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Forestry Commission Scotland
Coimisean na Coilltearachd Alba

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Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Variety is the spice of life

Variety is the spice of life

Action for nature on Scotland's national forest estate

Forestry Commission Scotland Coimisean na Coilltearachd Alba

natural scotland
SCOTTISH GOVERNMENT

You won't believe what you can find in Scotland's forests today. A rich variety of wildlife that the first tree-planters could never have imagined. And why is it thriving? Because it's had more than just a little help. Read on… you'll be surprised!

Cha ghabh a chreidsinn na lorgas tu ann an coilltean na h-Alba an-diugh. Fìor measgachadh de fhiadh-bheatha air nach biodh a' chiad luchd-planntrais air smaoineachadh. Agus carson a tha e cho beairteach? A chionn 's gu bheil taic nach beag air a bhith ann. Lean ort a' leughadh… cuiridh e iongnadh ort!

Front cover: Scottish crossbill


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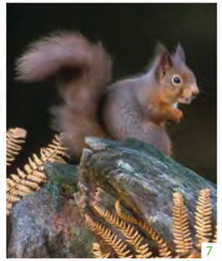
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Welcome / Fàilte

"This is a fantastic publication and I have really enjoyed having had the opportunity to witness some of the amazing wildlife on Scotland's national forest estate in person."

Stewart Stevenson
Minister for Environment and Climate Change

I am delighted to be able to share with you one of our passions – nurturing biodiversity. Many of our woodlands are still very young in ecological terms, having only been created in the last century. Our aim is to help them grow into diverse forests.

Although Scotland relies on introduced conifer species for the bulk of our timber production, we are integrating this into the management of native species and habitats – a mosaic of open and wooded habitats that makes the most of the productive and environmental potential of the land.

Forest Enterprise Scotland is the part of Forestry Commission Scotland that manages Scotland's national forest estate. Our commitment to biodiversity extends from remote mountain tops to the edges of lowland cities – but wherever our work takes us, it's a passion we love sharing with others. We are grateful to the many conservation partners that are helping us along the way, and are proud of our sustainable forestry certification – the UK Woodland Assurance Standard.

It's a work in progress, but I hope you enjoy these snapshots of the story so far!

Simon Hodge
Chief Executive, Forest Enterprise Scotland

Tha e na thoileachas dhomh a bhith a' toirt dhuibh sealladh air rud anns a bheil fìor ùidh againn – ag àrach bith-iomadachd. Tha mòran dhe na coilltean againn glè òg a rèir eag-eòlais, leis gur ann anns an linn mu dheireadh a chaidh an cruthachadh. Tha e na amas againn fàs gus am bi iad nan coilltean eugsamhlach.

Ged a tha Alba an urra ri gnèithean craobh-durcain a chaidh a thoirt a-steach dhan dùthaich airson mòr-chuid a' ghnìomhachais fhiodha againn, tha sinn a' ceangal sin ri bhith a' dìon is a' stiùireadh ghnèithean dualchasach agus àrainnean – snìomh de dh'àrainnean fosgailte is craobhach a tha a' dèanamh an fheum as fheàrr de thorrachas agus àrainneachd na talmhainn.

Tha Iomairt Coille na h-Alba na pàirt de Choimisean Coillteareachd na h-Alba a bhios a' stiùireadh coilltean na h-Alba. Tha ar dealasachd gu ruige bith-iomadachd cho farsaing ri slèibhtean iomallach gu oir nam bailtean air a' Ghalltachd – ach as bith càit an toir ar n-obair sinn, tha e a' còrdadh rinn a bhith a' sgaoileadh na h-ùidh a tha againne do dhaoine eile. Tha sinn gu mòr an comain nam buidhnean glèidhteachais com-pàirteachaidh a tha gar cuideachadh air an t-slighe, agus a tha moiteil à teisteanas coillteareachd seasmhach – fo sgeama Inbhe Ìre Coille na Rìoghachd Aonaichte.

Tha sinn fhathast ag obair air, ach tha mi an dòchas gun còrd na seallaidhean seo dhe na tha air tachairt gu ruige seo ruibh!

It's not just about trees

Biodiversity is the term given to the variety of all life on earth. Put simply, it refers to the rich diversity of plants, animals and habitats that make up the natural world.

Scotland is particularly rich in biodiversity - from the seas around us to the mountain tops. But nowhere is it more evident than in our forests and woodlands. In fact, wildlife is one of the things that people say they value most about woodlands when they visit.

Forestry Commission Scotland has a strong history of active engagement in conservation work. Today, we are working harder than ever before to promote biodiversity on the national forest estate and to help deliver the government's *Scottish Biodiversity Strategy*.

Throughout the country, we are enhancing or conserving important habitats, protecting threatened species, and placing good forest management at the heart of everything we do.

HABITATS

We manage some amazingly diverse habitats, from working conifer forests to globally important native woodland, and from rare mountain scrub to thriving rivers and lochs.

FIND OUT MORE:

WILDLIFE

Many of Scotland's most iconic species - and some you may never have heard of - are at home on the national forest estate, and facing a brighter future thanks to our efforts.

FIND OUT MORE:

FOREST MANAGEMENT

We promote sustainable forestry through best practice woodland design and forestry operations, and play a key role in the control of invasive species - all in line with the UK Woodland Assurance Standard.

FIND OUT MORE:

Main image: Pine marten

Talon show

A century after being declared extinct in the UK, goshawks are staging a remarkable recovery in some of Forestry Commission Scotland's most productive forests. Editor **Gordon Scott** goes in search of these striking birds of prey.

We're in one of Forestry Commission Scotland's biggest and most productive forests. Around us are stands of Scots pine, Sitka spruce and larch. In the distance, the sound of foresters at work.

Suddenly, a flash of silver-grey emerges from the trees and crosses the path in front of us, sweeping low past a log pile before disappearing into the woods on the other side. Alastair Young, Operations Manager for the Grampian Area allows himself a satisfied grin as if the event had been carefully choreographed. I wait for the falconer who, of course, never appears.

A century after becoming extinct in the wild in the UK, goshawks are now staging a remarkable recovery. Of the estimated 500 pairs in Britain, more than 20 per cent of these striking birds of prey live in Scotland. And nowhere are they more at home than in the productive conifer forest... right under the noses of Alastair and his fellow foresters.

"Fantastic birds," says Alastair, a passionate ornithologist and licensed bird ringer. "They may not be the most glamorous birds of prey in the eyes of the public. I mean, they're not peregrines and they're not Scottish icons like golden eagles, and they don't get the publicity of, say, red kites or sea eagles, but they still lift my heart whenever I see them."

Fortunately, Alastair's heart is positively soaring with sightings. Careful planning of work in the forest means that goshawks are not disturbed and are thriving in the national forest estate – proving that productive forestry and conservation can work happily hand in hand. "I guess some people find that surprising," adds Alastair. "There are many people who look at a dark, green forest and think nothing lives there. Even people who understand that it is a good habitat for some species see a clear-felled area and say, 'well, that's the end of that'. But you need to understand the lifestyle of the goshawk.

UKWAS

The United Kingdom Woodland Assurance Standard (UKWAS) promotes sustainable forestry through a certification standard that includes management planning, woodland design, forestry operations, community involvement, conservation and the enhancement of biodiversity.

The UKWAS Standard is approved by the international Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) schemes. Forestry Commission Scotland maintains UKWAS accreditation through hard work and dedication.

"By monitoring their activity we can plan our operations and make sure we're not felling in areas of known goshawk nest sites at sensitive times."

Alastair Young

"They have quite large territories and move around the forest, so by monitoring their activity we can plan our operations and make sure we're not felling in areas of known nest sites at sensitive times. Quite often, though, we find a nest when we're about to start, so we can't do that site either. It's all part of managing the forest. We accept that; it's standard practice."

That 'standard practice' involves Forestry Commission Scotland's environment and operations teams working together, often with local raptor groups, to survey, monitor and record nest sites. The data is incorporated into local work plans.

On a larger scale, areas of forest are retained as 'natural reserves' within the forest design plan. "Sometimes we're talking about areas as large as 20 hectares with no commercial intervention because we recognise them as being good nesting habitat for goshawks," adds Alastair. "If (and sometimes it's a big 'if') we can encourage them to stay in that area, we can work around them."

With a plentiful supply of food – pigeons and crows in particular – it all adds up to good news for the goshawk. Despite widely held (but unfounded) misgivings among many about the ecological value of the working forest, these magnificent raptors are actually faring better on Forestry Commission Scotland land, where they are safe from illegal persecution.

"Some of our biggest timber-producing forests currently support large numbers of goshawk."

The forest we're in is also home to other classic species of the conifer woodland, such as the Scottish crossbill, crested tit and capercaillie. All benefit from forest management plans that seek to encourage biodiversity by increasing the 'structural diversity' of the forest.

It's a term you hear a lot from Alastair and also from Philippa Murphy, Environment Lead for Moray and Aberdeenshire Forest District. She explains: "Basically, what we're talking about is creating a diversity of habitat and food supply from different ages of trees, different species, areas of heavy thinning or light thinning, open glades within the forest, feathered edges where it meets other habitats...

"Then there will be specific management actions for particular species. For example, protecting areas of older larch trees of the right size for goshawks, or retaining a degree of dead stumps for crested tits to nest in."

It's all in line with the *Scottish Forestry Strategy* and the *UK Forestry Standard* – vital documents and the framework for all good forest operations management. Sometimes, however, the evidence on the ground is the greatest motivation.

"Some of our biggest timber-producing forests currently support large numbers of goshawk and the largest populations of crossbill for many years," says Philippa. ■

In brief

The working conifer forest is a surprisingly productive habitat for a great number of woodland birds, including crested tit, Scottish crossbill, capercaillie and goshawk – a stunning bird of prey that is faring particularly well on Forestry Commission Scotland land, where environment and operations teams are working together to ensure its wellbeing.

Gu h-aithghearr

Tha a' choille ghiuthais obrachail na h-àrainn a tha gu h-iongantach torrach dha àireamh mhòr de dh'eòin choille, nam measg a' chailleachag chìreach, an cam-ghob Albannach, an capall-coille is a' ghlas-sheabhag – eun brèagha cobhartach a tha a' soirbheachadh gu math air talamh Coimisean Coilltearachd na h-Alba, far a bheil sgiobaidhean àrainneachd is obrach ag obair còmhla airson a dìon.

Specific management actions include protecting areas of older larch trees of the right size for goshawks.

Goshawk

About the size of a buzzard, the goshawk has a fierce expression with bright orange eyes and distinctive white eyebrows. Its broad wings and long tail enable it to hunt at high speed, weaving in and out of trees, and its long legs and talons can catch its prey in flight. It is best seen in spring when the smaller male puts on an impressive aerial display to attract his mate.

Crested tit

Crested tits are the squirrels of the bird world, storing moth larvae and pine seeds to help when food is scarce. They are not as colourful as some tits, but their bridled face pattern and 'punk' crest make them easy to distinguish. However, they are shy and flighty, so it's best to listen out for their cheerful trill, or 'zee, zee, zee' call.

Scottish crossbill

The Scottish crossbill isn't found anywhere else in the world and is the UK's only endemic bird species. It is extremely difficult to tell from other crossbills but is slightly larger with a distinctive 'Scottish' accent or call. Their curved mandibles cross over when their bills are closed (to the left or right, which means you can get 'left or right-handed' crossbills!), allowing them to pry open pine cones and extract the seeds.

Capercaillie

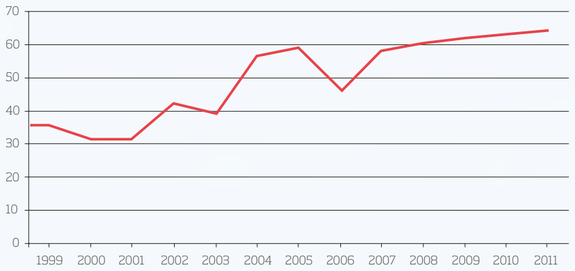
The capercaillie is about the size of a turkey and is one of the wonders of Scotland's forests. In spring, birds gather at 'leks' to display and sing their amazing songs. Declared extinct in Scotland in 1785, it was reintroduced at various times during the 19th and 20th centuries, when large populations developed in many of the new forests that were created. Over the last few decades, the population has declined again and fewer than 2,000 birds remain.

Boom or bust?

Capercaillie not out of the woods yet

Action taken by Forestry Commission Scotland has helped improve the fortunes of capercaillie in some places, but numbers remain low. The next ten years are crucial to their survival in Scotland, so FCS is continuing to work with partners, such as RSPB Scotland, to make our forests better places for capercaillie to live in. Although forests managed for timber production provide an excellent habitat for capercaillie, future success relies on a lot of planning by foresters to ensure work does not disturb the birds during their breeding season.

Male capercaillie numbers at leks on Forestry Commission Scotland land



Positive steer

Some of the UK's rarest (and most beautiful) butterflies are being pulled back from the brink – thanks to Forestry Commission Scotland and some heavyweight partners.

They go together like... well, like fish and bicycles. Nevertheless, two unlikely bedfellows are teaming up to create one of Scottish wildlife's most unusual success stories.

On a hillside near Fort William, numbers of the rare chequered skipper butterfly (above) are on the increase – thanks to a grazing herd of Highland cattle.

Declared extinct in England in 1976, the chequered skipper is now found in only a handful of places in Lochaber and north Argyll. And until a few years ago, it looked to be on the way out there too. However, it is now experiencing a comeback after Forestry Commission Scotland introduced cattle from its 100-strong Lochaber herd to key butterfly sites.

"I have to say that even just by looking at the site, numbers have definitely increased."

The bovine heavyweights graze the hillside and trample the bracken, benefiting the habitat and encouraging the food plants that the tiny chequered skippers prefer. Now, recent monitoring results at Lochaber's Allt Mhuic butterfly reserve on the north shore of Loch Arkaig suggest that numbers are on the increase.

Similar results are being recorded elsewhere, where Forestry Commission Scotland's conservation management appears to be paying off – not only for the chequered skipper (pictured left) but also for two more of Forestry Commission Scotland's key species, the pearl-bordered fritillary (pictured right) and the black grouse.

"The chequered skipper needs specific conditions to survive," said Kenneth Knott, Environment Lead for Forestry Commission Scotland in Lochaber Forest District (pictured above). "It depends almost exclusively on purple moor grass, the tall, tussocky grass you find on damp rough grazing."

Deer management

Four of Britain's six species of deer – roe, red, fallow and sika – roam freely on Forestry Commission Scotland land, contributing to biodiversity by grazing and browsing vegetation. This aids re-growth and natural regeneration, and limits the build-up of the old growth vegetation that can contribute to wildfires.

However, in the absence of natural predators such as wolf and lynx, deer numbers can quickly increase and cause damage to the natural environment through over-grazing. Deer also eat young trees and can disturb or destabilise soils.

Forestry Commission Scotland has therefore to take on the role of predator, culling just enough to maintain a good balance between deer populations and the natural resources.

"I care passionately about the welfare of deer, so my job is to cull only enough deer to ensure that grazing and browsing levels are low enough to allow the natural regeneration of plants such as heather, blaeberry, juniper, birch, rowan, alder and aspen," explained wildlife ranger Alex Fenton, who manages deer in the Great Trossachs Forest, where there is a landscape-scale Forestry Commission Scotland woodland creation project (in partnership with RSPB and The Woodland Trust) around Loch Katrine in the Loch Lomond and Trossachs National Park.

In working to achieve lower numbers of deer on the national forest estate, Forestry Commission Scotland also takes into account the deer management objectives of neighbours (such as sporting estates, who may require higher numbers of deer) and tries through collaboration to meet the needs of both types of land use.

"At least five species of butterfly on the site have shown improvements in numbers."

The butterflies lay their eggs on the purple moor grass and when the caterpillars emerge, they spend the summer in shelters made from rolled grass blades. feeding on the grass before hibernating over winter at the base of the tussocks. After pupating for about six weeks, the adult butterflies emerge from mid-May and into June. Even then, the purple moor grass is important as males use the tall spikes as perches from which to launch attacks and defend their territories.

"Encouraging purple moor grass by reducing the bracken cover is important," added Kenneth. "But purple moor grass can take over too, and it's important to control it so it doesn't shade out the nectar plants that the butterflies need, like bugle, bluebells and orchids. It's a fine balance."

Just how fine a balance was demonstrated as recently as 2009, when teams from Forestry Commission Scotland, Forest Research and Butterfly Conservation thought their six-year battle to boost numbers at Allt Mhuic had failed. "We'd put cattle out to graze on the hill because it seemed the obvious, natural way to control the habitat without the use of machinery or chemicals," explained Kenneth. "But we weren't seeing the improvement in butterfly numbers we hoped. Then it struck us: the cattle were eating the grass... and the caterpillars.

"So, the decision was taken to change the cattle's regime on the lower slopes from summer to winter grazing, and early indications suggest that the change is benefiting butterfly numbers."

Enthusiasts now regularly travel hundreds of miles to see the skipper, which can only be spotted within 25 miles of Fort William. " It's too early to say exactly because it's notoriously difficult to get totally accurate figures for butterflies, which are affected by so many different factors, but I have to say that even just by looking at the site, numbers have definitely increased," said Kenneth.

Costs of the programme are partially offset by the sale of high-quality beef from cattle that are certified as 'naturally raised'. It's proving so successful that it has also been extended to the appropriately named Cow Hill above Fort William and to the slopes of Loch Sheil.

"The cattle are doing a great job and are thriving on the area, proving that the traditional Highland breed was the right choice for our conservation work on this site," added Kenneth. "As the season has progressed at least five species of butterfly on the site have shown improvements in numbers, which is excellent news." ■

Costs have been offset by the sale of high-quality beef.

Habitat for black grouse

Careful management of cattle grazing on the national forest estate is also benefiting the black grouse, one of the key woodland species identified for action under the *Scottish Forestry Strategy*.

Not only are the cattle creating areas of short grass – perfect for the males to lek (display) in the breeding season – they are encouraging a wider variety of vegetation for the adult grouse to feed on. It's also believed that cattle grazing improves the structural diversity of the vegetation and allows easier foraging by chicks.

Fringe benefits

Forestry Commission Scotland is leading the way to restore the ecologically important woodland fringe. Good news for wildlife. Bad news if you like straight lines.

Rob Soutar has a dream... a vision. Granted, it's a little unusual but it's also bold and imaginative, and precisely what you'd expect from someone who lives life on the edge.

The 'edge' in question, of course, is the forest edge or 'woodland fringe' - that zone of scattered trees and shrubs that once linked forests with open mountaintops but has now almost vanished from Scotland, along with much of the special wildlife that lived there.

Woodland fringe

The woodland edge is an important niche habitat that links sheltered woodland with the open upland habitats above. An integral part of the broader landscape, it's important for a range of bird species, including black grouse.

Open habitats above the treeline

Above the treeline, the woodland edge feathers into important open habitats, including upland heathland. Montane heath can be found further up on the windswept summit ridges of our higher hills.

Forest zone

In the forest zone, conifer and broadleaf trees grow straight and tall, providing habitats and shelter for many iconic woodland species.

Rob, Forest District Manager for Forestry Commission Scotland in Galloway, is a champion of this once forgotten habitat, and one of the driving forces in the mission to restore the fringe and, in turn, further enrich the biodiversity on the national forest estate. "My dream," he said, "would be to see a bird called the bluethroat living as a common species amongst drifts of new woolly willow habitat in the mountains."

Both are extremely rare in Scotland and while the woolly willow is on Scottish National Heritage's species action list, no one expects the bluethroat to make more than an occasional fleeting visit any time soon. Nevertheless, they are typical of the types of species that could thrive in the right conditions.

"You don't need to look very far to see other countries where this habitat is common," added Rob. "In Norway, the woodland fringe is rich in birds and invertebrates that are actually very rare here. I can't see any reason why we can't aspire to restore it in Scotland.

"Even in the limited areas where we have been working, we've had records of a staggering 59 bird species using this new habitat. Black grouse, in particular, seem to prefer the woodland edge, where they have cover from predators but also open areas for feeding and displaying."

In nature, the tree cover gradually thins at altitude, creating a 'feathered' woodland fringe zone, then shorter montane scrub and eventually windswept montane heath. However, human management in the past has removed this 'fuzzy' edge, through the grazing of deer or sheep to the fenced forest edge, or by fire. Meanwhile, the hard edges of conifer forests of the past have done little to endear themselves to wildlife – or the public.

"It's magical but the awful truth is that natural treeline woodland is still a rare habitat in Scotland."

"We're aiming to remove these straight edges," added Rob. "The 'feathered' edge is not just for biodiversity, it's also to improve the landscape visually, helping to blend the forest into the surrounding land more naturally."

Montane willow scrub and tall herb vegetation (far left) hosts uncommon species such as downy willow. The habitat can be very beautiful, showcasing the spectacular autumn colour of alpine bearberry (left), for example.

"The woodland fringe is rich in birds and invertebrates."

Despite Rob's enthusiasm, and the commitment of Forestry Commission Scotland and its partners, the restoration of scattered edge treeline woodland is not likely to be an overnight process. In Galloway, some of the dwarf juniper shrubs on the small pockets of natural treeline woodland that survive are more than 100 years old. Other signature species of the habitat, such as rowan, birch, aspen, many willow species and juniper, will also take many years to establish.

Elsewhere, there are few good examples. At Glenmore in the Cairngorms, stunted and contorted Scots pine – at their climatic limit – create a magical, almost fairytale-like landscape. Rob agreed: "It's magical but the awful truth is that it is still a rare habitat in Scotland, with only a few fragments left.

"The problems that eliminated most of our treeline woodland – frequent fires accompanied by overgrazing by sheep and deer – are still an issue and the robust woodland edge habitats that will survive, come what may, are perhaps decades away.

"That said, there a lot of people working very hard to bring it back.

"Forestry Commission districts in Scotland with upland areas are establishing native type woodland fringes along the treeline, and we have to highlight the really, really important work of the charitable trusts... organisations like the Borders Forest Trust and the Cree Valley Community Woodlands Trust, who are working with us in Galloway. Or Trees for Life, who are working with various forest districts in the Highlands."

Together, Rob is confident they'll make a difference. Is that the call of a bluethroat we hear in the distance? ■

Open habitats

Ask people to describe the work of Forestry Commission Scotland and most will focus on trees. However, about a third of the national forest estate is actually open ground, providing a diverse range of habitats for a huge number of species.

Much of this open ground exists because it was too high or too wet to plant. Today, however, Forestry Commission Scotland is deliberately leaving areas of open ground in newly created forests to create important open habitats. Elsewhere, conservation grazing and scrub control is being carried out, while work is ongoing to restore some of our rarest habitats, including lowland raised bog, blanket bog and coastal sand dunes.

"Since 2005, we have been undertaking an ambitious survey to record and describe the wealth of open ground habitats on the national forest estate," said Forestry Commission Scotland's Open Habitats Ecologist, Jeff Waddell.

"Many good examples of internationally important blanket bog habitat have been found and some of the more unusual habitats include lochs with crystal clear water rich in calcium, meadows rich in wildflowers, and fens with floating vegetation that hosts some of our rarest plant species. We're now using the results of the survey to prioritise our conservation management."

On the crest of a wave

Forestry Commission Scotland is working with local teenagers to improve opportunities for a frequently misunderstood species. The great crested newts haven't done too badly either.

David Kjaer (rspb-images.com)

Just 10 miles from Glasgow city centre, Forestry Commission Scotland is working with local volunteers to improve the habitat for one of nature's most elusive creatures. The 3 million people who live within a half hour's drive probably don't know it's there; nor do the Celtic footballers who train just down the road.

Great crested newts seldom make the headlines, which is possibly how they like it. While capercaillies and red squirrels are the undisputed pin-ups of nature conservancy in Scotland's forests, these threatened amphibians are thriving in glorious anonymity in Lennox Forest near Kirkintilloch.

Unheralded but not forgotten. And thanks to an imaginative joint initiative between Forestry Commission Scotland and East Dunbartonshire Council's Positive Alternatives project, the great crested newt now has a legion of new fans.

Positive Alternatives aims to encourage young people into employment, education or training and away from the risks of addictions and antisocial behaviour. That journey took them into the forest once a week.

"I think it's fair to say that the guys were a bit disappointed when they realised they weren't going out to work with chain saws, axes and all the gear," said project development officer Tam James, "but they soon began to appreciate that what they were doing, even on a small scale, was having big benefits to wildlife. In the end, they got quite excited about the newts."

Up to 12 young people between the ages of 15 and 17 worked with Forestry Commission Scotland ranger Andy Gallacher to improve the habitat for newts, which were discovered in ponds created by old mine-workings.

The conifer canopy was thinned and the ground between breeding ponds improved to help the newts (which spend most of their lives out of the water) move about and forage. The group also built hibernation piles for the newts, and have been involved in ongoing projects to clear invasive rhododendron. They even go pond-dipping to learn more about pond ecology!

The outcome has been good for the newts, but also for the volunteers. "Of the 12 people who were involved, most have gone on to college or got into an industry training scheme," added Tam. "They all also received John Muir Awards for their conservation work." ■

Great crested newt

The great crested newt is the largest of Britain's three newt species and grows to a length of about 15 cm. It is rare across Europe but has several strongholds in Scotland, including the Central Belt.

Though it spends most of its life on land, hunting small prey in damp grassland or leaf litter, adult great crested newts must return to small ponds to breed. Forestry Commission Scotland not only plays an active role in conservation by improving habitats, it also tailors forest work plans to ensure minimum disturbance to the amphibians, particularly in the breeding season.

Going native

Away from the working forest, Forestry Commission Scotland also manages native woodland of global importance. Ecologist **Richard Thompson** introduces us to a 'truly magical place'.

Forestry Commission Scotland manages some remarkable native woodland. Some of the richest can be found in the West Highlands and Argyll and include oak, ash, birch, hazel and pinewoods. Some areas are well known and celebrated; others are fragmented and hidden away. Together, they make up a habitat of international importance.

This 'Atlantic woodland' is found on Scotland's steep and rocky west coast – where the climate is wettest. Indeed, the habitat is often referred to as Britain's temperate rainforest. On the forest floor, mosses and liverworts coat fallen trees and rocks with a carpet of verdant green. Trees are covered in lichens, fungi and ferns while a complex diversity of humidity-dependant plants cling to the sides of racing streams.

"It is a truly magical place," says Forestry Commission Scotland's Native Woodlands Ecologist, Richard Thompson, enthusiastically. "To fully appreciate it, you need to get in among the trees, down into the ravines and alongside the burns and waterfalls. It's extremely humid."

If that doesn't sound like a fun day out, then the midges and the ticks are unlikely to swing the balance in its favour. However, the rewards, insists Richard, are well worth it as the humidity, along with the high rainfall and variety of soils, makes Scotland's Atlantic woodlands vitally important for more than 500 species of mosses, ferns, lichens and liverworts.

Some of the lichens and bryophytes (mosses and liverworts) have their 'world headquarters' in the area, while a handful are found nowhere else but in the West Highlands. Getting up close and personal with some of the species with an eyeglass has been compared to diving in the Great Barrier Reef.

"I think that's quite right," agrees Richard. "As you look more closely, some of the fruiting bodies on the lichens are almost like coral. They're quite exquisite. This juxtaposition between texture and colour and shape is the thing that is most fascinating. You go from hard, grey, scaly lichens with bright orange 'jam tart' fruits to tiny magenta-coloured liverworts and bright green, soft and luxuriant mosses – all intimately mixed. It is quite spectacular.

"Some lichens smell like TCP or rotting fish; one is the colour of sun-bleached parchment, turning a beautiful apple green when wet; one liverwort smells of mothballs; the yellow speckle-belly lichen is beautiful, especially when lit up by a shaft of sunlight; while there's a rare fungus on hazel that looks like orange rubber gloves... It's all stunning and most people driving past will have no idea it's there."

In addition to these so-called 'lower plants', Atlantic woodland is also home to spring flowers such as bluebells, wood anemone and primroses. Migrant songbirds, such as redstart, tree pipit and wood warbler are found, along with buzzards, great spotted woodpeckers and jays, while the woodland provides a perfect habitat for deer and badger, as well as the rarer red squirrel, wild cat and pine marten. Insects include wood ants and, in sheltered glades, the threatened chequered skipper butterfly.

"It's very difficult to get across how important the west coast of Scotland is for these species. Scotland is very important for lichen and bryophytes. In terms of what's really special from a biodiversity point of view on a global scale, the Atlantic woodlands are very, very high up."

Richard Thompson

Then, of course, there are the trees. In Sunart, Knapdale, Argyll Forest Park and throughout the north-west, they are the living monuments to this unique habitat. However, before unfair comparisons are made with the more 'artificial' looking working conifers elsewhere, it's worth considering that the Atlantic woodlands, too, have been shaped by man.

Oak has always been used as an important source of timber and fuel. From the 1700s to the 1800s, many Atlantic woods provided a vital supply of charcoal for industrial iron production, while the bark was stripped and used to produce tannin for processing leather.

During periods of agricultural and forestry expansion, Atlantic woods were often cleared and grazed, or planted with faster growing conifer tree species. Rhododendrons and other invasive shrubs colonised extensive areas, largely from the gardens of Victorian properties.

All this changed in the 1980s and 1990s, when Forestry Commission Scotland recognised the importance of native woodland. Led by Alan Stevenson, the then northern Forest Management and Environment officer, staff toured the country, searching for areas of surviving native woodland, both pinewood and broadleaf. They identified areas with potential and drew up pioneering conservation plans for restoration and natural regeneration. Some of the most significant sites were recognised as sites of special scientific interest (SSSI) – Forestry Commission Scotland also created several key Caledonian Forest Reserves.

Conifers have been thinned or felled, invasive shrubs cleared, and grazing by deer and livestock reduced. "The main thing that we're trying to do is look after the remnants of ancient woodland and veteran trees that survive within the later forest that grew up around them," says Richard. "It's about developing a native woodland 'mosaic' around these remnants to make the environment right for them to expand.

"But it's not just a case of clear-felling the forest. Where we can, we'd rather open up the remnants gradually, so there aren't sudden changes to humidity, and the epiphytes – the plants that live on the trees – have time to respond and become more robust."

Richard adds: "Ideally, we want the native woodlands to regenerate in these areas naturally, but if there aren't enough good seed sources, we'll consider planting native trees. Sometimes it's a half-way house. We may get abundant regeneration of birch, rowan or grey willow but enrich the gaps – if the soils are right – by planting oak, ash, hazel or pine.

"Long term, there should be a lot more connectivity between existing ancient woodland sites and new areas so that the fragments that remain are embedded in a really good network of native woodland. As a result, the landscape will be even more diverse... and even more beautiful." ■

In brief

Forestry Commission Scotland manages native woodland of global significance, particularly in the West Highlands and Argyll, where the so-called 'temperate rainforest' is home not only to ancient oak, ash, birch, hazel and Scots Pine, but also to rare and fascinating mosses and liverworts, lichens, fungi and ferns.

Gu h-aithghearr

Tha Coimisean Coilltearachd na h-Alba a' stiùireadh choilltean dùthchasach aig a bheil cudromachd chruinneil, gu sònraichte air Taobh Siar na Gàidhealtachd is ann an Earra-Ghàidheal, far a bheil 'a' choille-uisge eadar-mheadhanach', na dachaigh dha darach, uinnseann, beithe, calltainn is giuthas àrsaidh ach cuideachd dha còinneach, cuilse aibheach, crotal, fungas is raineach a tha tearc is iongantach.

Key species


1


2


3

Yellow speckle belly (1)
Lobaria amplissima (2)
Wilson's filmy fern (3)
Prickly featherwort
Spotty featherwort
Deceptive featherwort
Hazel gloves
Lungwort
Map and script lichens
Brown scalewort
Toothed pouncewort

Acquired by Forestry Commission Scotland in 1951, Glen Affric is one of the most beautiful and iconic places in Scotland, and is a National Nature Reserve. It contains one of the country's largest ancient Caledonian pinewoods as well as lochs, moorland and mountains.

One great view

28 species of mammal, 117 birds, 272 trees and plants

(Not forgetting... 6 reptiles and amphibians... 30 butterflies and dragonflies... 101 moths... 140 other invertebrates... 224 fungi and molds... 390 lichens, mosses and liverworts)*

* 'Improving the ecological content of Forest Plans: A Case Study from Glen Affric' (2008), Forest Research

Tales from the riverbank

Careful management of water course habitats is essential for a wide range of invertebrates, birds and mammals. Just ask Ratty.

Forestry Commission Scotland is committed to preserving and restoring a range of specialist habitats. Some of them are quite surprising. So if you thought the riparian zone was from *Lord of the Rings*, think again.

Just as open space forms a significant proportion of Forestry Commission land in Scotland, so too does water. The many lochs, ponds, rivers and streams are essential for life, and the narrow strip of vegetation adjoining these water courses – the 'riparian zone' – is an extremely important habitat.

Riparian vegetation can directly influence the condition of the aquatic ecosystem by providing shade and leaf litter, and by stabilising river banks. It can also provide a very effective filter and buffer, helping to trap sediment and absorb nutrients, thereby reducing the delivery of pollutants to water courses.

The riparian zone also has the potential to be ecologically rich, with the establishment of native trees, shrubs and ground flora enhancing the biodiversity of woodland, and providing different habitats for invertebrates, birds and mammals. In Scotland, this wasn't always the case. In working forests, conifers were historically planted close to the water's edge – causing deep shade and, in some cases, controversially, acidification of the water.

"After a period of important habitat being lost, we are now opening up the burn-sides and holding the treeline well back from the water's edge to allow the more natural riparian vegetation to recover," said Katy Freeman, Habitats Manager in Cowal & Trossachs Forest District.

Although many species have benefited from the restoration of habitat – from tiny invertebrates, salmon and trout to otters and raptors – few can match the success story of the water vole. Virtually wiped out by loss of habitat and escaped populations of American mink, the water vole was reintroduced in an ambitious project near Aberfoyle.

Katy took up the story. "Habitat restoration was our priority, and the water vole reintroduction project only came about after a lot of work over a number of years to recreate these habitats," she explained. "There have been many benefits for a wide range of species but the water vole certainly makes a good flagship species for this kind of work."

The project is a joint initiative between Forestry Commission Scotland, Scottish Natural Heritage and the Royal Zoological Society of Scotland. Since it started in 2008, more than 1000 water voles have been released into Loch Ard forest from a captive breeding programme.

"Going hand in hand with the habitat work for water voles goes the mink control," added Katy. "In our area, we've used up to 60 mink traps that are monitored carefully. Last year we caught just one. We're now pretty much mink free, which has benefits for water birds like little grebe and moorhen too.

"But it's the water voles that are now doing really well. Animals are breeding in all the areas where we released them, and they are also colonising new areas of habitat. It's been a tremendous success; perhaps more successful than anyone imagined it would be." ■

Freshwater pearl mussel

Scotland is a global stronghold for the freshwater pearl mussel – one of the most critically endangered molluscs on the planet. More than half of the world's viable populations live in Scottish rivers but even here numbers have been declining.

Sedimentation of water courses, nutrient enrichment, pollution and even pearl fishing have all combined to threaten a key species that may nevertheless be one of the least known.

"Freshwater pearl mussels are not very productive but can live to be 100 years old, so they have plenty of time to produce offspring!" said Kenny Kortland, Forestry Commission Scotland Species Ecologist. "Healthy populations have a good spread of ages, with about 20% of the mussels being younger than 20 years old. However, too many of our populations comprise only the older, bigger mussels because hardly any young mussels are surviving these days in some rivers.

"We follow the *UK Forestry Standard 'Forests and Water'* guidelines for all our work – and on certain sites we take additional precautions. The riparian zone is crucial. We're looking to plant a variety of native woodland that not only provides important dappled shade but encourages a diverse habitat of trees, shrubs and ground flora that form a very effective filter to help trap sediment."

5 things you didn't know about water voles

- Despite his name, 'Ratty' in Kenneth Graham's *Wind in the Willows* was actually a water vole.
- The UK population of water voles has declined by more than 90% since the 1950s.
- Water voles feed on more than 200 different types of reeds, grasses, rushes, herbs, shrubs and trees.
- The average lifespan of a water vole is just five months – they're eaten by mink, stoats, weasels, foxes, badgers, buzzards, kestrels, owls, large fish...
- Water voles make their homes in burrows in the river bank – often with secret underwater entrances.

Island record

Andy Walker is Forestry Commission Scotland's man on Arran. The island has been described as 'Scotland in miniature' and, for 13 years, Andy's been protecting habitat and wildlife that's as varied as his average working week.

Monday

Spent the morning with our forest ranger, Bob, who's helping me out with an unusual project to create nesting sites for barn owls. They're fantastic birds of prey but their population all over, not just on Arran, has really suffered over the years because the old cottages and barns where they nested have either fallen down or been turned into modern homes. We've sourced some 45 gallon plastic drums, cut holes in them and put them up in trees. We try and put at least one barrel at each new clear-fell site – maybe one about every kilometre.

The results have been fantastic with about 50% occupied in the breeding season. Obviously, it's great to see more of these owls about the place, but it's also good for forestry because the barn owls eat voles, which can cause a lot of damage to young seedlings.

"...the great thing about working on Arran is that I get to do the 'whole' job."

Tuesday

A whole day out with the rhododendron clearance squads. Rhoddies are a major problem on Arran. They love our warm, wet climate – but they're an absolute menace, crowding out everything else. The target's to totally eradicate them from the national forest estate across Scotland, and we've got our work cut out on Arran.

I've had 15 people full-time on the job for the last six months, and I've probably spent £0.5m over the last three years. In some places it's just like a jungle. And because rhododendrons spread their seed so widely, we're having to go back at least two or three times.

The results have been impressive, though. There's one wee glen where we had to get in and cut the rhododendron down by hand that's been totally opened up. It's wonderful. We can now see the waterfall that we used to only hear, and some big grand trees that we knew were there can now be seen in all their glory. It's very satisfying.

Wednesday

A day at my desk. Planning. That might sound dull but the great thing about working on Arran is that I get to do the 'whole' job. I create the forest design plan, fell it, replant it and get to see if it's been a success or not. We have soil maps for some areas, so I can try and match different species to the conditions. But there's nothing to beat getting out there and testing the soil and surveying the land.

Commercial forestry is important on Arran and managing the felling takes up a huge chunk of my time. Annual output from the island is about 45,000 tonnes, which goes out on approximately 60 barge loads, or on lorries on the ferry – two to three trips per day on average.

Thursday

The population of hen harrier on Arran is of international importance. Around 5% of the UK breeding population is on the island (more than the whole of England) and, in order to protect the birds' habitat, 11,000 hectares of Arran's moors are designated as an SPA (special protection area). Knowing where the nest sites are is an important part of my job. If there's likely to be felling nearby, I have to plan operations carefully to ensure minimum disturbance.

A lot of the moorland is Forestry Commission Scotland land, so we have to manage that too. That's where I was today – planning the heather burn. There's a long history of heather burning on Arran, mainly to break up the hill as protection against wildfires or to encourage new growth to draw in the deer. These days, we burn the heather to help the hen harriers. Just small areas at a time – a fraction of what used to be burned – to create a mosaic of different types of habitat.

We need to keep the vole population up for the birds, so we burn areas to encourage new growth for food, and leave others for cover and nest sites. But the harriers are ground-nesting too, so we need to make sure we leave deep heather for them within their territories. There's a lot to think about but it's paying off. Hen harriers are one of the UK's most persecuted raptors, but they're thriving on Arran.

"Knowing where the nest sites are is an important part of my job."

Friday

The sun came out after a miserable morning, so I took my lunch down to one of our newly planted areas. In recent years we started planting a mixture of native broadleaves and Scots pine and put the focus on recreation and wildlife.

We still plant conifers, along with the oak and ash, but the emphasis now is on timber quality in the hope that long-term we can harvest timber for local processing and use by craftspeople here on the island. The knock-on effect is that we're creating woodland that not only is more pleasing to look at, it's also more biodiverse for wildlife – particularly red squirrels, which thrive here without the greys for competition.

Saturday

Bumped into Arran High School's Head of Science at the local shop – and told him I was still okay for the talk he's asked me to give his Second Year class next week. I'm glad it's not in the classroom – much more fun to be outside! I recently took kids from Lochranza Primary School on a woodland trail to identify different varieties of trees and look for wildlife.

I also get involved in work experience for the older ones. They spend a week with me and the ranger, and do a whole variety of jobs... Everything from repairing footpaths and fences to monitoring the hen harriers and checking for red squirrel dreys. It's a real eye opener for them.

Sunday

I guess because Arran's an island, I'm well known as the local forester. We sell trees at Christmas and supply all the village halls – it's great for Forestry Commission Scotland to be seen as part of the community. So I suppose I'm never really off duty. But when I'm not at work, I like to spend time with my bees – I've been a beekeeper for 25 years. ■

"The knock-on effect is that we're creating woodland that not only is more pleasing to look at, it's also more biodiverse for wildlife."

Red alert

The much-loved red squirrel is one of Scotland's iconic woodland species. But the red faces an uncertain future as the introduced American grey squirrel expands its range.

Not only is the larger grey squirrel pushing its native cousin out of broadleaved and mixed woodland, it also carries the squirrelpox virus - harmless to greys but fatal to reds. Today, there are only 120,000 red squirrels left in Scotland (75% of the UK population) but there is hope for the future, as good forest design and operational practice can make a real difference.

What is Forestry Commission Scotland doing to help?

Planning forest operations to avoid damage to red squirrel dreys

Designing forest structure and composition to suit red squirrels and discourage greys

Helping to establish 19 red squirrel 'strongholds' across Scotland, covering 400 square miles

Improving habitats by thinning to promote coning or removing large-seeded broadleaves where they provide colonisation routes for greys

Controlling grey squirrels in pox areas

"There's no doubt that the spread of invasive non-native species represents one of the greatest challenges facing us today."

Alien invasion

Scotland is under attack from aliens. But it's not little green men that we should be worried about. Today's biggest menace comes from the little green shoots of nature's most pernicious pests.

Invasive non-native species, including Japanese knotweed and rhododendron, spell big trouble for our native plants and animals.

Along with introduced mammals, they're threatening some of Scotland's most iconic species and sensitive habitats, such as the red squirrel and Atlantic woodland.

Expensive to control, alien species can damage forests and crops, or even cause flooding. In fact, it's estimated that the total cost for Scotland could be as much as £200 million each year. That's before considering the effect some species, such as the poisonous giant hogweed, can have on people's lives... or the way they can affect how we enjoy the countryside.

"There's no doubt that the spread of invasive non-native species represents one of the greatest challenges facing us today," said Forestry Commission Scotland's Native Woodlands Ecologist, Richard Thompson.

"*Rhododendron ponticum*, in particular, is one of Scotland's most unwelcome invasive species. It really is nasty stuff. It suffocates habitats, hampers biodiversity and – if that wasn't bad enough – it harbours tree-killing *phytophthora* species. Getting rid of it would be a real shot in the arm for Scotland's environment and its forests."

Work to clear rhododendron has already started throughout Scotland, in Cowal & Trossachs, Lochaber, West Argyll, North Highland and Galloway Forest Districts. A comprehensive planning and recording system has been established to help coordinate the effort.

Of course, the very nature of invasive species means that Forestry Commission Scotland cannot work in isolation. Fences are no barrier to seeds, roots or agile mammals, so the support of neighbouring landowners and other bodies is vital.

It's a problem that Dr Julia Garritt knows only too well. As Forestry Commission Scotland's policy adviser on species, soils and water, she is at the forefront of efforts

> "We look for everyone to be responsible to help us win this battle."

to involve all landowners in the earthly battle against the aliens. "New legislation from the Scottish Government means that all landowners have a responsibility to ensure that non-native species don't spread from their land, whether it's plants or animals," she explained.

"Forestry Commission Scotland is the lead body for woodlands, so not only do we need to help other people meet the requirements of the legislation, we also need to ensure good practice on the national forest estate. Part of that, of course, is to control non-native species on our own land, so there are some very rigorous ways of controlling them."

For the squeamish who might find the concept of 'rigorous control' difficult to stomach, Julia points to the alternatives from her own work in red squirrel conservation. "Grey squirrels are particularly nasty," she said. They carry a disease called squirrelpox, which doesn't affect the greys but kills red squirrels in a gruesome way within a week."

While species control is at the sharp end of Forestry Commission Scotland's work, Julia's work is of a more strategic nature. "It's such a high priority for us because not only is it just wrong to let non-native species run rampant, they are hugely damaging for the timber crop and the native woodlands," she said.

"Most of my work is spent working with government and with neighbours, and with agencies like Transport Scotland and Network Rail – we all have a responsibility to help stop the spread. But we're also producing a guide to controlling invasive non-natives in woodland for the public and for private landowners."

With a battleground covering millions of hectares and finite resources available for the fight, efforts are focused on areas where they can have the biggest impact. Water courses, for example, are heavily targeted. Mink use rivers to travel and hunt, grey squirrels favour the native broadleaves that are often found on river banks, while rhododendron thrives in the rich, damp soil. However, visitors can also spread seed and pollen on their clothing or their cars, while grey squirrels have been known to piggy-back on farm vehicles or logging trucks.

"We look for everyone to be responsible to help us win this battle," added Julia in a quietly Churchillian sort of way, "and keep the woodlands as they should be for the future." ■

In brief

One of the greatest challenges facing Forestry Commission Scotland is the control of the non-native species – including rhododendron, Japanese knotweed, American mink and grey squirrel – that are threatening some of Scotland's most iconic species and sensitive habitats, such as the red squirrel and Atlantic woodland.

Gu h-aithghearr

'S e aon de na dùbhlain as motha a tha fa chomhair Coimisean Coilltearachd na h-Alba a bhith a' cumail smachd air gnèithean neo-dhùthchasach – nam measg an ròs-chraobh, glùineach Sheapanach, minc agus an fheòrag ghlas – a tha a' cur cuid de na gnèithean Albannach as samhlachail agus na h-àrainnean as cugallaiche ann an cunnart, leithid an fheòrag ruadh agus fearann-coilltean a' Chuain Siar.

American mink

Since the 1930s, many mink have escaped or been released from fur farms, and become widespread across Scotland. They are thought to be a significant factor in the crash of the water vole population, and the huge losses suffered by several seabird colonies on Scottish islands.

Grey squirrel

The grey squirrel was first introduced during the late 1800s and is now widespread across southern and central Scotland. It's best known for causing the catastrophic decline of the red squirrel by competing for food and passing on disease.

Japanese knotweed

Japanese knotweed was originally introduced to Scotland as an ornamental plant in the mid-19th century but today it causes massive ecological problems by out-competing native plants. It can regenerate from pieces of plant the size of a fingernail and its rhizome system can be up to 3 metres deep, making it extremely difficult to eradicate. It is easily spread to new sites through illegal fly-tipping or the careless disposal of infected soil.

Rhododendron

Rhododendron ponticum was introduced into Britain in the mid-1700s as an ornamental plant. Since then it has become widespread, particularly in woodland habitats on the west coast of Scotland. Although the flowers give a colourful display, it creates dense thickets and shades out native plants and will eventually come to dominate the habitat, to the total exclusion of virtually all other vegetation. Its root system and leaf litter is also toxic to other plants.

Himalayan balsam

This attractive plant is a garden escapee that can be often found along riverbanks. It can outgrow native grasses and other plant species, creating an ecologically-harmful monoculture in which native species are unable to thrive. It is able to project its seed over a radius of up to 4 metres and spreads readily to new areas. Eradication can be difficult and time-consuming.

Giant hogweed

Another garden escapee, this was introduced into Britain in the late 1800s and can often be found on waste ground and riverbanks. It grows up to 5 metres tall and each flower head produces thousands of seeds that are readily dispersed by wind and water. If sap from the plant gets on to the skin and is then exposed to sunlight, it can blister and cause severe skin irritation. Children in particular are at risk.

Life in the deadwood

Forestry Commission Scotland contractor **Stevie Thomson** is the man with the big machine – and a big part to play in the long-term biodiversity of the forest.

"In the early days, and in my father's time before that, no one paid any attention to biodiversity. No one talked about deadwood. It was all the same commercial crop and you cleared as much of it as you could."

How long have you been working in forestry, Stevie?
All my working life – most of it in Forestry Commission Scotland woods. I'm 46 now, so that's about 30 years. My father Louis was in the industry before me – more than 40 years. He's retired now, but my 18-year-old son Ruaridh is now working with me in the forest. You could say it's a bit of a Thomson dynasty.

So, you'll have seen some changes then.
You could say that. In the early days, and in my father's time before that, no one paid any attention to biodiversity. No one talked about deadwood. It was all the same commercial crop and you cleared as much of it as you could. Anything left lying about was seen as waste. And if you left just one stump, it'd be quickly pointed out to you! You'd be sent back out to cut it down, and get one extra log off it.

Deadwood's surely not that important.
These days, we're told that what we leave behind is every bit as important as the produce that goes away on the trucks. My lad's never known anything else. We get clear instructions from Forestry Commission Scotland on how much deadwood to leave, right down to how many stumps to leave per hectare.

That must be a bit of a hassle for you... slow you down in your work.
Aye, maybe to begin with we had a bit of a moan about all the policies and procedures. But these days, it's all part of the job. And I like to know that I'm doing my bit for the wildlife. We've been on courses about the importance of deadwood, and how to look out for red squirrel dreys or badger setts and bat roosts.

You're genuinely interested in the wildlife?
I think you have to be, working in the forest. You see loads of stuff when you're working. I've had buzzards sitting on a branch behind me, just waiting for mice and voles getting disturbed by the machine. And there's capercaillie in the forest here...

Capercaillie. That must cause you some headaches.
No, it's all included in the forest plan... their breeding season and the like. There's a lek up there on the hill about 50 metres away, so we have to be well out of the way before the end of February. Which is why we're out here today in the cold and the snow. But that's how it has to be. We work 12 months of the year, but we have to organise our work around the wildlife.

In brief

Dead and dying trees provide habitat, shelter and food for all kinds of birds and mammals, and are particularly important for the less visible majority of forest species, such as beetles, fungi and lichens – making the management of deadwood a vital part of Forestry Commission Scotland's work plans.

Gu h-aithghearr

Tha àrainnean, fasgadh is biadh dha iomadh seòrsa eun is mamail ri fhaighinn anns na craobhan a tha marbh no a' crìonadh, is tha iad air leth cudromach dhan mhòr-chuid a ghnèithean nach fhaicear cho tric, a leithid daolagan, fungas is crotal – tha seo a' dèanamh stiùireadh fiodh marbh na phàirt deatamach de phlanaichean-obrach Coimisean Coilltearachd na h-Alba.

Tell us a little more about deadwood.
Stuff that's already dead, we leave. But if there's none, we'll leave fresh produce in the wood to rot away. Some we leave standing, some we cut back. Then if there's pockets of timber that's blown down, we'll leave it to regenerate naturally rather than clear it.

Sounds complicated.
It shouldn't be. We just have to work closely with the folks at Forestry Commission Scotland when it comes to planning. It used to be that we'd leave single trees scattered about the place but now we tend to leave groups. It gives better cover for wildlife, and they're less likely to blow down on badger setts and the like. Leaving deadwood in groups also means it's easier for us to get in with our machines when it comes to restocking.

You mention machines. They're huge. They can't be good for the environment.
They look worse than they are. Most days, we get wee robins following us around looking for grubs in the wheel tracks. Where the ground's really soft, we leave some more of the timber to help stop the machine sinking, and all that gradually rots away too. It all helps create different habitats for the wildlife.

Then there's the way it looks after you've finished. It's a bit of a mess isn't it?
Sure, I've had people come up to me and complain that the area we've been working on looks like a bombsite. But it's amazing how quickly it all regenerates; it's like what we do kick-starts the germination process. And you just need to see how the wildlife uses it to realise it's the right way.

"Life in the forest begins in the deadwood."

You've really bought into this deadwood policy. But realistically, what's in it for you?
For people in the industry, it's the difference between working and not working. Before I can get a contract from Forestry Commission Scotland, there are questions I've got to go through; boxes that have to be ticked. Somebody that comes in here and doesn't do what they're supposed to do with the deadwood won't be back again. Sometimes it takes a bit more work and you definitely have to think about the best way to leave the deadwood... but it's got to be worth it in the long run. ■

The importance of deadwood

A recent WWF report suggested that up to a third of European forest species depend on old trees and deadwood for their survival. And yet, not so very long ago, foresters removed deadwood as a hygiene measure to protect their timber from what were seen to be dangerous threats from insects and fungi.

That resulted in levels of deadwood in Scottish woodland that were too low to sustain populations of many woodland species of key conservation importance.

Today, the *UK Woodland Assurance Standard* (UKWAS) sets out guidelines for all areas of sustainable woodland management – including deadwood. "Forestry Commission Scotland adheres to the Standard not because we have to (although we do) but because it's the right thing to do," said FCS Species Ecologist Kenny Kortland. "Life in the forest begins in the deadwood."

Different species require different types of deadwood, and factors include stage of decay, size and whether the tree is standing or fallen, sheltered or exposed.

For example, crested tits nest in holes in decaying stumps, woodpeckers prefer stumps up to three metres high, while buzzards and goshawks use standing deadwood or upturned root 'plates' as look-outs or 'plucking perches'. The timberman beetle is quick to colonise new deadwood, while the rainwater 'soup' that forms in the top of rotting stumps is important for the larvae of the rare pine hoverfly.

"It's because deadwood contributes to such structural diversity within the forest that it now forms such an important part of our forest work plans," added Kenny.

Take a closer look

There are some fascinating birds and animals to be found in and around Scotland's forests. Find out more about Forestry Commission Scotland's wildlife watching facilities all over the country.

Seall nas dlùithe

Tha eòin is beathaichean iongantach rim faighinn ann an coilltean na h-Alba agus mun cuairt orra. Faigh tuilleadh a-mach mu ghoireasan faire fiadh-bheatha Coimisean Coilltearachd na h-Alba air feadh na dùthcha.

www.forestry.gov.uk/wildlifescotland

Red deer (1)

Where: Red Deer Range, Galloway Forest Park
When: Open all year round. Ranger-led events in the summer and autumn
Why you should go: This is one of the best places to get up close to the UK's largest land mammal.
Also watch out for: Wild goats
More info: **www.forestry.gov.uk/gallowayforestpark**

Salmon (2)

Where: Rogie Falls, Contin, Inverness-shire
When: July to October
Why you should go: Rogie Falls is one of the best places in Scotland to watch salmon as they 'run' upstream to find a mate and lay their eggs.
Also watch out for: Woodland birds

Otters (3)

Where: Kylerhea Otter Hide, Isle of Skye
When: All year round
Why you should go: Otters thrive here, making Kylerhea one of the best places to look out for these elusive mammals.
Also watch out for: Grey seals, common seals and porpoise
More info: **www.forestry.gov.uk/kinloch**

Peregrine falcons (4)

Where: Huntly Peregrine Wildwatch
When: Easter to early September
Why you should go: This award-winning centre is a great place to see the fastest living creature on earth.
Also watch out for: Red squirrels
More info: **www.forestry.gov.uk/huntlyperegrines**

Butterflies (5)

Where: Allt Mhuic, Loch Arkaig, near Fort William
When: Early summer
Why you should go: It's home to some of Britain's rarest butterflies, such as the chequered skipper and small pearl-bordered fritillary (pictured).
Watch out for: Azure hawker dragonflies
More info: **www.forestry.gov.uk/alltmhuic**

Beaver (6)

Where: Scottish Beaver Trial, Knapdale, West Argyll
When: Spring, summer, autumn (dawn or dusk)
Why you should go: Beavers are well known for their construction skills – in Knapdale, seeing their dam-building work is almost as impressive as seeing the animals!
Also watch out for: Ospreys, red squirrels and otters
More info: **www.scottishbeavers.org.uk**

Red squirrels (7)

Where: Queen Elizabeth Forest Park, David Marshall Lodge, Aberfoyle
When: Spring, summer, autumn (they don't hibernate)
Why you should go: Estimates indicate that there only around 120,000 red squirrels left in Scotland as they are threatened by non-native greys.
Also watch out for: Ospreys
More info: **www.forestry.gov.uk/dml**

White-tailed eagles (8)

Where: Loch Frisa, Isle of Mull
When: All year round
Why you should go: With broad wings over 2.5 m wide, the UK's biggest raptor is sometimes known as the 'flying barn door'.
Also watch out for: Golden eagles
More info: **www.forestry.gov.uk/mullseaeagles**