is the most extensive habitat. This is mainly due to human activities such as drainage (for grouse and red deer hunting), and/or due to felling, burning and grazing, which prevents natural tree regeneration.

- Blanket bog is the second most extensive habitat. Over time blanket bog form peat soils, which are important carbon stores. However they are susceptible to erosion from human activity (such as tracks and ATV use) and trampling by deer.

- Montane scrub is found above the natural tree line. Dwarf willows, birches and juniper grow in a low twisted, wind-pruned form together with a variety of flowering plants, fungi and lichen. The best example is at Creag Fhialach above Inshriach, where a complex of juniper and birch scrub grows at 550- 650m. High altitude birches, willows and junipers would have been more common in the past. Centuries of burning and heavy grazing by livestock and deer have taken their toll on trees and shrubs. These pressures continue today.

Lowland habitats

The lowland farmland and grassland within the Park (figure 2) has been traditionally managed less intensively than the rest of the UK. There are small fragmented areas of lowland and upland hay meadows that are locally important for biodiversity (including waxcap fungi). Changes in land use and agricultural practices can present a threat to these habitats.

Freshwater and wetland habitats

Many of the rivers and lochs within the Park are internationally recognised as areas protected for nature conservation for the species they host, such as Atlantic salmon and freshwater pearl mussel, as well as the riparian habitats and variety of species they support. The Park contains part of eight river catchments, although two have only a very small portion within the Park (figure 4). The largest catchment is for the River Spey.

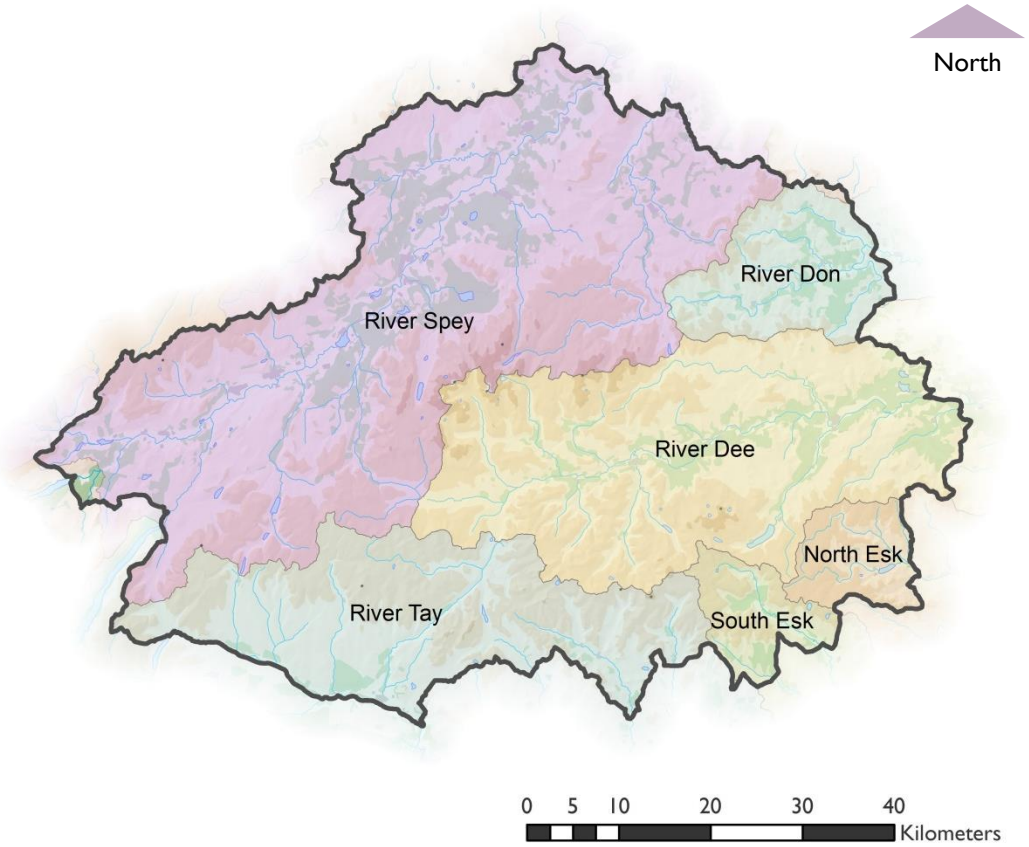

Figure 4 – river catchments in the Park

The latest data available from SEPA provides information on the ecological status of the 154 waterbodies analysed by SEPA in the Park. This shows that, since the environmental baseline assessment was carried out for the current NPPP in 2015, the number of waterbodies in high, good or moderate ecological status has increased by around 8% while the number in bad or poor status has increased by 1.3% (table 7).

Table 7 – waterbody status figures for waterbodies in the Park

Status	2015, number of waterbodies	2017, number of waterbodies	Percentage change
High	13	12	-0.65%
Good	80	87	4.55%
Moderate	26	32	3.90%
Poor	18	16	-1.30%
Bad	2	6	2.60%

A variety of pressures are affecting waterbodies within the Park. River basin management plans seek to set measures to address pressures. The main river catchments within the Park with catchment management plans are for the Spey and the Dee:

- The River Spey Catchment Management Plan 2016 (https://www.speyfisheryboard.com/wp-content/uploads/2016/12/SCI-2016-Catchment-Management-Plan.pdf) identifies barriers to fish migration as the biggest contributor to downgrading of ecological status, followed by flow and levels, water quality and unspecified ecological issues resulting in poor fish condition that are under investigation. Some natural flood management works have taken place on a tributary of the Spey near Carrbridge (https://www.nfm.scot/case-studies/allt-lorgy-river-dulnain-spey-catchment), which sought to re-establish natural processes and river form, while also enhancing habitats.

- The River Dee Catchment Management Plan 2007 (https://www.deepartnership.org/dee-cmp.asp) identifies a number of pressures similar to the Spey. Severe weather since 2007 has affected the river and surrounding land, through flooding and erosion. In some locations, natural flood management measures have been implemented (eg on the Braemar floodplain https://www.nfm.scot/case-studies/braemar-floodplain-restoration-river-dee) to try and counteract flooding, while also enhancing habitats.

- The South Esk Catchment Management Plan 2009 (http://theriversouthesk.org/) identifies pollution, morphological changes and abstraction as the main pressures. Work has taken place on various initiatives to address these issues, including restoring natural processes and river form, while also enhancing habitat (eg Rottal Burn restoration http://theriversouthesk.org/projects/rottal-burn-restoration/).

Alongside many of the watercourses and lochs within the Park are wetland habitats. A mosaic of wetland habitats with fens, bogs, woods, wet grassland and open water provides a home to a rich array of wildlife (figure 5).

Wetlands would have once been an extensive habitat within the Cairngorms National Park, but like wetlands across the UK, have suffered declines – RSPB report that wetlands have declined by 90% in the UK since Roman times (http://ww2.rspb.org.uk/our-work/rspb-news/news/283477-wetland-loss-threatens-wildlife-and-people-). Pollution, changes in land use and drainage affect both freshwater and wetland habitats.

In the National Park, the most extensive wetland habitats are found around Insh Marshes between Kingussie and Kincraig. The marshes are internationally important for wet woodland and fen habitats as well as the birds, fish, plants and invertebrates that they support. The marshes also function as an important flood plain.

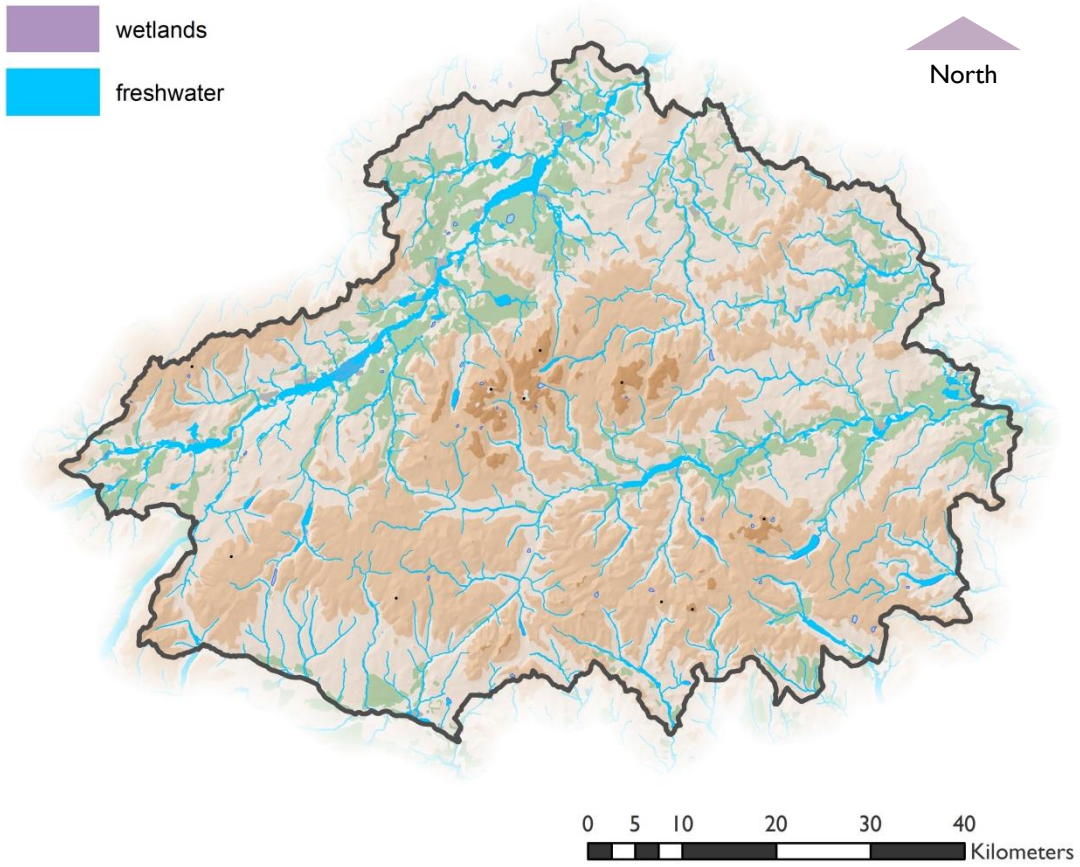

Figure 5 – lochs, rivers and wetland habitats within the Park

Wet grasslands also occur in the Park. They are often found in agricultural land, in low-lying areas of fields where crop yield and productivity is low. They are nonetheless important for invertebrates that provide a food source for wading birds, such as curlew.

Scottish wildcat

Scottish Natural Heritage (2017, https://www.nature.scot/sites/default/files/2017-07/A1697327%20-%20The%20Cairngorms%20Wildcat%20Project%20-%20final%20report.pdf) consider that the current range for wildcat consists of areas in mainland Scotland north of the Highland Boundary Fault. Knowledge about population figures is patchy, partly due to the elusive behaviour of wildcat and also because of interbreeding with domestic/feral cats resulting in hybrids that can be difficult to tell apart from pure bred wildcat. Camera trap surveys from 2010 to 2013 estimated a population of 115 to 314 individuals.

Scottish wildcats prefer to live on the woodland edge, in the margins of mountains and moorlands, with rough grazing. They generally avoid high mountain areas, exposed coasts and intensively farmed lowlands. The main threat to Scottish wildcats is genetic extinction due to hybridisation with feral cats, domestic cats and existing hybrids.

Other factors affecting wildcat include incidental harm from predator control activities, feline disease, road collisions and fragmentation or disturbance to habitats through development or changes in land management.

One area wholly within and one partially within the Park have been identified as priority areas (figure 6) for Scottish Wildcat Action, where wildcat have been recorded along with suitable habitat. Safeguarding this contributes to efforts to save the species from extinction in the wild.

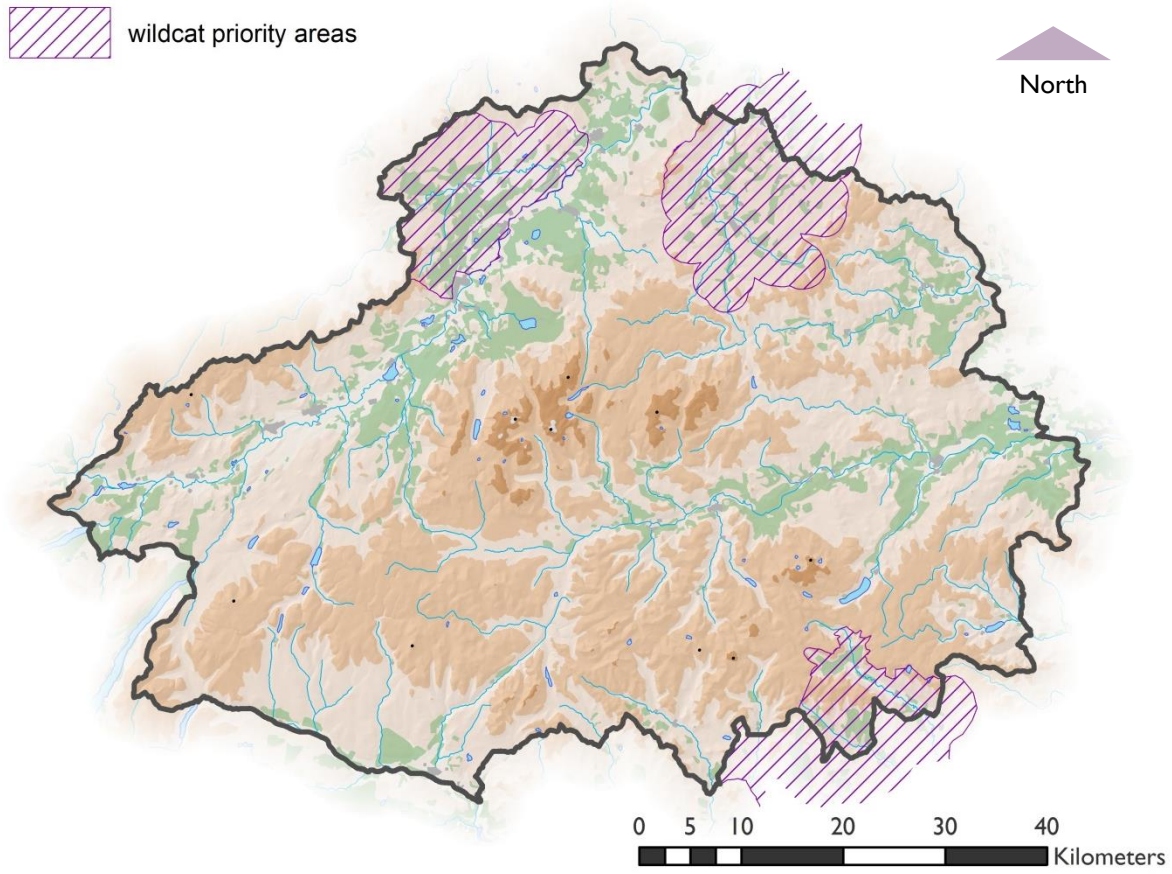

Figure 6 – wildcat priority areas in the Park

Mountain hare

The mountain hare are native to the Highlands, where they are found on heather moorland managed for grouse and montane uplands. Although some studies have found significant declines, population data is inconclusive. This is in part because standardised methodologies for population counts have only recently being published (SNH, 2018 https://www.nature.scot/snh-research-report-1022-developing-counting-methodology-mountain-hares-lepus-timidus-scotland).

However the factors affecting mountain hare numbers are better known. They include habitat damage/loss, legal hunting and culling, and climate change causing a shift in distribution of brown hare bringing them into competition with mountain hare. Being prey species, mountain hare are important for biodiversity, for example for wilcat and raptors.

Capercaillie

Capercaillie populations in Scotland have declined significantly from an estimated 20,000 birds in 1970 to 1,114 at the national winter survey in 2015/16. The Park holds a significant proportion of the national population – around 80%, the majority in Strathspey - mostly in areas protected for nature conservation but also in other forests that host metapopulations. Capercaillie also persist in Deeside (as well as several areas outwith the Park), but this population (and the others in Scotland) is more fragmented, numbers are lower and breeding success poorer. The Strathspey capercaillie population is crucial to the long-term survival of the species in the UK.

In addition to being a species identified for action in the CNAP, capercaillie are the focus of the Cairngorms Capercaillie Project (https://www.cairngormscapercaillie.scot/), which is delivering the recommendations of the Capercaillie Framework. (The Framework pulled together all the information relating to capercaillie distribution, the pressures they face and management measures.) Key recommendations to improve conservation for capercaillie include the introduction of landscape scale measures to target the main causes of disturbance, predation, collision with deer fences, unsympathetic woodland management, habitat loss and fragmentation.

Curlew

The National Park is one of the most important UK mainland sites for breeding wading birds due to its combination of wetlands, wet grasslands and low-intensity mixed farming. Nevertheless, curlew have seen their numbers dramatically reduce by over 62% between 1994 and 2017 (SNH, 2018 https://www.nature.scot/sites/default/files/2018-11/Official%20Statistics%20-%20Terrestrial%20Breeding%20Birds%202018.pdf).

The Strathspey Wetlands and Waders Initiative (SWWI) was set up to work with farmers and other landowners to safeguard wetland habitats and the future of the nationally important wader population in Badenoch and Strathspey - the largest of its kind in mainland Britain. It seeks to support farmers in delivering land management based conservation projects on agricultural land in Strathspey for the benefit of waders on a landscape conservation scale. This should benefit curlew.

The River Spey Catchment Management Plan 2016 includes objectives and actions to enhance riparian and wetland habitats that should also benefit curlew.

CNAP raptors: golden eagle, peregrine falcon and hen harrier

The most recently published report into wildlife crime in Scotland (Scottish Government, 2018. https://www.gov.scot/publications/wildlife-crime-scotland-annual-report-2017/pages/6/#Sect4.7) included population information on the three raptor species identified as priorities in the CNAP. The report does not break down figures to regional level, but provides a national overview with some regional commentary:

- For golden eagle, the most recent national survey was done in 2015 and found 508 territorial pairs. Of relevance to the National Park, eagles were found across the Highlands and Islands, primarily in upland habitats. The population had increased since the previous 2003 survey, however there was little change in central and eastern parts of the Highlands. Factors affecting the national population were identified as collisions with powerlines, winter starvation, disease, long term changes in land management (increased afforestation and intensive grazing) and illegal persecution.

- For hen harrier, the population in 2016 was estimated at 460 pairs, spread across Scotland. The breeding population was concentrated in Orkney, some west coast islands and Argyll mainland, but scarcer elsewhere. The population had decreased since the previous survey in 2010, with declines identified in the central and eastern Highlands. Factors affecting the national population were identified as winter starvation and disease, land use changes degrading habitat, predation by fox and illegal persecution.

- For peregrine falcon, the 2014 survey estimated there to be 516-538 pairs, spread across Scotland. Of relevance to the National Park, the species was found to be rare or scarce in parts of the north and west Highlands. The population had decreased since the previous 2002 survey, with the north and some upland areas. Factors affecting the national population were identified as collisions with power lines, winter starvation, disease, changes in prey availability, accumulation of contaminants from consumption of seabirds, potential interactions with increasing golden eagle populations and illegal persecution.

Freshwater pearl mussel

Freshwater pearl mussel are long-lived and have an unusual life cycle, with the initial stages reliant on fixing to the gills of salmonids, before detaching to become sedentary on the river bed. Because of this, they are particularly susceptible to changes in water quality and quantity, habitat damage/loss, as well as changes in their host species population.

Scotland represents a stronghold for freshwater pearl mussels in Europe. However, populations in Scotland are in serious decline. In 2015 a national survey found mussels in 115 watercourses, the majority being in the Highlands and Western Isles. Only 71 of these showed successful recruitment (breeding and settling of juvenile mussels in the river bed). In the remainder, only adult mussels were found.

Lack of recruitment is of concern, as populations will go extinct - since the previous national survey in 1999, freshwater pearl mussels became extinct in 11 rivers. Factors affecting the survival of fresh water pearl mussel include illegal pearl fishing, water pollution and habitat damage/loss (natural and man-made).

Other issues affecting biodiversity - deer

There are five species of deer found within the Cairngorms National Park. Their distribution is strongly influenced by human activity and land management:

- Red deer, a native species, have long been central to the cultural and natural heritage of the Highlands. They are common in most upland areas of the Park, although they can also be found in woodlands. Red deer influence habitats through grazing, for example by providing a source of dung and carrion that benefits other species, and creating areas for seedlings to take hold. However too much grazing and trampling by red deer can have negative impacts on important habitats and associated species. Upland habitats are particularly sensitive to over-grazing and trampling, which can lead to erosion.

- Roe deer, another native species, are also numerous in the Park. They are more commonly seen on lower ground in and around woodlands. They can cause damage to young trees and crops.

- Sika deer, a non-native species, are present in much smaller numbers. Populations of sika are found in the Monadhliath mountain range, with individuals also sometimes seen in other areas within the Park. Sika deer are able to mate with red deer, producing fertile hybrid offspring. This threatens the genetic distinctiveness of the red deer, so is of concern.

- Reindeer are found in the Park, mainly in the upland areas around Cairngorm and Cromdale hills. Once a native species, they were re-introduced in 1952, and form a unique semi-domestic herd managed by the Cairngorm Reindeer Centre. They are important mainly as a tourist attraction. Their numbers are controlled through selective breeding. In order to ensure effects of grazing by reindeer on fragile upland habitats is managed at a sustainable level, a research project is currently underway (https://www.inverness.uhi.ac.uk/news/cairngorm-reindeer-research-programme-enters-its-next-phase.html). In partnership with Cairngorm Reindeer Herd, the Cairngorms National Park Authority, the Royal Botanic Garden Edinburgh, Highlands and Islands Enterprise, the Royal Society for the Protection of Birds, Scottish Natural Heritage and Scottish Forestry, Inverness College UHI is leading on the Cairngorms Reindeer Research Programme. One aspect of the research is investigating the ecological role reindeer play in the Cairngorms, focussing on their movements, behaviour and diet.

- Fallow deer were introduced to Britain in the 11th century. There is a small population in the southern section of the Park in Perthshire.

Deer numbers need to be managed to minimise negative effects on habitats, as well as to ensure there is sufficient food and shelter to maintain the health and welfare of the deer.

Voluntary deer management groups bring together those managing the land, seeking to create a coordinated approach to managing deer numbers for conservation and economic interests across different land holdings. There are five deer management groups either partially or wholly within the Park (figure 7).

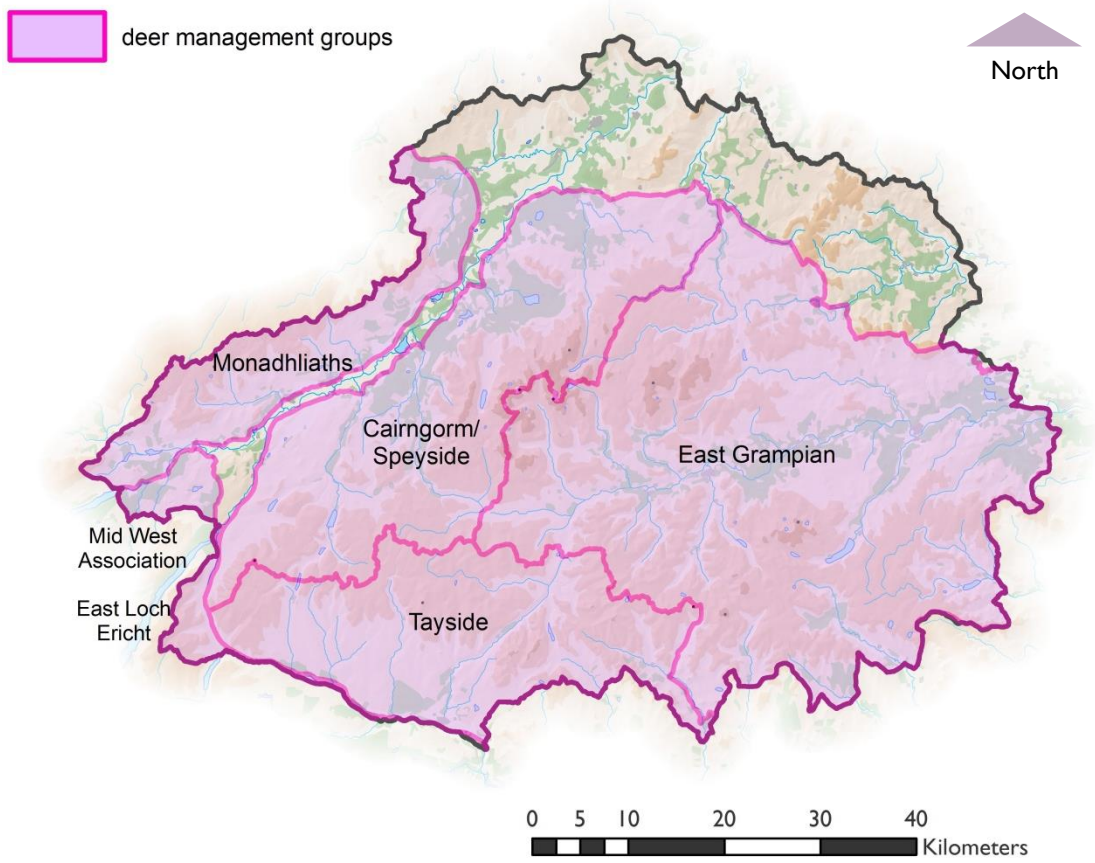

Figure 7– deer management group boundaries (boundaries from SNH)

However as deer are mobile species, work with neighbouring deer management groups is also important. The Cairngorms Deer Advisory Group provides a means of contact and communication between members from deer management groups and other parties involved in land management within and neighbouring the Park, to promote sustainable deer management within the Park.

Other issues affecting biodiversity –diseases, non-native species

Non-native species can kill, harbour disease, and/or compete with native species. A number have been recorded in the Park.

These include the plants Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegiazzanum*), Himalayan balsam (*Impatiens glandulifera*) and American Skunk Cabbage (*Lysichiton americanus*); mammals American mink (*Mustela vison*) and grey squirrel (*Sciurus carolinensis*); and fish, rudd (*Scardinius erythrophthalmus*), roach (*Rutilus rutilus*), tench (*Tinca tinca*), golden orfe (*Leuciscus idus*) and bream (*Abramis brama*).

Pathogens can cause death or reduce viability of populations of host species, which has implications ecosystems and biodiversity. In the Park, the main issues relate to tree health:

- Dothistroma (red band) needle blight is a fungus that causes the premature loss of pine needles, weakening the tree which may lead to premature death. The Cairngorms Forest Strategy promotes the removal of lodgepole pine stands from within Caledonian pine woods to reduce the threat of dothistroma.

- Ash die back or Chalara (*Hymenoecyphus fraxineus*) is a fungus causing dieback and mortality in ash trees. In 2016 it had been confirmed in the eastern and southern edges of the National Park.

- *Ramorum Phytophthora ramorum* is a fungal disease of larch. The highest incidence is in the south west of Scotland, but it has been recorded on the southern and eastern fringes of the National Park since 2015.

- *Phytophthora austrocedraeon* is a fungus that causes dieback and mortality in juniper where it attacks the roots and stems. It is thought to initially be transmitted to new areas through movement of sheep from infected areas, and is then spread through movement of infected soil and water. It has been found within the Park since 2014.

A number of management plans also identify the threat that non-native species, pests and diseases pose to the biodiversity of the Park. The River Spey Catchment Management Plan 2016 includes objectives and actions on non-native invasive species affecting freshwater and wetland habitats. The Cairngorms Forest Strategy also recognises the threat that pests, diseases and non-native species pose for the forests and woodlands in the Park.

Proposed SEA objectives

SEA main objective	Sub-objective
6a: Protect and enhance the biodiversity of the National Park.	Will there be an effect on the favourable condition of areas protected for nature conservation?
	Will there be an effect on protected species?
	Will there be an effect on Cairngorms Nature Action Plan habitats and plants?
	Will there be an effect on Cairngorms Nature Action Plan bird and mammal species?
	Will there be an effect on wider biodiversity (outwith protected areas and the habitats and species identified in the CNAP) in the National Park?
	Will there be an effect on deer management practices that seek to reduce environmental effects?
	Will there be an effect on land management practices that seek to avoid the introduction and spread of invasive non-native species and tree diseases?