Scottish Forestry
Coilltearachd na h-Alba

Scottish Forestry Biodiversity Duty Report 2018 - 2020

Scottish Forestry is the Scottish Government agency responsible for forestry policy, support and regulation

Is e Coilltearachd na h-Alba a' bhuidheann-ghnìomha aig Riaghaltas na h-Alba a tha an urra ri poileasaidh, taic agus riaghladh do choilltearachd

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Executive summary

Introductory information about Scottish Forestry

Scottish Forestry is the Scottish Government agency responsible for forestry policy, regulation, and advice. Scotland has 1.4 million hectares of forests and woodlands that we regulate, support and promote. This report sets out how Scottish Forestry have furthered the conservation of biodiversity during the period 2018 – 2020.

Our actions to protect biodiversity and connect people with nature

Between 1 April 2017 and 31 March 2020, the Forestry Grant Scheme in Scotland funded the creation of over 29,000 hectares of new woodland. This equates to 81% of all new planting in the UK during this period. More than 12,000 hectares, over 40%, of this new woodland was native woodland. Additionally over £4.5 million of grant support was provided to improve native woodland condition and protect a range of habitats and species through approved works such as removal of invasive species and protection from grazing mammals, and support vulnerable species such as capercaillie and black grouse.

Scottish Forestry has led or collaborated in a large number of partnership projects which help connect people and nature over the last three year period such as Scottish Forestry's flagship health programme Branching Out, an innovative referral programme to help people recover from long-term mental health problems. We are also working with the Forest Therapy Institute to develop a Forest Bathing programme to reconnect people with nature and forests.

Nature-based solutions, climate change and biodiversity

Scotland's Forestry Strategy 2019-2029 was published in 2019 with biodiversity outcomes an integral part of this. It sets out our long-term approach to expanding, protecting and enhancing Scotland's forests and woodlands, so that they deliver greater economic, social and environmental benefits to Scotland's people, now and in the future.

Through the UK Forestry Standard Scottish Forestry promotes the enhancement, conservation and restoration of semi-natural habitats and priority species. A lot of work has taken place in the last three years to build the evidence to support the UKFS and associated Practice Guides which help to implement the research on the ground to encourage adoption of nature-based solutions. Work is ongoing on two forthcoming Practice guides on adapting forests to climate change, and the role of trees in reducing flooding.

Scottish Forestry developed and manages the **Woodland Carbon Code** which helps generate an economic return from a nature-based solution. At the end of March 2020, 130 woodland creation projects in Scotland, mainly of broadleaves and native species, had been validated under the Code.

Public engagement and workforce development

Scottish Forestry recognises the importance of enabling personally motivated staff to tackle climate change, and lead behaviour change across Scottish Forestry. The Climate Change Project Team established this year enables staff to take positive action towards achieving net zero.

Research and monitoring

Scottish Forestry commissioned a wide range of research on biodiversity and climate change from our research agency Forest Research though our Science and Innovation Strategy (2015-2021), and also from a wide range of research organisations. Some specific examples include understanding the impacts of woodland creation on species, and using National Forest Inventory data to determine the ecological condition of all our woodland types.

Biodiversity highlights and challenges.

More than 12,000 hectares of new native woodland was established under the Forestry Grant Scheme between 1 April 2017 and 31 March 2020. This is over 40% of the 29,000 hectares of new woodland funded under the scheme and accounts for 81% of all new planting in Britain during this period.

The Forestry Grant Scheme also funded some £4.6 million of work during the same period to benefit a range of priority habitats and species, as defined in the Scottish Biodiversity Strategy, under its 'Habitat and Species' and 'Species Conservation' options. Work included deadwood provision, rhododendron eradication, scarification to encourage natural regeneration, fencing to exclude stock, deer and/or rabbits, control grey squirrels, and, control predators on capercaillie and black grouse.

Scottish Forestry collaborated with NatureScot and others in the development and publication of a set of 15 indicators of ecological condition collected during the National Forest Inventory (NFI) survey of woodlands. These Woodland Ecological Condition statistics were published and will allow monitoring of ecological condition across all woodland types. They show that there are more native woodlands in Scotland than previously reported, with most native woodlands exhibiting many characteristics of favourable ecological condition, and that our non-native woodlands are contributing to the overall ecological value of Scotland's wooded landscape.

Future challenges will include reducing the negative impacts of deer and invasive non-native species in native woodlands, and protecting all woodlands from tree pests and diseases.

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Purpose of this document

Under current legislation, The Nature Conservation (Scotland) Act 2004 places a statutory duty on all public bodies in Scotland to further the conservation of biodiversity when carrying out their responsibilities. They also need to provide a publicly available report every three years detailing the actions which they have taken to meet this duty.

The biodiversity duty goes beyond simply protecting and managing specific sites, habitats and species. It also requires the promotion of activities aimed at increasing the level of understanding and connection between people and the living environment. The duty ensures we consider our impacts on the environment and encourages staff, partners and customers, to engage with and understand how Scottish Forestry improves biodiversity through its day to day activities.

This report sets out how Scottish Forestry have furthered the conservation of biodiversity during the period 2018 – 2020.

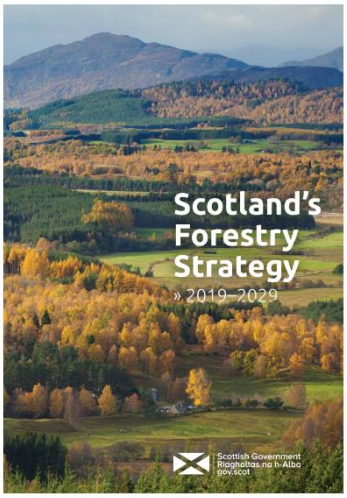
Section 1: Introductory information about Scottish Forestry

Scottish Forestry is the Scottish Government agency responsible for forestry policy, regulation, and advice. Scotland has 1.4 million hectares of forests and woodlands that we regulate, support and promote.

Our staff are split between our national office in Edinburgh and five Conservancy offices who lead the local delivery of our functions. We work with partners in the public, private and third sector to help deliver our vision that by 2070, Scotland will have more forests and woodlands, sustainably managed and better integrated with other land uses. These will provide a more resilient, adaptable resource, with greater natural capital value, that supports a strong economy, a thriving environment, and healthy and flourishing communities.

Scottish Forestry operates a management model comprising five functions: Standards, Evidence and Expertise; Policy; Operational Development; Operational Delivery, and Finance and Business Support. Each function is led by a Head who reports to the Chief Executive.

Scottish Forestry published Scotland's Forestry Strategy 2019-2029 in February 2019. The Strategy presents our 50-year vision for Scotland's forests and woodlands, and provides a 10-year framework for action. It sets out our long-term approach to expanding, protecting and enhancing Scotland's forests and woodlands, so that they deliver greater economic, social and environmental benefits to Scotland's people, now and in the future.



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Section 2: Our actions to protect biodiversity and connect people with nature

Grant funding

Between 1 April 2017 and 31 March 2020, the Forestry Grant Scheme in Scotland funded the creation of over 29,000 hectares of new woodland. This equates to 81% of all new planting in Britain during this period. More than 12,000 hectares, over 40%, of this new woodland was native woodland.

Through the Forestry Grant Scheme option 'Habitat and Species', Scottish Forestry funds work that will benefit a range of priority habitats and species, as defined in the Scottish Biodiversity Strategy. Between 2017 to 2019, £3.7 million was approved for work such as rhododendron eradication, deadwood provision, scarification to encourage natural regeneration, and fencing to exclude stock, deer and/or rabbits.

In addition, the Forestry Grant Scheme option 'Species Conservation' supported work to control grey squirrels, control predators of capercaillie and black grouse, and reduce the negative impacts of deer. Between 2017 to 2019, around £870,000 was approved for this work.

Partnership Projects

Scottish Forestry has led or collaborated in a large number of partnership projects over the last three year period with the specific aim of protecting biodiversity. Some examples are highlighted below.

- Expansion of the Opportunity and Constraints Mapping for Waders to further improve modelling outputs and their interpretation through a collaborative project with Cairngorms National Park. Project outputs will provide sensitivity maps to enable land owners considering woodland creation schemes to protect important bird habitat and provide new habitat for woodland specialist. In addition Scottish Forestry have been working collaboratively on a project to provide increased information on landowners on the location of ground nesting birds, particularly Curlew.

- Collaboration and co-chair of the Raptors and Forestry Joint Working Group. The group has developed knowledge and guidance to ensure raptor habitats are considered as part of woodland creation proposals.

- Support for Butterfly Conservation Scotland (BCS), to protect butterfly breeding habitat on potential grant aided forestry schemes. The Woodland Butterflies project is adapting butterfly survey data into electronic maps that will be available to woodland officers and land owners through our Land Information Search system.

- Support for the Scottish Raptor Monitoring Scheme has enabled the creation of an online facility to record raptor data for Scottish Forestry and others to use to locate raptors when developing woodland creation schemes and forest plans.

- Working on the South of Scotland Golden Eagle Project. This partnership project aims to supply boost the dwindling populations of Golden Eagles in the south of Scotland by translocating birds from the north. Since 2018, the South of Scotland Golden Eagle Project has successfully translocated four golden eagles from the Scottish Highlands to the south of Scotland. The four birds have all settled into their new habitats and are fending for themselves.

- Support for Saving Scotland's Red Squirrels. This joint initiative aims to co-ordinate red squirrel conservation work in Scotland. Saving Scotland's Red Squirrels is working with local communities to ensure red squirrels will always be a part of Scotland's special native wildlife. Together with partners, landowners, and a network of local groups and volunteers, they are focused on the areas where red squirrels are most under threat from the spread of the invasive grey squirrel.

- Development of the Woodland Herbivore Impact Assessment (WHIA) to improve deer management. Land managers can assess the impact that deer are having on a native woodland and take appropriate action.

- Supporting a number of trial sites to demonstrate how to introduce native woodland plants to native planting schemes. This followed a sharing good practice event held in May 2018, and will culminate in publication of best practice guidance in early 2021.

Scotland's Forestry Strategy 2019-2029

This Strategy sets out a strategic framework for action, including increasing the use of Scotland's forests and woodlands to improve people's health and well-being. There is increasing evidence of the benefits of connecting people with nature and natural environments

for health and well-being, both physical and mental health. Three major projects demonstrate this in action:

Scottish Forestry is working with the Forest Therapy Institute to develop a **Forest Bathing** programme to reconnect people with the therapeutic and healing benefits of forests. This sensory and "immersive experience" involves slow and relaxed walking in the forest, meditation and honing in on sights, smells, sounds and tastes in the restorative woodland environment. Forest bathing helps to enhance physical, psychological, and spiritual wellbeing; reduces stress, boosts the immune system; and encourages relaxation. Supporting activities include a certificated training course to establish a network of qualified Forest Bathing Guides in Scotland. Fifteen guides are to be trained in 2021, and a Pilot Forest Bathing nature connection programme will be delivered in 2021-22.

Progress towards maximising the potential of the environment as a health promoting resource is being made in Scotland through the **NHS Greenspace Demonstration Project. This is a** strategic collaboration which has brought together key players in the health and environment sectors – namely the Green Exercise Partnership – Nature Scot, Scottish Forestry, NHS National Services Scotland and Public Health Scotland. The partnership came together as a result of the growing evidence of public health benefits from engaging with the natural environment. This project aims to improve the quality and accessibility of NHS greenspace on a range of demonstration sites and to encourage more use of greenspace by patients, staff, visitors and members of the local community.

Scottish Forestry's flagship health programme **Branching Out,** is an innovative referral programme that brings together mental healthcare workers and outdoor staff to help people recover from long-term mental health problems. Through a 12-week programme, comprising of around three hours of woodland activities per week, Branching Out teaches participants about coping strategies to maintain positive mental health. It offers participants a chance to increase their self-confidence, explore new places and activities, and feel engaged with their community. The project demonstrates how outdoor and greenspace activities can be an effective supplementary therapy to tackling wellbeing and mental health.

Branching Out is delivered in 10 of Scotland's 14 health board areas, with 22 delivery partners, it is all supported by Scottish Forestry and over 400 people complete the course each year.

Communicating biodiversity

Media and Website

Scottish Forestry is proactive in pushing biodiversity messages through a range of external channels, mainly through news releases and various forms of social media eg blogs, Twitter

and most recently LinkedIn. Recent topics for promotion include raising awareness of deadwood in our forests, encouraging young people to learn about tree health, the benefits of community woodlands during COVID, green carbon credits, tree planting for farmers and urging stakeholders to check their trees for Phytophthora ramorum disease. Blogs have included celebrating World Bee Day, using nature to overcome mental health and building your own bee hotels.

When responding to media enquiries, the media team take the opportunity to push messages about multi-benefit forestry, including biodiversity and climate change.

The Scottish Forestry website includes a top level section entitled “Forests and the Environment”, which includes sub-sections specifically related to Biodiversity and sharing information about the Native woodlands, habitats and species, and conservation. The broader environment section also touches on many other facets of sustainability and biodiversity including regenerating, protecting and managing soils, water and landscapes, and building resilient forests.

Other related sections of the website include information about Sustainable Forestry (such as Tree Health, Pests and Diseases and Biosecurity), Forests and People (such as Woods for Learning, Woods for Health, Working with Communities).

In addition, the website also hosts all other Public Information resources as listed above, including: information about volunteering, outreach programmes and activity ideas (both schools and communities), promotion of events, all of our publications, blogs and news releases and links to our social media channels.

Forestry Development Programme

A number of Biodiversity projects were also supported through our Forestry Development Programme. This Programme aims to increase the contribution of forestry to all sectors of society through, enabling effective multi-sectoral partnerships, supporting initiative and innovation in forestry, and building a strong evidence base of forestry benefits and best practice. Projects that support delivery for biodiversity included:

- European Protected Species protection through guidance and delivery of SRDP grant to protect nesting and breeding habitat and encourage range expansion and population recovery (Black Grouse, Capercaillie and Beaver).
- Improving location and of design of woodland creation schemes to protect important habitat for Schedule 1 raptors, including Golden Eagle and Hen Harrier.
- Native Woodland Condition – by supporting Lowland Deer Network Scotland to help improve condition through reducing herbivore impacts.

- Support to a project in South Scotland showing the link between kestrels and their use of new planted forest land (both new schemes and restock sites). The contribution allowed purchase of tags which are enabling young birds to be tracked and their habitat use monitored. Restock sites form an important hunting habitat for kestrels.

Section 3: Mainstreaming biodiversity

Procurement

To ensure sustainable procurement, four key processes or tools must be adopted. The Scottish Public Procurement Prioritisation Tool focuses on potential to generate benefits such as financial savings, reduced carbon emissions and waste, and community benefits, whilst driving innovation.

The Sustainability Test provides a 'sense check' of anticipated outcomes for individual procurements. Life Cycle Impact Mapping assesses sustainable risks and opportunities during four key phases. The Scottish Flexible Framework enables the development of an action plan to determine and implement relevant actions that will embed good procurement practice and realise sustainability outcomes.

Governance and systems

Work is underway to develop our governance, information systems and partnerships so that we can address our impact as an organisation in relation to climate change. We will be gathering extensive information on our emissions, water/energy consumption, and waste/recycling. We will use this data to identify our priorities and activities to reduce our emissions and set carbon targets/savings. Our approach to reducing our environmental impact, alongside raising the awareness of staff and changing their behaviours, will be outlined in an Action Plan on Climate Change, Adaptation, and how we intend to reach Net Zero. We will be reporting our progress each year from 20/21 onwards in our Public Bodies Climate Duties Annual Report.

Covid-19 lockdown

We will be using the lessons from lockdown. Responding to Covid has propelled us forward, changing our ways of working. We now have consistent remote access to our systems across the whole organisation; we make use of electronic signatures and authorisations; we are improving our digital records management; and we are developing our video conferencing options. As home working and remote working are seen as a key levers in reducing emissions, we will be building on this in the future.

Learning from others

We are learning from others who are further down the line in terms of taking action on their journey to Net Zero. We have reached out to partners such as Zero Waste, NatureScot and Loch Lomond and the Trossachs National Park, to find out how they have approached the project management, governance and data collection process, and finding out about their innovations (such as integrating a statement on climate change as part of their homeworking policy).

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Section 4: Nature-based solutions, climate change and biodiversity

How our organisation integrates biodiversity into nature based solutions.

UK Forestry Standard

Scottish Forestry uses the UK Forestry Standard to promote the enhancement, conservation and restoration of semi-natural habitats and priority species. This is carried out through an ecosystem approach to managing natural resources to supply environmental, economic and social benefits within sustainable limits.

The UK Forestry Standard (UKFS) is the reference standard for sustainable forest management across the UK, and applies to all woodland, regardless of who owns or manages it. The standard ensures that international agreements and conventions on areas such as sustainable forest management, climate change, biodiversity, and the protection of water resources, are applied in the UK.

We have initiated a project to measure the level of impact implementation of the diversity guidelines in the UKFS has had on Scottish forests. Results will enable Scottish Forestry to better understand how to maximise future diversity in woodlands. It will inform the review of the next UKFS to make improvements in our advice, and provide information which we will share with landowners on the best ways of achieving biodiversity benefits in the woodlands they manage.

Adapting our forests for climate change

Scottish Forestry has been working with the other administrations in the UK and Forest Research on a UK Forestry Standard (UKFS) Practice Guide: **Adapting Forest and Woodland Management for the Changing Climate**. We will encourage forest owners and managers to make full use of this guidance and provide advice on how to adapt management and plan for the changing climate to protect woodlands and biodiversity. The guidance makes best use of the latest research and practice including an Adaptation Framework and case studies, and will be published in 2021.

Scottish Forestry has commissioned two major pieces of work on climate change adaptation. Together, the work will help inform both policy-makers and practitioners, through Climate Exchange, to **build woodland resilience** and help **mitigate and adapt to climate change**.

- The first is a series of case studies that help test and develop the Adaptation Implementation Framework set out in the Practice Guide and demonstrate how adaptation actions can be put into practice. This will be included within and alongside the UKFS adaptation Practice Guide described above.

- The second is a review of the implications of new evidence on drought risk to Scotland's forests – in terms of both new planting and ongoing management, and in terms of both productive and non-productive forests.

Scottish Forestry is developing more research and evidence on the role of nature-based solutions in delivering biodiversity, climate change and other societal objectives. With the other UK forestry authorities, it has led work to:

- Understand the full range of economic values from biodiversity, including whether and tangible values might be attached to these.
- Estimate the value of the forest estate (both public and private) in alleviating flooding for communities at risk from flooding.
- Apply a natural capital approach (using the Natural Capital Protocol for the first time in the UK) to a woodland creation scheme in Scotland.

Flood Management and water quality

Scottish Forestry is supporting the Scottish Environment Protection Agency (SEPA) in **Flood Risk Management Cycle 2**, by embarking on a review of geographic target areas for woodland creation for Natural Flood Management. The outputs will be used to inform future grant aid for woodland creation. As well as capturing carbon to help meet Net Zero, trees and woodlands are recognised as having an important contribution to make to Natural Flood Management.

In conjunction with Forest Research, SEPA and Forestry & Land Scotland, Scottish Forestry has been working to carry out a study to monitor the effect of land use change (grazed to woodland) on water quality. This will allow us to understand more about the ways in which woodlands and forests can contribute improvements to the water environment and help reduce diffuse pollution. Baseline data, collected prior to mixed woodland planting in selected sites in 2019, are being monitoring after planting and this has shown that soil infiltration rates are highest under trees, building on the evidence base for how woodland creation can help to reduce runoff and mitigate downstream flooding.

Outdoor Learning

Scottish Forestry works alongside Scottish Government agencies for environment, nature, forestry, and heritage to provide support for learning experiences, outdoors and in, and across the Curriculum for Excellence. Outdoor learning is simply learning, planned as part of a unit/topic etc, which goes outside the classroom and school doors. Those directly responsible for learning are often best placed to plan and deliver learning experiences outdoors. Our

partners offer educators support in a range of ways on the Outdoor Learning Directory, including support delivering a nature based approach to delivery of the curriculum outdoors, and through all levels 3-18 years.

Scottish Forestry has developed a Forest Kindergarten programme (SQA level 7) which enables participants to set up regular Forest Kindergarten sessions in a nearby woodland area and embed Forest Kindergarten in their Pre-Birth to Three, and Curriculum for Excellence practice. A Forest Kindergarten training course has been developed and is currently being delivered through teacher training colleges and universities. The course is based upon three variables - people, place and activities. Young children with Forest Kindergarten experience can progress naturally to other outdoor learning opportunities including Forest School programmes.

Diverse forests to enhance habitats

To maximise the biodiversity benefits delivered by all new woodlands, Scottish Forestry has given greater attention to ensuring all new woodlands were designed with the minimum required under UKFS. This includes all new schemes having a diverse composition, with a mixture of species being planted, and in all cases, including a minimum of 10% open space, managed for the conservation and enhancement of biodiversity, and a minimum of 5% native broadleaves trees or shrubs.

Management of existing woodlands must also follow UKFS guidelines, to protect and where possible enhance existing habitats and species. One example of the benefit to is shown by a recent study by Heriot Watt University which showed that where forests free from grey squirrels are managed to UKFS standards, species-specific forest management for red squirrel conservation would not be required.

Incorporating biodiversity outcomes into partnership initiatives.

Biodiversity outcomes are an integral part of Scotland's Forestry Strategy 2019-2029.

A key objective of the strategy is to improve the resilience of Scotland's forests and woodlands and increase their contribution to a healthy and high quality environment. The Strategy outlines six priority areas for action over the next 10 years, which form the framework for co-ordination of Government action and partnership working.

These priorities include two focused on biodiversity:

1. Expanding the area of forests and woodlands, recognising wide land-use objectives – which will in turn enhance Scotland's biodiversity; and

2. Enhancing the environmental benefits provided by forests and woodlands – in particular focusing on protecting and enhancing associated biodiversity.

Youth engagement

Before publishing the Strategy, Scottish Forestry conducted a public consultation to inform their work, and appointed Young Scot to lead on engaging young people aged 11 to 25. The consultation and youth engagement aimed to discover people's priorities in forest management, find out about their use of forests, and discover their visions for the future of Scottish forests and woodlands. Respondents were asked to select the "top five" most important benefits of forests today and in 50 years' time (2068). Just over three quarters rated today's most important benefit as *Providing habitats for wildlife,* and 81% rated the most important benefit in 50 years' time as *Helping to reduce climate change.* The Future of Forestry in Scotland: Co-design Report for Scottish Forestry was published in May 2019.

Young Scot will continue to work with Scottish Forestry to expand on how Scottish Forestry can collaborate with young people to co-create a suite of online content and campaign materials to share key messages of Scotland's Forestry Strategy; to share information about the forestry sector; and to communicate opportunities for young people to be involved in the sector.

Ecological indicators

Scottish Forestry collaborated in the development and publication of a set of indicators of ecological condition collected during the National Forest Inventory (NFI) survey woodlands. A total of 15 woodland ecological condition (WEC) indicators were devised, reviewed, and their interpretation agreed by a working group comprised of specialists from Scottish Forestry, Forestry England, Natural England, Nature Scot, Natural Resources Wales and the Welsh Government. The reports have been published as official statistics by the National Forest Inventory. This study into Woodland Ecological Condition is the largest and most in-depth assessment of the ecological condition of any habitat in Great Britain and will be used to help inform the review of the UK Forest Standard, and is an indicator under delivery of Scotland's Forestry Strategy.

These statistics show that there are more native woodlands in Scotland than previously reported, with most native woodlands exhibiting many characteristics of favourable ecological condition, and our non-native woodlands are contributing to the overall ecological value of Scotland's wooded landscape. Existing SRDP grant support is available to help managers improve the condition of their native woodlands. Future reports using the same indicators will help identify where opportunities for specific management may be targeted to improve ecological condition, and provision of biodiversity benefits, not only to our native woodlands but also commercial forests through targeted positive management.

Carbon and forests

Scottish Forestry manages the Woodland Carbon Code, set up to boost confidence in the domestic woodland carbon market and encourage additional private sector investment in creating new woodlands. At the end of March 2020, 130 woodland creation projects in Scotland had been validated under the Code. Projects validated under the Code have tended to be mixed broadleaved and native species, and have therefore brought additional biodiversity and other benefits for local communities.

Pollinators

The **Pollinator Strategy for Scotland 2017 – 2027** sets out Scotland's response to ensure that our pollinators instead survive and thrive into the future. Scottish Forestry contributed to the role of woodland expansion projects to ensure the correct choice of tree species (e.g. willow are very important early sources of pollen/nectar), protection of designated open habitats from planting, the design of integrated habitat within woodland creation schemes and improving the condition of native woodlands by reducing the impact of browsing animals. Less browse will lead to increased natural flora development in our woodlands.

Deer Management

Scottish Forestry is working with Scottish Government and other bodies on the response to the Deer Working Group (DWG) report. The DWG report indicates the broad spectrum of complex and interrelated issues encountered when planning and delivering land management activities, where deer management is an important and fundamental part of the overall process. We will be taking an integrated approach to delivery of any actions and working closely with partners.

Deadwood survey

Scottish Forestry funded and promoted a citizen science project delivered by the Trust for Conservation Volunteers in Scotland. The project, the dead good Deadwood Survey, encourages environmental community groups, schools and nature enthusiasts to join in a Scotland-wide survey to find out more about deadwood in Scotland. The survey has been the most popular event TCV has run, resulting in more people increasing their knowledge and understanding of the importance of deadwood.

Future Climate change related challenges for biodiversity

The main challenges will be to use nature and biodiversity as nature based solutions to help Scotland adapt to climate change. We need to ensure that our biodiversity itself can adapt to this change too.

Ecological biodiversity

One approach Scottish Forestry will use is to measure the ecological biodiversity benefits related to the implementation of the guidelines incorporated in the UKFS. The work will be able to demonstrate how recent woodland creation schemes have been complying with the guideline. In turn, this will enable Scottish Forestry to undertake an analysis of forest survey

data on increasing ecological diversity, to show if existing trends will enable greater diversity in woodlands, or to help develop guidance and advice on the best way of achieving this. Analysis of results will help Scottish Forestry inform the review of the next UKFS to help improve ecological diversity within all types of woodlands.

Landscape habitats for protected species

Scottish Forestry has indicated in Scotland's Forestry Strategy Implementation Plan 2020-2022 how we will support landscape scale habitat management to protect and expand the range of key iconic protected and priority woodland species (e.g. beaver, red squirrel, wildcat, capercaillie, pearl-bordered fritillary), and support projects focusing on improving the condition of priority and important native woodlands, including landscape scale initiatives.

Section 5: Public engagement and workforce development

Workforce skills and training

Good practice events

Scottish Forestry worked closely with NatureScot to plan, deliver and participate in a wide range of biodiversity specific Sharing Good Practice events. Over the last three years, Scottish Forestry has chaired or co-chaired a number of these events including the Reintroduction of Native Plants to Native Woodlands (2018), Promoting Opportunities of Forestry for Raptors (2018), and Forestry Crime – Awareness, Prevention and Enforcement (2019), and participated in others related to the Scottish Biodiversity Strategy or specific to EPS (eg Forest Operations and Wildcat).

Ground Nesting Birds

In 2019, Scottish Forestry collaborated to deliver a RSPB Scotland event on forestry and ground nesting bird habitat, to promote early evidence gathering, consultation and design planning to protect important habitat whilst delivering woodland creation to support the planting targets in the Climate Change Plan.

Water quality

Through the Forestry & Water Scotland initiative, Scottish Forestry helped to develop guidance materials for forestry contractors and site managers on how to minimise and mitigate the risk of diffuse pollution from forestry operations, with the aim of protecting aquatic habitats and species.

Since 2017, Forestry & Water Scotland has produced a popular pocket guide and vehicle sticker, and created online resources including three training videos on forestry operations and written guidance on protecting ground water dependent terrestrial ecosystems. The 2nd edition of the pocket guide was published in 2019 which expands on topics like preventing the spread of invasive non-native species.

Landscape design

Scottish Forestry delivered two-day classroom courses in forest landscape design for the forestry sector, including forestry students at the University of the Highlands and Islands Scottish School of Forestry, and at Aberdeen University. The course explains what is meant by 'landscape' and explores the principles of forest landscape design as outlined in the UK Forestry Standard landscape guidelines. A key principle that is explained and practiced by course delegates is 'diversity' in terms of what visual diversity and biodiversity can contribute towards a forest design proposal.

Staff participation in practical actions

Scottish Forestry recognised the importance of enabling staff, who feel personally motivated to tackle climate change, to become involved and lead behaviour change across Scottish Forestry and be part of our **Climate Change Project Team**.

We have initiated a project which will allow staff to take positive action and input towards achieving net zero climate Change Action Plan ambitions.

Section 6: Research and monitoring

Research activities

Scottish Forestry commission a wide range of research on biodiversity and climate change from our research agency Forest Research and from a wide range of research organisations. Some specific examples are listed below.

Scottish Forestry commissioned research on the creation of a Niches for Species model. The model, available through forest research, predicts the potential occurrence of woodland species from the Scottish Biodiversity List by linking species habitat requirements to spatial environmental data. It has many applications in forestry planning and management including its use in strategic targeting of conservation effort. It will compare the likely benefits to biodiversity of different woodland expansion scenarios, visualising the configuration of species-rich and species-poor woodland, and highlighting the likely presence of a particular woodland species at a site.

The importance of understanding the current state of woodland ecological condition, and how it changes over time, was recognised by Scottish Forestry through direct support for a long term collaborative project under National Forest Inventory and release in 2019 of UK statistics on '*National Forest Inventory woodland ecological condition in Great Britain*'. The work in Scotland will inform the targeting of resources and woodland management in support of biodiversity and ecological evidence. The statistical assessment of 15 indicators of woodland ecological condition and classification of woodland habitat into a condition status is the first survey of its type to compare woodland ecological condition across all woodland types in Scotland. The woodland ecological condition (WEC) scores compare all woodlands against a theoretical standard: an ancient semi-natural woodland (ASNW) in good condition. All supporting data has been published in spreadsheets containing all the data used in official reports, and is available online.

Impacts of woodland creation on species

Scottish Forestry directly supported strategic assessments of the potential impact of woodland creation in two pilot areas within the Scottish Borders as part of the Regional Strategic Woodland Creation Project. Three studies were commissioned and published on the Scottish Forestry web site.

The first is a Black Grouse evaluation report, which identifies the potential impacts and opportunities which new large-scale woodlands may have on other biodiversity interests, such as black grouse.

The second is a regional strategic woodland creation mapping methodology exploring the extent to which landscapes could accommodate new woodlands and forests, without significant change to their character or amenity. The provision of guidance, from a landscape and visual perspective, on the most appropriate locations, general extent and design criteria for potential forest and woodland creation is also a requirement set out in the brief.

The final paper reported the development of tools to recognise constraints for breeding birds associated with woodland expansion based on the development of a tool to model species-specific risks and opportunities based on detailed spatial knowledge of species distributions to enable new forest proposals to be more effectively targeted at areas where conservation conflicts would be minimised and net benefit could be maximised.

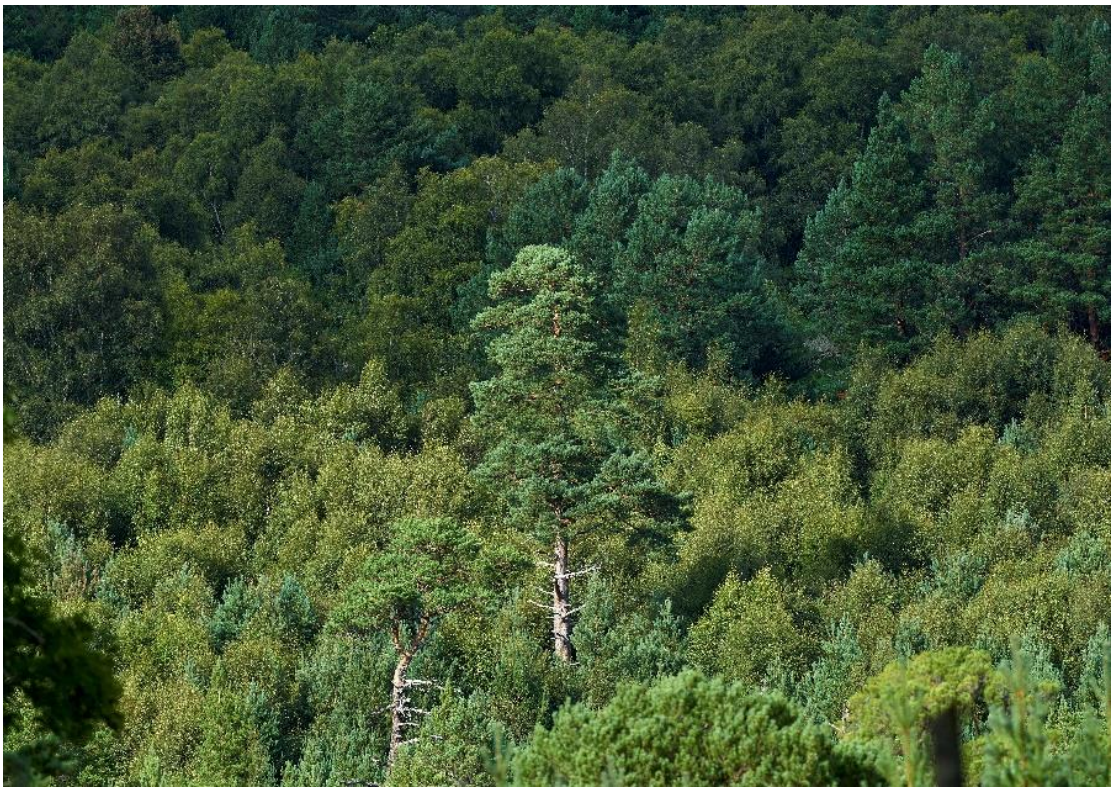
This combination of all three publications will allow us to understand how a species is likely to respond to changes in its environment. Scottish Forestry will promote their use to decision makers aiming to conserve species, as well as those wishing to make changes to existing landscapes for any purposes that have the potential to compete with conservation management.

Native Woodland Survey Scotland habitat data was re-classified to give all woodland a European nature information system (**EUNIS)** code to enable the data to be used in the Habitat Map of Scotland, published on Scotland's Environment web in 2018. Additionally, a native woodland condition indicator has been developed in collaboration with NatureScot to

indicate ecological health or condition in relation to biodiversity, no matter what the age or type of native woodland.

Assessing the impacts of our actions

Scottish Forestry is using the woodland ecological condition (WEC) scores to compare all woodlands against a theoretical standard: an ancient semi-natural woodland (ASNW) in good condition. Through surveys carried out by Forest Research and the National Forest Inventory (NFI), it will provide a record of the size, distribution and information on other key attributes of all forests and woodlands in Scotland. This monitoring of ecological condition is one of the Forestry Strategy Actions published under the Implementation Plan to be used as part of the future monitoring of the Strategy.



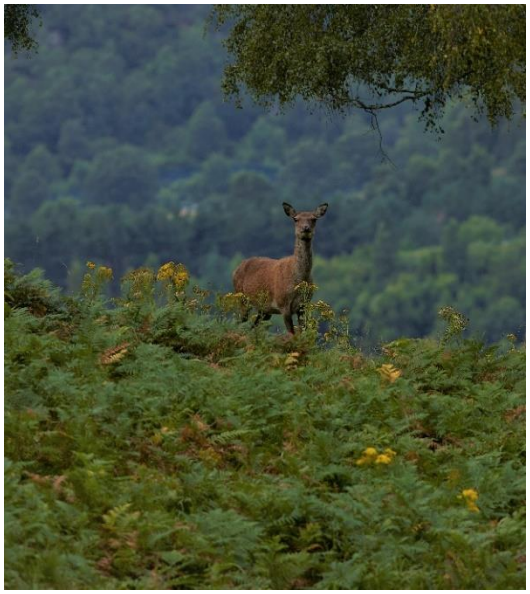
WEC also provides a measure of the delivery of UKFS biodiversity guidance, especially those elements of sustainable forest management which are necessary to promote and enhance important ecosystem services and biologically diverse forests and woodlands. Trends in WEC reports will be helpful to monitor delivery of international agreements and conventions on areas such as sustainable forest management, climate change, biodiversity and the protection of water resources are applied in the UK.

Scottish Forestry is a member of the Scottish Raptor Monitoring Scheme, and have financially supported the development of the online data storage and interrogation system which will be used to determine the potential impact of woodland creation and expansion on key raptor species. Further monitoring and evidence available through the scheme could support future work to develop guidance to protect key species during forest operations.

Regular monitoring of the ecological condition of Scotland's woodlands will include specific attention to the impacts herbivores may be having to the regenerative capacity of woodlands. Scottish Forestry has worked closely with Nature Scot to develop a technique to decide where woodland is on an ecological trajectory, and then allow land managers to develop a response or set of actions designed to move the trajectory towards an appropriate ecological end point.

Trends highlighted by our monitoring

Woodland condition trends including the Woodland Ecological Condition and Woodland Herbivore Impact assessments are updating the evidence of native woodland biodiversity health originally collected under the Native Woodland Survey of Scotland (2006-2010).



These along with partner publications indicate that herbivores are the most significant factor affecting woodland function and health, with woodland structure, composition and productivity all significantly impacted by grazing and browsing.

Scottish Forestry will work closely with land use partners to implement any actions arising from the Government response to the Deer Working Group recommendations.

Sharing data

National datasets on woodland habitat extent and condition, including the NWSS and NFI Woodland Ecological Condition, are available through the Scottish Forestry Open Data web page, SEWeb web portal and the Habitat Map of Scotland.

Section 7: Biodiversity highlights and challenges.

Main achievements.

Woodland habitat creation

During the last three year reporting period, Scottish Forestry figures indicate approximately 12,005 ha of new native woodland was created (April 2017 to April 2020). In the period April 2019-2020 approximately 4,529 ha of new native woodland was established, set against the Scottish Biodiversity Target to create 3,000 to 5,000 ha of new native woodland per year. This target is identified as a forestry commitment in Scotland's Forestry Strategy 2019–2029.

Additionally, in 2019-20 alone, over 11,000 hectares of new woodland was created which accounts for over 80 per cent of all UK new planting. Over 40% of Scotland's new planting was native woodland. Scotland continues to lead the way in the UK in delivering against climate change targets and making a significant contribution to increasing the biodiversity value of Scotland's diverse landscape.

Scottish Forestry use their role as forest regulator to ensure that all this additional woodland is delivered and managed to the internationally recognised standards of sustainable forest management, specified in the UKFS. This ensures all woodland contains a diverse composition, with a mixture of species (a maximum of 75% may be a single species). In all cases, a forest must include a minimum of 10% open space, managed for the conservation and enhancement of biodiversity, and a minimum of 5% native broadleaves trees or shrubs.

Forests and woodlands support a diverse range of species and are rich in biodiversity; to date, researchers at Stirling University have recorded over 1000 species associated with Scottish forests. These include 172 protected species, comprising some of Scotland's most charismatic and recognisable species, including the pine marten, twinflower, crested tit, Scottish Crossbill, black grouse, capercaillie, as well as an estimated 75% of the UK's red squirrel population.

Purifying our environment

Forests and woodlands also help to purify our water and air, reduce flood risks, improve slope and riverbank stability, and help to decontaminate soils on post-industrial sites. They are also a key part of Scotland's iconic landscapes, helping to frame views, adding colour and textures, and marking the passing of the seasons.

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Coilltearachd na h-Alba

Main challenges over the next three years

Deer management

In an environment where deer are considered both an asset and a risk, depending upon landowner objectives, forestry faces significant challenges delivering Scottish Government policies and targets. Deer generally have a negative impact on woodland expansion by their grazing habits. The actions of deer inhibit natural tree regeneration and suppress the development of native ground flora. Their future management will require close collaboration with a wide range of land use sectors and communities.

Although invasive non-native species (INNS) are acknowledged as one of the main contributors to biodiversity loss globally, controlling plant INNS, especially rhododendron, within woodlands is expensive, resource & skills dependant and requires lengthy periods of monitoring and follow-up management to be effective. Improved guidance on where to prioritise control efforts, and support of collaborative projects where INNS control is an objective (such as Scotland's Rainforest Alliance), will be required to balance numerous differing demands on limited grant availability.

Resilience of tree species

Some native tree species and habitats are at risk from a variety of pests and diseases, some are predicted to cause population declines as climate induced pressures increase. To protect these habitats, species specific guidance has been produced in consultation with specialist groups and stakeholders. Guidance available to land managers includes Juniper Management Guidelines and guidance on Planting juniper in Scotland, advice on how to protect our Native Pinewoods from Dothistroma needle blight, and guidance on the management of Native Ash in Scotland from the threat of Ash dieback.

Our TreeAlert system has been set up to gather information about the health of the nation's trees, woodlands and forests. This information will support important tree health monitoring and surveillance work, contribute to ongoing scientific research in this field and, ultimately, support efforts to protect the nation's trees. The system includes advice to guide the preparation and submissions of a report through a checklist of essential information that needs to be provided.