# A Nature Recovery Plan

## 11 transformative actions for nature in Scotland

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We must urgently prioritise and invest in nature's recovery to safeguard the future of our wildlife, our societies and economies. Here we outline 11 high-impact interventions to restore nature in Scotland. Delivering these actions would support a resilient economy, help achieve our ambitious climate targets and provide many wider benefits to people, contributing to achieving the Sustainable Development Goals in Scotland. Several of the actions would also support a green recovery from the coronavirus crisis.

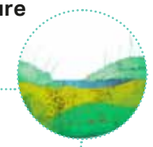
1 **Deliver a significant expansion in Scotland's native woodlands annually from 2020**

2 **Introduce new legislation to achieve sustainable, low-impact fishing by the end of 2021**

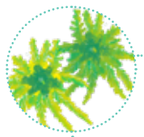
3 **Implement licensing of driven grouse shooting by end 2021**

4 **Reduce deer populations and maintain them at sustainable levels through new or improved legislation by the end of 2021**

5 **Ensure that all new development is net positive for nature through the National Planning Framework 4 in 2022**



6 **Include a Scottish Nature Network in the National Planning Framework 4 in 2022, and deliver it by 2030**



7 **End burning on peatland and the commercial extraction and sale of peat for horticulture across Scotland by 2023**

8 **Introduce and apply new rules to improve the use of nitrogen by 2024**

9 **Establish a Scottish Invasive Non-Native Species Inspectorate by 2025**

10 **Transform Scottish agricultural policy by 2027 so that it facilitates and rewards nature- and climate-friendly farming**

11 **Commit to at least 30% of Scotland's seas being highly protected, with at least 10% fully protected, by 2030**

# Why we need a Nature Recovery Plan

**Nature's importance has become increasingly clear for many people. The necessary response to the Covid-19 pandemic has disrupted lives and routines in ways distinctive to each of us, but nature has been a defining factor of our individual experiences.**

Many people have turned to gardens or nature-rich greenspace and have become more attuned to the sounds and sights of local wildlife. For others, lockdown will have been made all the more challenging by a lack of outdoor space or living in more nature-deprived areas. Both sets of experiences highlight the value of nature to our quality of life, mental health and physical wellbeing.

Lockdown has also shone a light on some of the impacts that human activities have on the environment. Fewer cars on the road and grounded aeroplanes have helped to reduce air pollution and greenhouse gas emissions. Quieter towns and cities have enabled wildlife to roam more widely and allowed birdsong to be better heard. But while there have been some positive impacts we should seek to sustain, lockdown has also caused huge disruption and hardship and highlighted that there is unequal access to nature, particularly for vulnerable and disadvantaged communities and individuals.

It is vital that, as we work towards nature's recovery, we do this in a fair and planned way that builds resilience to future shocks and enhances people's wellbeing.

We need nature, but we are failing it. Nature was in trouble long before the onset of the pandemic. It is eroding across the world at a rate not seen before in human history, caused largely by five direct drivers: changes in land and sea use, resource extraction, pollution, invasive non-native species and climate change.[1] In Scotland, 49% of wild species have declined, and one in nine are threatened with national extinction.[2]

2020 was set to host two major summits on climate and biodiversity that were expected to make pivotal decisions about the future of our planet. The past few years have witnessed a global movement led by young people calling for change. Whilst events have understandably had to be delayed until 2021, we must not lose this momentum. The pandemic and resulting lockdown have shown us that transformative change is possible, and that energy should be channelled into a recovery for both people and nature.

This plan sets out 11 high-impact interventions for nature's recovery, which are necessary and urgent steps. Successful delivery would generate significant benefits for nature, climate and people, and would unlock pathways to long-term transformative change.

A number of the actions could also be prioritised by the Scottish Government over the next six months as part of a green recovery. Looking beyond that, the actions should be considered as a package of policies for nature that must be delivered within the next 5-10 years. We call on all political parties in Scotland to champion nature and include these actions in their party manifestos for the 2021 Scottish Parliament elections.



**Delivering these eleven actions would contribute to the following:**

## Sustainable Development Goals:

| SDG 3 | SDG 6 | SDG 8 | SDG 11 | SDG 13 | SDG 14 | SDG 15 | SDG 16 |
|---|---|---|---|---|---|---|---|
| Good Health and Wellbeing | Clean Water and Sanitation | Decent Work and Economic Growth | Sustainable Cities and Communities | Climate Action | Life Below Water | Life on Land | Peace, Justice and Strong institutions |

## and Scottish National Performance Framework Outcomes:

| Economy: | Fair work and business: | Environment: | Health: | Human Rights: | International: | Communities: |
|---|---|---|---|---|---|---|
| We have a globally competitive, entrepreneurial, inclusive and sustainable economy | We have thriving and innovative businesses, with quality jobs and fair work for everyone | We value, enjoy, protect and enhance our environment | We are healthy and active | We respect, protect and fulfil human rights and live free from discrimination | We are open, connected and make a positive contribution internationally | We live in communities that are inclusive, empowered, resilient and safe |

# Valuing nature

**Investing in nature represents a huge return on investment and will underpin a vibrant, nature-rich economy and society for the long-term that will be more resilient to future shocks.**

The Advisory Group on Economic Recovery, appointed by the Scottish Government in April 2020 to provide expert advice on Scotland's economic recovery after the Covid-19 crisis, has recommended delivering transformational change "where the coincidence of emissions reductions, the development of natural capital and job creation are the strongest".[3] It also emphasised the key role of nature-based solutions, which support multiple objectives and boost rural, tourism and nature-based economies.

Now is the moment to kickstart deeper structural reforms needed to shift to a wellbeing economy which actively invests in nature.

This transformational change will deliver widespread benefits and contribute to numerous societal goals, such as improving flood mitigation, cleaning up our air and drinking water and delivering access to nature for everyone. Wildlife-rich greenspace provides multiple public health, well-being and social benefits, from reducing obesity, to tackling stress to promoting social interactions.

A green recovery from the Covid-19 pandemic must include green stimulus focused on achieving net zero emissions and biodiversity goals.[4] The actions in this report were designed for nature's recovery, but a number of them could also be prioritised as part of a green recovery: scaling up and rolling out Green Infrastructure across Scotland by delivering a Scottish Nature Network, delivering large-scale nature-based solutions to climate change, transforming our food and farming system and ensuring that new planned development has a positive impact on nature.

Investment in nature's recovery can avoid double costs and prevent future spend in other areas, saving money in the long term for both the public purse and private investors.  It will also create and sustain green jobs and industries that are more secure over the long term. To transition to nature-based industries in a way that is fair for all, workers, sectors and industries must be supported with the necessary training, skills and infrastructure.

Restoring nature will also play a central role in achieving Scotland's climate targets. The natural capacity of soils and plants to store carbon means that habitat restoration, such as protecting kelp forests and salt marshes, restoring peatlands and coastal habitats, expanding native woodlands and helping them to regenerate, can provide nature-based solutions to climate change. These projects are large-scale green infrastructure projects that can create green jobs and underpin a sustainable economy. All scenarios for achieving net zero emissions in Scotland by 2045 involve deployment of nature-based solutions.

**Scotland is consistently identified with and marketed on its landscapes and wildlife.**

Scotland's natural heritage including the ecosystem services provided by it is worth
**£21.5-£23 billion pa**

Nature based tourism
**£1.4billion pa**
39,000 jobs

Cost of Protection
**€211.5 m pa**

**Benefit** | **Cost**

When the costs of implementation are factored in, there is a benefit-cost ratio of 7:1 over 25 years.



# Funding Nature's Recovery

**Adequate, long-term funding is essential for delivering the actions set out in this report. The protection and restoration of nature has historically been chronically underfunded, despite the strong investment case outlined above.**

Funding for public sector bodies responsible for protecting Scotland's environment has fallen steadily since 2007. Research has shown that the budgets of Scottish Natural Heritage, Scottish Environment Protection Agency, and Rural and Environment Science and Analytical Services have been cut by almost £100m over the past decade, a 40% reduction in real terms.[5] Though there was some increase in the 2020-21 draft budget, this was insufficient to offset losses over recent years.

There has also been insufficient dedicated grant funding to date for nature. Now that the UK has exited the EU, we are set to lose access to further vital funds, most notably the EU LIFE programme. Scotland has benefited from many millions of pounds for LIFE projects aimed at machair, raised bogs, blanket bogs, oak woodlands, seabirds, Atlantic salmon, capercaillies, freshwater pearl mussels and hen harriers, amongst others. Additionally, from 2012-15, private foundation support for environmental work in England and Wales was twenty times greater than in Scotland.[6]

Private sector funding has a crucial role to play in unlocking large-scale action and Scotland has already begun this journey. The £1 Billion Challenge[7] was launched by the Scottish Environment Protection Agency (SEPA) and the Scottish Wildlife Trust as an ambitious initiative to pioneer, develop and showcase cutting-edge investment and funding models to help close the funding gap. A large number of organisations and individuals contributed to the Route Map to £1 Billion which sets out nine opportunities to generate new forms of investment in Scotland's natural assets in ways that will deliver significant wider benefits, and in some cases provide financial returns for investors. More collaborative work across government, business and NGOs now needs to be done to turn these models into investment-ready opportunities.

## Specific funding needs that must be urgently addressed:

**Review and reform existing public expenditure and procurement so that perverse and conflicting incentives are ended.**

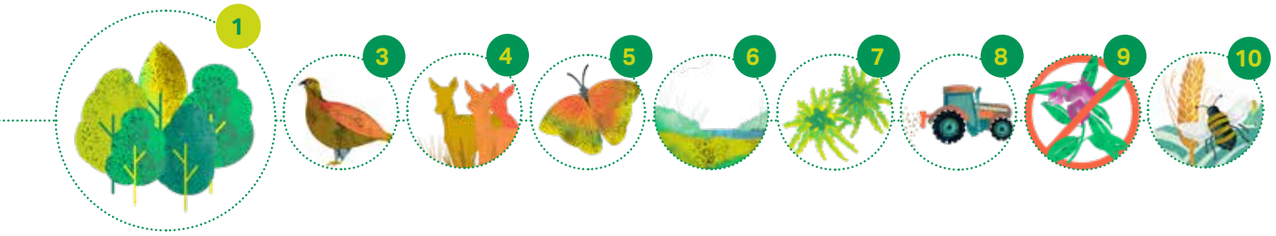
**Transform the Biodiversity Challenge Fund into a large-scale nature fund for Scotland. This should be targeted explicitly at addressing the five direct drivers of biodiversity loss, at a project scale between £200k and £10m.**

**Properly fund the statutory environment agencies so they can carry out their statutory duties, at a minimum reinstating budgets to 2010 levels. This must include sufficient funding for environmental monitoring across Scotland.**

**Ensure that Natural Infrastructure receives its fair share of funding within the Infrastructure Investment Plan.**

**Strategically align and target private sector investment in nature's recovery through the forthcoming Regional Land Use Frameworks and Scotland's planning system. The Infrastructure Levy must be implemented across all local authority areas to provide new funding for green and blue infrastructure.**

# 1. Deliver a significant expansion in Scotland's native woodlands annually from 2020




## Why is this important for nature?

Native and ancient woodlands support complex, diverse and unique wildlife communities. Scotland's Caledonian pine woods are among the least modified woodlands in Britain.[8] They are home to rare tooth fungi, black grouse and red squirrels, and the last UK stronghold of the capercaillie, crested tit and the Scottish crossbill – a species unique to Scotland.

Atlantic woodlands are globally important. Known as 'Scotland's rainforests', they are named as such for their lush, complex carpets of bryophytes and colourful lichens, ferns and oak, holly, alder and hazel woods that thrive in the mild wet oceanic conditions of western Scotland.[9]

These habitats are under pressure and in decline. Scotland's native pine woods only remain in 1% of their former range. Invasive species, browsing pressure, lack of management, pollution, recreational disturbance and climate change are all threatening nature in our woodlands. The State of Nature Report 2019 highlighted declines in woodland specialist birds such as capercaillie, willow tit, wood warbler and woodland butterflies like the common blue.[10]

Targeted woodland expansion efforts post-war, particularly in the 1970s and 1980s, increased tree cover from 5% at the turn of the 20th century to over 19% of Scotland's land by 2019.[11] However, much of this was non-native productive forestry, which now accounts for over three quarters of total tree cover.

Poorly sited planting impacted internationally important species and open habitats. Changes in practice have since been introduced and work is progressing to address this past damage: planting on peat soils of 50cm depth or greater is no longer allowed and trees are being removed from peatlands as part of restoration work.

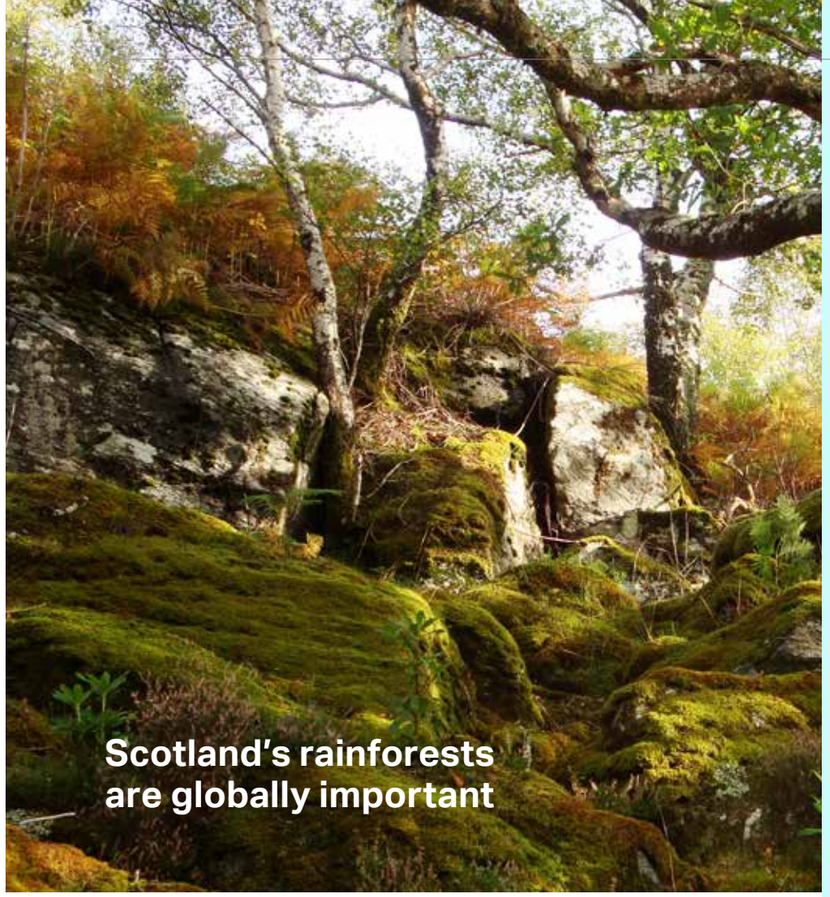
Further effort is needed to ensure new planting does not impact priority species that depend on open habitats, nor where it will undermine the hydrology of adjacent deep peat. Further research is also required to better understand the carbon impacts of planting on shallower peat soils and whether this should be avoided.

In order to reduce dependence on imported timber, planting of productive woods and forests will need to be part of the mix.

The Committee on Climate Change (CCC) also highlighted that increased tree planting should be a core component of a green recovery.[12] However, to ensure it delivers for nature, it is critical that all new planting is sited appropriately and, at a minimum, 50% of new planting is of native tree species, which could include productive species.

Alongside new planting, natural regeneration will also play a critical role in expanding and connecting our existing native woodlands. Effective deer management, reducing browsing pressure, is essential for natural regeneration of woodlands. Existing woodlands also need to be brought into sustainable management to improve their carbon and nature benefits.

All forests - new, existing and productive woodlands - must be developed and managed in a way that provides biodiversity value, but as Scotland's Forestry Strategy recognises, well-managed native woodlands, particularly Semi-natural and ancient woodlands, will deliver the highest biodiversity benefit.[13]




## Wider benefits

**Economic benefits-** Forestry has been one of the first sectors to reopen as Scotland emerges from lockdown. Operations occur largely outdoors, and with the ability to apply social distancing measures. Therefore, an expansion of appropriate tree planting, along with the training opportunities and jobs it would support, could make an important contribution to a green recovery.

**Climate –** Considerable woodland expansion is central to all pathways to achieving net zero GHG emissions by 2045. The CCC recommended that Scotland plant 15,000-24,000ha of new trees each year from the mid-2020s.

**Recreation –** Woodlands and forests offer a wide range of recreational opportunities, from cycling, walking and running to wildlife experiences. The public forest estate alone hosts over ten million visitors annually. Forest-related tourism is worth £165 million, with £94 million spent on day visits each year. The annual health benefits of Scottish woodlands have been estimated to be at least £10 million.[14]

**Flood alleviation –** Woodlands can be a natural flood solution if sited appropriately. Trees can slow flows, stabilise slopes and sediment, and improve the capacity of soils to hold water.

**Farm productivity -** Agroforestry systems can see improvements in total biomass production, as there is better utilisation of water, soil and sunlight. Crop yields can also be improved by soil diversity. Integration of trees and hedges on farms can also provide benefits such as shade and shelter for livestock. Different tree species can also be utilised for fruit, nuts, energy and timber and can contribute to farm diversification and new income streams.



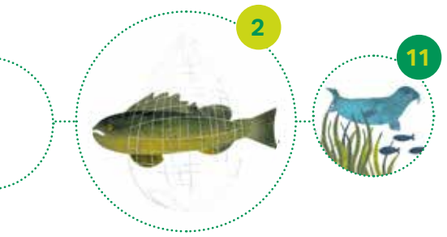
## Steps to support implementation

1. Existing native woodlands of conservation importance, especially protected sites, must be brought into favourable condition and managed sustainably, supported by improved grants and better, more direct advice for land managers. The UK Woodland Assurance Standard (UKWAS) should be made a statutory minimum requirement for new and existing productive woodland once it reaches maturity.

2. Woodland grant schemes must be reviewed and revised to deliver plantings at a greater variety of scales, species diversity and density, and to support expansion of farm woodlands and hedgerows. New planting and woodland management should be carefully planned to deliver a variety of age classes. The sustainable management of new and existing woodlands is crucial to maximise benefits; this will require greater provision of advice to land managers, including more advisors and woodland ecologists. Greater levels of natural regeneration should also be encouraged, through more effective deer control and other measures.

3. All future planting should be located in appropriate places and guided by a strategic approach. The forthcoming Regional Land Use Frameworks and formal planning processes should ensure this happens. These Frameworks, along with the strategic direction of a Scottish Nature Network, would ensure that opportunities for native woodland recovery, connectivity and expansion are maximised and that trees can be successfully integrated with other land uses, with minimal trade-offs.

# 2. Introduce new legislation to achieve sustainable, low-impact fishing by the end of 2021




## Why is this important for nature?

Centuries of fishing activity have had a profound effect on global marine biodiversity and ecosystem health, making our seas less resilient to disturbance and environmental change. International efforts have shown promise but commercial fishing, along with climate change, remains a pervasive pressure affecting marine biodiversity in Scotland and the North East Atlantic.

Many species are currently being fished beyond sustainable levels, with catch limits consistently set above independent scientific advice. Although improving, Scotland's national performance indicator on sea fisheries shows that only 54% of fish stocks are fished sustainably.[15] Additionally, some fishing activity causes widespread disturbance to the seafloor[16] affecting the ability of many seabed habitats to recover, while others pose a risk of accidental capture to birds, whales and dolphins. This is partly because fishing has not been held to the same environmental standards as other at-sea industries.

Commercially targeted fish and shellfish are important components of marine biodiversity, and play a key role in maintaining healthy, functioning marine ecosystems throughout Scotland's seas. Equally, fragile deep-water habitats and nearshore waters, where the complex mosaic of habitats provide many ecosystem services (e.g. fish nurseries, carbon storage and coastal protection), are being damaged by heavy, bottom-towed fishing gear.

Therefore, effective fisheries management must go beyond fish stock health, and adopt a broader ecosystem approach that ends overfishing, minimises damage to non-target species and habitats ***and*** leads to a recovery in the health of marine habitats and ecosystems.

A paradigm shift in fisheries management is urgently needed to deliver the change required to restore the marine environment. Covid-19 and the ensuing lockdown and economic recession has had significant impacts on Scotland's fisheries, highlighting the critical need to make this sector more resilient over the long-term, particularly mitigating future shocks and risks to fisheries from the nature and climate emergencies. To create a more resilient marine environment, we must be forward-looking, adaptable and ambitious in our approach, looking to create solutions that will restore nature in the marine environment and provide training and upskilling opportunities to create sustainable marine jobs over the long term.




## Wider benefits

**Economic –** Rebuilding fish stocks and greatly reducing the ecosystem impacts of fishing activity will enhance productivity and deliver long-term stability, increases in fish biomass, more long-term employment opportunities and higher revenues and profits.[17]

**Social –** Long-term sustainability will provide stability to coastal communities that benefit from and depend on fishing and allow wider civil society to enjoy the services provided by healthy marine ecosystems, full of abundant and diverse marine life.

**Food –** The reliable supply of locally caught seafood is essential to a sustainable low-carbon food system, helping Scotland to become a Good Food Nation and achieve long-term food security.

**Climate –** More effective spatial management of fisheries will allow protection of vital blue carbon habitats, while more abundant and diverse fish stocks will contribute to healthier and more resilient marine ecosystems that have a higher capacity to store carbon and, therefore, increase their contribution towards mitigating the effects of climate change.

## Steps to support implementation

1. Champion sustainable fisheries by introducing world-leading legislation, policy and governance that delivers ecosystem-based fisheries management, fully integrated with conservation objectives by 2021, including a commitment to:

   — Fishing in accordance with the best available independent scientific advice

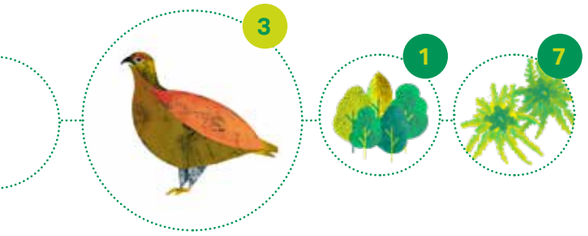
   — Delivering spatial management of all gear types and the exclusion of some gears, including a presumption against heavy bottom-towed mobile fishing gear in a significant part of Scotland's inshore waters.

   — All fishing vessels in Scottish waters to use Remote Electronic Monitoring with cameras (REM), ensure full and verifiable documentation of catches of target and non-target species, deliver robust monitoring, and support enforcement and compliance as well as provide assurance to retailers and consumers.

2. Develop a clear climate and nature-smart strategy that sets out: the measures needed for climate adaptation of the sector; the contribution the industry can make to net zero emissions; and where fishing practice needs to be managed to strengthen climate resilience, such as the protection, recovery and restoration of natural carbon sinks like seagrass, maerl beds and burrowed mud.

3. A wholesale review of the fleet. Within this a phased and just revocation and reallocation of all fishing licenses according to clear social and environmental criteria, including climate impacts should be initiated. The new licencing system must place ecosystem health at the core of all decision-making to secure fisheries that operate within environmental limits and contribute to the recovery and restoration of the ocean as well as delivering benefits for dependent coastal communities.

# 3. Implement licensing of driven grouse shooting by the end of 2021




## Why is this important for nature?

Scotland is renowned for its birds of prey, such as the enigmatic golden eagle. As top predators these species are key indicators of the health of our environment. However, evidence is clear that wildlife crime is restricting the range and abundance of golden eagles, hen harriers, red kites and peregrines. A 2017 report by Scottish Natural Heritage (SNH) recorded that 40 out of 131 satellite tagged young golden eagles had disappeared in suspicious circumstances over the period 2004-16, mostly in locations on or adjacent to grouse moors.

In December 2019 the Grouse Moor Management Review Group, known as the 'Werritty Review', made recommendations to the Scottish Government as to how grouse moors can be managed sustainably and within the law, looking specifically at the issues of birds of prey, moorland burning, mountain hares and use of medicated grit.[18]

Predator control is frequently carried out on grouse moors to maximise the numbers of grouse available to shoot when the season opens. However, while not all predator control is illegal, illegal killing of birds of prey and other protected species is still occurring. This is not acceptable under any circumstances.

The measures and sanctions used to deter the illegal persecution of birds of prey to date have been mostly ineffective in driven grouse moor areas, largely due to the difficulties involved in obtaining enough admissible evidence to secure a prosecution, and the fact that these crimes mostly occur in remote areas.

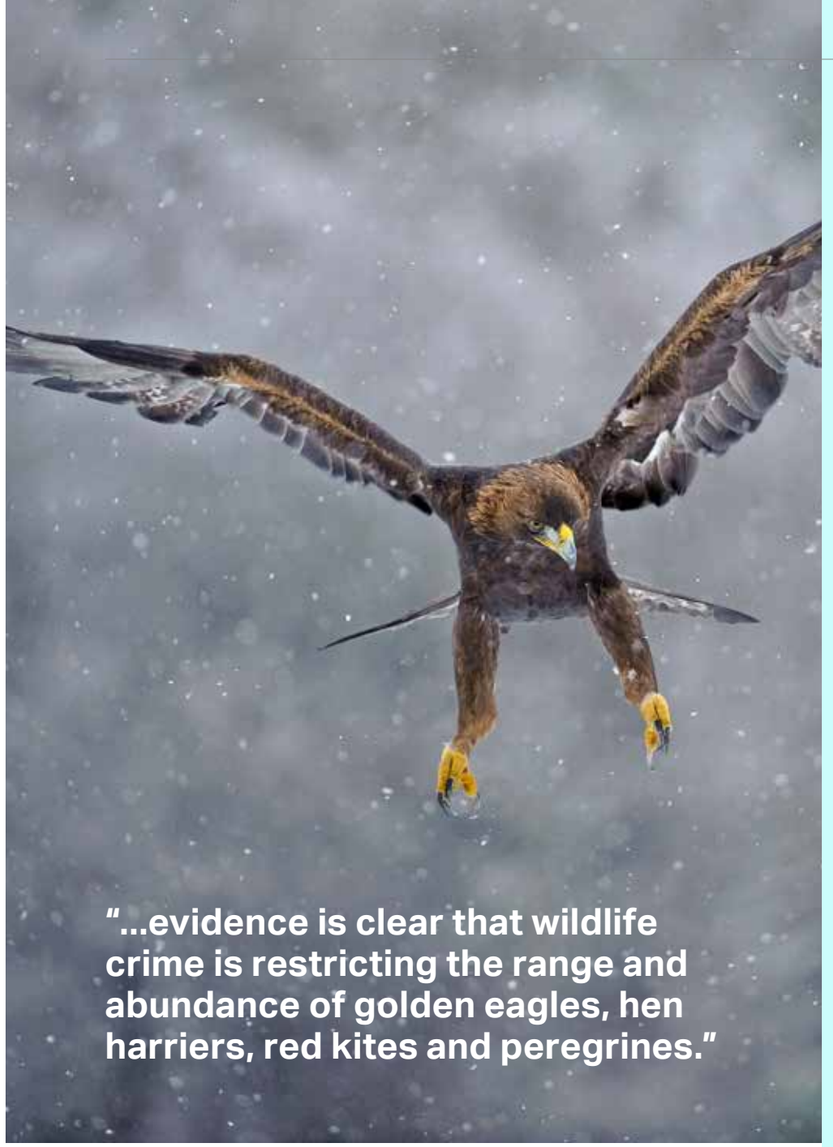
Rotational burning of moorland vegetation, known as muirburn, is a common management tool on grouse moors, providing young shoots for grouse to eat and maintaining open ground. Though muirburn may deliver some positive effects on dry heath, burning of blanket bog can negatively impact sensitive bog vegetation, hydrology, water quality, carbon storage capacity and biodiversity. Despite a presumption against burning on deep peat, this is still happening even within protected nature sites.[19] The Muirburn Code, which regulates muirburn, lacks the statutory provisions and robust monitoring system necessary to avoid these negative impacts.

The Werritty Review recommended increased regulation of mountain hare culling. Good progress has now been made on this issue in the Animals and Wildlife (Penalties, Protections and Powers) (Scotland) Bill. It is critical that the other recommendations around counting and surveillance by SNH of mountain hare populations set out in the Werritty Review are also carried out without delay.

Crucially, the Werritty Review recommended introducing a licensing scheme for grouse moors, but only if, after a further five years of assessment, no improvement in the conservation status of birds of prey has occurred. Licensing would provide clearly defined standards and create greater trust between the grouse shooting industry and the public. The report also recommended further scrutiny of the use of medicated grit, which can persist in the environment and is toxic to aquatic organisms.

Given the continued occurrence of wildlife crime and in the context of climate change and the continued loss of nature, a proportionate response by the Scottish Government to the Werritty Report recommendations would be to introduce a licensing scheme without delay.



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## Wider benefits

**Biodiversity –** Licensing would be a route to sustainable management of moorlands, which comprise a range of habitats, including dry and wet heath, Atlantic heath, blanket bog, tall herb vegetation, species rich and upland grasslands. Upland breeding species such as golden plover, dunlin and curlew can also thrive in these habitats. When managed well, moorlands can deliver significant nature and carbon benefits.[20]

**Accountability –** Licensing allows bad practice and illegal activity to be managed directly, increasing public transparency and trust and ensuring that the reputation of the grouse shooting industry is improved.

**Cultural –** Provision of access to and cultural preservation of countryside pursuits.

**Climate –** An end to muirburn on deep peat will be essential for securing the restoration of all Scotland's peatlands by 2045. This would deliver wider benefits such as flood protection and water quality improvements.

## Steps to support implementation

1. Fully implement the recommendations of the independent Grouse Moor Review, without delay, including the immediate licensing of driven grouse shooting with effective sanctions to remove licences where wildlife crime is confirmed by public authorities.

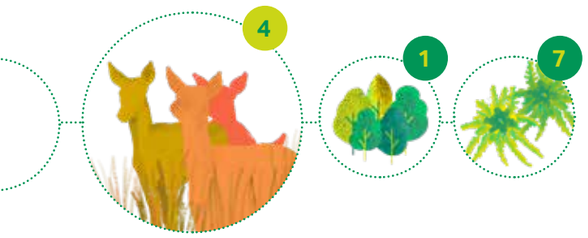
2. Introduce a requirement for the production of management plans for driven grouse shooting estates. Management plans should ensure the protection and enhancement of public land management interests, as well as private interests. These could include protection and expansion of areas of native woodland and of peatlands.

3. Following increased protection for mountain hares in the Animal and Wildlife Bill, introduce a licensing system administered by SNH to safeguard mountain hare populations, by maintaining sustainable levels, as soon as possible.

4. Regulate the use of medicated grit, including putting in place and enforcing closed seasons and restricting use to when relevant diseases are present in grouse populations proven by veterinary testing. Ensure research is undertaken by the Scottish Environment Protection Agency (SEPA) to look at wider environmental impacts of medicated grit, for instance on watercourses and in the food chain.

5. Give new powers to the Scottish SPCA to investigate wildlife crime, following the recent announcement by the Scottish Government of a taskforce to consider this issue. The Partnership Against Wildlife Crime should have more focus on the effective enforcement of laws to combat wildlife crime, and additional resources should be provided to the Police Wildlife Crime Officer network.

# 4. Reduce deer populations and maintain them at sustainable levels through new or improved legislation by the end of 2021




## Why is this important for nature?

Deer are a much-loved feature of Scotland's landscapes. However, the absence of natural predators over recent centuries has meant that there is no natural mechanism for keeping deer numbers in check. As a result, deer numbers have risen to unnaturally high levels in certain parts of the country. This can have substantial negative impacts on important habitats and on restoration projects, particularly through trampling and browsing.[21] Human management is therefore required to maintain deer populations at sustainable numbers.

The current lack of effective deer management creates a substantial barrier for the restoration of key habitats that are significant for both biodiversity and climate, particularly woodland regeneration and peatland restoration. High densities of deer and heavy browsing can cause suppression of tree and shrub regeneration, leading to eventual loss of woodlands and loss of species diversity in the ground layer of many habitats, including woodland and species rich grassland. Whilst heavy browsing is problematic, extremely low levels of browsing and disturbance when deer are entirely excluded by fencing can also result in a reduction of natural processes in woodlands.[22]

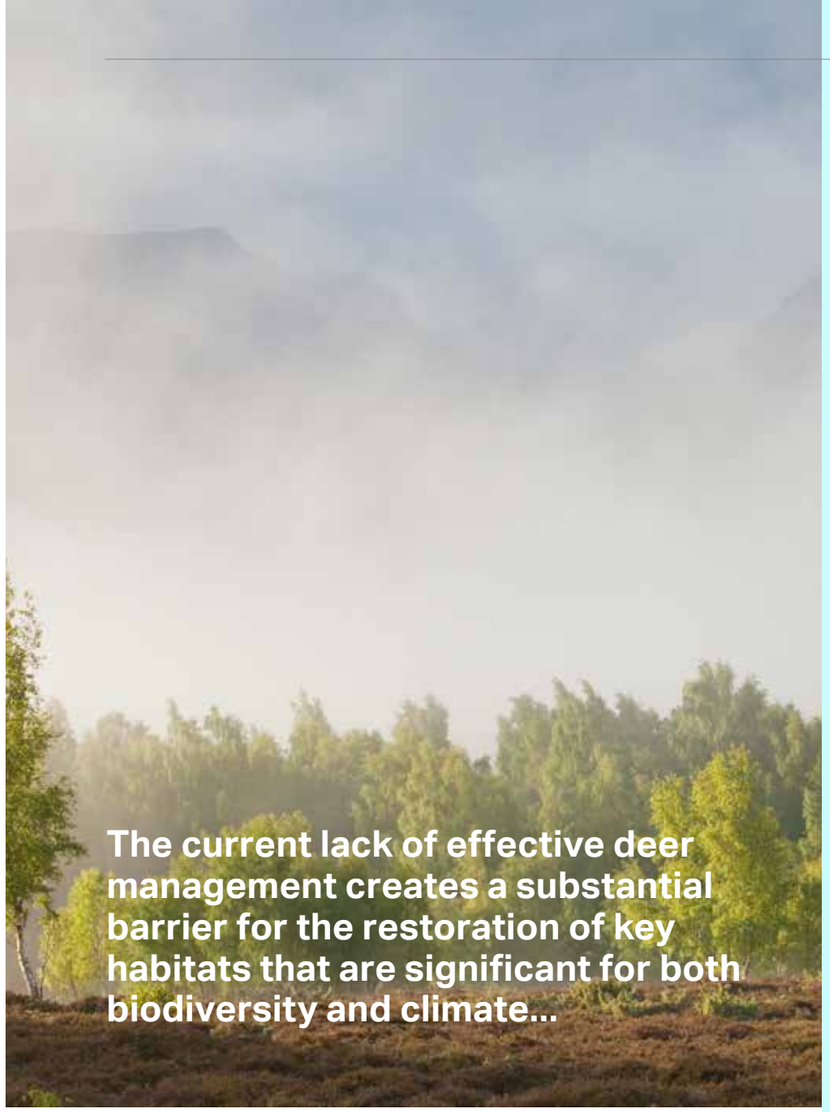
High deer densities can also lead to trampling on important habitats such as mires, fens and flushes, which increases rates of soil erosion and runoff, negatively impacts water quality and increases the downstream flooding risk. The erection of deer fences to allow high deer densities, for example for private sporting purposes, alongside areas of woodland, can cause habitat fragmentation and adversely impact species like capercaillie.

The Native Woodland Survey of Scotland identified and mapped the location, extent, type and condition of all of Scotland's native woodlands.[23] The woodland survey concluded that only 46% of the resource is in a satisfactory condition for biodiversity, mainly due to browsing and grazing of young trees by domestic livestock and wild deer.

Independent work carried out on behalf of Scottish Environment LINK identified that where red deer densities exceed eight deer per square kilometre, then there is likely to be ongoing damage to peatlands and the success of peatland restoration work may be compromised.[24]

**...deer numbers have risen to unnaturally high levels in certain parts of the country.**






## Wider benefits

**Climate –** Reducing deer numbers and maintaining densities at sustainable levels would increase native woodland regeneration and improve the success of afforestation projects, contributing to achieving net zero emissions by 2045. Current public investment in peatland restoration is also at risk from subsequent damage by deer.

**Flood protection –** Reducing the browsing pressure of deer on our woodlands would help to increase the natural flood mitigation service provided by trees.

**Supporting rural communities –** Sustainable deer management requires more deer stalkers, providing more jobs to diversify and strengthen local economies in our most sparsely populated areas.

**Public health –** Reducing deer numbers would reduce vehicle collisions and help tackle the rise in tick numbers and Lyme disease, which are public health risks, and a burden on the NHS.[25]

**Deer health –** Reducing the numbers of our wild deer would help improve overall deer health and welfare, keeping populations at more natural levels, ensuring habitat resources are not over-exploited, and that mass starvation events of deer on open hill ranges in bad weather are reduced.[26]

## Steps to support implementation

The Scottish Government should implement in full the recommendations of the Independent Deer Working Group report[27] through the introduction and implementation of new deer legislation. In particular:

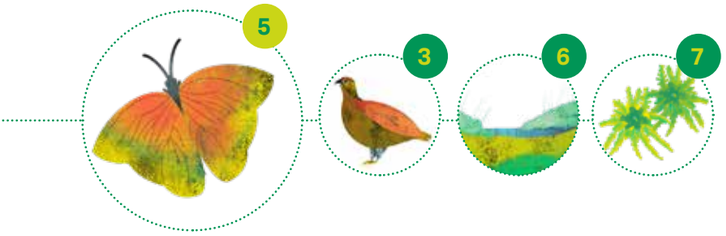
1. Set statutory maximum limits for deer density on a regional basis, including a maximum of ten red deer per square kilometre density over large areas of open range in the Highlands.

2. Strengthen SNH's deer management powers, ensuring that they have sufficient, flexible enforcement powers to maintain deer populations at sustainable levels in every area of Scotland and to protect public interests. Mandatory deer count data and cull return systems, and improved flow of public information on deer populations, administered by SNH, are required to underpin this process.

3. The Scottish Government and Land Commission should integrate Deer Management Groups within the Regional Land Use Framework model so that deer management is framed within the context of other social, environmental and economic priorities.

4. Public financial support for deer fencing should be phased out. A cost-benefit analysis of delivering woodland expansion via natural regeneration and sustainable deer management, rather than by tree planting and deer fencing, should be undertaken and used to guide policy implementation.

# 5. Ensure that all new development is net positive for nature through the National Planning Framework 4 in 2022




## Why is this important for nature?

Development and urbanisation are major pressures on biodiversity globally.[28] The planning system also shapes how we access nature, perceive and interact with it in the places where we live and work. Our planning system is therefore well placed to lead and deliver far-reaching, positive outcomes for nature, climate and people in Scotland.

Many types of development can result in the loss or change of valuable sites for wildlife and the fragmentation of habitats. This fragmentation has impacted on the ability of some species to move through the landscape, creating isolated populations that are at heightened risk of going locally extinct.[29] This urbanisation effect of development continues, with the area covered by impermeable materials, such as concrete and buildings, increasing in many regions across Scotland between 2009 – 2018.[30]

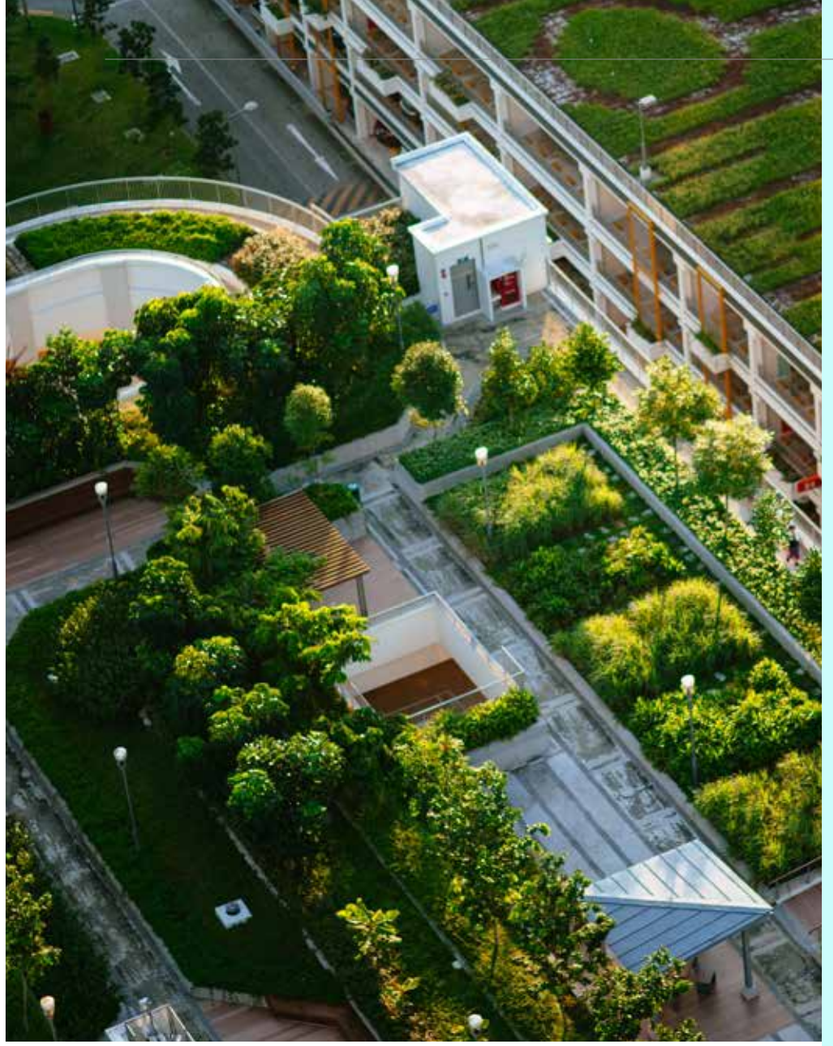
However, planning can also play a leading role in delivering transformational change - creating and implementing a future vision for Scotland where the places we live and work are places that support our collective wellbeing, support communities and where nature can thrive. To do that, planning needs to shift to a system that enables development but also helps rapidly accelerate our efforts to reduce climate emissions and restore biodiversity.

One of NPF4's outcomes is "securing positive effects for biodiversity". This has similar aims to other established mechanisms that require new developments to leave nature in a better condition, rather than simply preventing and reducing the worst impacts of development on the environment. Crucially there should be a net overall benefit for nature. "Securing positive effects for biodiversity" could be achieved in a variety of ways, including through investing in projects to protect, restore and enhance Scotland's wildlife and spaces for nature.

Fully integrating green and blue infrastructure[31], Scotland's natural assets, within the planning system is also crucial and mechanisms for "securing positive effects for biodiversity" must play a key role in funding and delivering this. Increasing green and blue infrastructure in and around Scotland's towns and cities would also help to address nature deprivation, which disproportionately affects disadvantaged communities and individuals, something that has been starkly highlighted during the Covid-19 crisis.

Wherever people live and work they should have access to nature: this can have a direct influence on our quality of life and wellbeing but also helps us to forge more resilient communities and economies that are integrated with and therefore intrinsically more likely to protect and restore nature.







## Wider benefits

**Health & Wellbeing –** Safe, local nature-rich greenspace, accessible without the use of cars or public transport, for leisure, active travel and education can provide multiple public health benefits and better connect people with nature. The need for this has been highlighted as critically important during the Covid-19 lockdown.

**Carbon Reduction –** Nature-based solutions such as peatland restoration and native woodland expansion can realise significant carbon sequestration potential. This potential can be maximised by the planning system to help contribute to achieving net zero emissions by 2045.

**Flood protection and resilience –** Focused habitat creation in and around development and in the right places can help absorb rainfall and slow its flow to streams and rivers. The planning system can help to deliver these natural, or more environmentally-friendly, flood risk management solutions, for example by better embedding them into Sustainable Drainage Systems (SuDS) schemes.

**Green collar jobs –** Developing a "positive effects for biodiversity" approach will require investment in natural capital creating new jobs and requiring new skills. Project managers, site workers and architects focused on the delivery of environmental benefits will be needed to deliver net positives for biodiversity. The Climate Change Committee has recommended to the Scottish Government that climate investment should be used to support post Covid-19 economic recovery[32] –much of this can be through nature-based solutions and securing positive effects for biodiversity would help deliver this.

## Steps to support implementation

1. Scotland's fourth National Planning Framework (NPF4) should place a duty for delivery of "securing positive effects for biodiversity" on all development by:

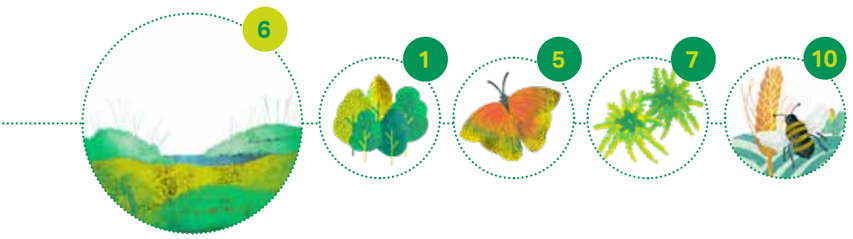
   — Implementing a 'positive effects for biodiversity' framework that is underpinned by key principles, including the full application of the mitigation hierarchy. This requires that negative impacts must first be avoided and mitigated before compensation is used.

   — Ensuring that positive effects for biodiversity that are secured from development are strategically directed to local, regional and national green and blue infrastructure priorities, including nature-based solutions. Scotland's Nature Network can provide this strategic direction and enable direct and necessary links to the forthcoming Regional Land Use Frameworks and infrastructure investment plans for a green recovery.

2. Include a Scottish Nature Network as a National Development in NPF4.

3. Ensure that infrastructure projects invested in as part of the economic recovery after Covid-19 are in line with current commitments to address climate change and biodiversity loss.

# 6. Include a Scottish Nature Network in the National Planning Framework 4 in 2022, and deliver it by 2030.




## Why is this important for nature?

The way that we use and manage land is one of the biggest drivers of habitat and wildlife loss. Space for wildlife is continually squeezed into increasingly small and isolated parcels of habitat that are more vulnerable to pressures such as disturbance, disease and predation. It limits the ability of species to disperse, find new homes and to access food and shelter.

This has significant implications for nature and for people. The Covid-19 crisis has highlighted huge inequalities around access to nature-rich greenspace in Scotland. Research produced for SNH shows that disadvantaged communities and individuals, disabled people and BAME people are less likely to visit the natural environment - participation in the outdoors is strongly impacted by affluence and residency. Having better connected, more attractive habitat close to where people live will help address this.

A Scottish Nature Network can help increase the richness of our countryside, rivers, hillsides, coastlines, towns and cities through reconnecting and expanding places where wildlife can thrive. This will help our wider landscapes to buffer and shield our most special and protected sites for nature, like Sites of Special Scientific Interest and European protected sites.

Nature networks also involve transforming the way we use land in between nature sites, providing corridors and other connections that allow wildlife to thrive and move, areas of nature-friendly farming, sustainably managed forests and nature-rich greenspace in our urban areas. Whilst lots of good conservation action is being undertaken across Scotland, the current scale of delivery is disconnected and not achieving the full potential for nature or people. A Scottish Nature Network would allow us to focus our combined efforts where we can make the most difference.

The Scottish Government has committed to a strategic programme of integrated land use planning and delivery through the Scottish Land Use Strategy and roll out of regional land use frameworks. It is essential that biodiversity opportunities and trade-offs are adequately reflected during the development of these frameworks - a spatial iteration of a Scottish Nature Network, through opportunity mapping, could help us do that.

A Scottish Nature Network would deliver widespread benefits for our societies and economies too, contributing directly to a green recovery in Scotland. It would provide strategic targeted investment in Scotland's natural capital and is coherent with the advice given to the Scottish Government on green recovery by the Climate Change Committee, particularly on tree planting, peatland restoration and green infrastructure and embedding fairness as a core principle.



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## Wider benefits

**Public health and wellbeing –** Better connected and restored habitats would provide far greater opportunity for engagement and use of green space, including better opportunities for active travel, which has demonstrable public health benefits. The lack of quality, biodiverse green space, especially for the poorest in society, has been highlighted during the Covid-19 crisis.

**Green and blue infrastructure –** Targeting restoration activities at peatlands, grasslands, hedgerows, riverine habitats, native woodlands, saltmarsh and other coastal habitats will be central to achieving greater connectivity. This would help provide the Infrastructure Commission with a selection of high-value projects that would deliver maximum public benefit. This will also provide new job opportunities, helping to fuel a green recovery.

**Ecotourism –** Creating a more attractive, nature rich and healthy nation would increase revenue opportunities from wildlife tourism. Tourism is one of seven growth industries in Scotland, contributing more than £4 billion to our economy each year, but has been significantly impacted by the Covid-19 lockdown. Spending on nature-based tourism is estimated to contribute nearly 40% of all tourism spend, supporting 39,000 full-time equivalent jobs. Outdoor-based nature tourism can play a key role in the green recovery, providing activities possible within social distancing guidelines and creating rural jobs.

**Strategic funding –** Greater ease of project selection and prioritisation for vital funders such as the National Lottery Heritage Fund and private investors, who want to invest in the most important strategic projects. The strategic vision and clear priority provided will also inform more effective investment through agri-environment and forestry funding.

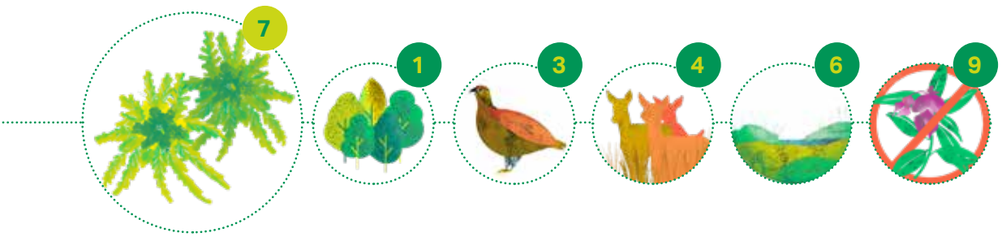
**Climate adaptation –** Nature networks create space for species to move and adapt to a changing climate.

**Supporting collaboration** - Identifying and agreeing conservation and restoration priorities at the national and regional levels can facilitate and encourage collaboration between landowners and managers to deliver over a larger scale.

## Steps to support implementation

1. Specific investment in the Scottish Nature Network through green recovery financial stimulus packages.
2. NPF4 should include a Scottish Nature Network as a National Development. This should actively seek opportunities to improve nature connectivity to maximise delivery of nature-based solutions and benefits for people and wildlife.
3. Target delivery of the Scottish Nature Network through the forthcoming Regional Land Use Frameworks to achieve strategic coordination of nature recovery at a national level.
4. Ensure that the forthcoming 2020-2030 Scottish Biodiversity Strategy is coordinated and integrated with implementation of the Land Use Strategy.
5. Develop a suite of national green and blue infrastructure projects that would contribute to delivery of the Scottish Nature Network and be prioritised as critical natural infrastructure within the Infrastructure Investment Plan. This is directly supported by the advice of the Infrastructure Commission to include natural infrastructure within infrastructure plans.

# 7. End burning on peatland and the commercial extraction and sale of peat for horticulture across Scotland by 2023




## Why is this important for nature?

Scotland's peatlands are internationally important and include 13% of the world's blanket bog. Peatlands are significant for the large amounts of carbon they store, as well as the rare plants and animals that they support. A loss of only 5% of UK peatland carbon would equate to the total annual UK anthropogenic greenhouse gas emissions.[33] Restoring and protecting *Sphagnum* dominated bog habitats, from the rolling expanses of the Flow Country to the lowland raised bogs of the borders, is a priority action for addressing the nature and climate emergency and is a fantastic example of a nature-based solution.

In this remarkable waterlogged environment, some amazing plant species have developed. Peat bogs are home to several carnivorous plants that trap and eat insects, plants such as bog myrtle which have developed symbiotic relationships with bacteria to extract additional nitrogen and even plants that have developed adaptations to be able to 'snorkel' underwater using air filled sacs in their root system.

The huge diversity of habitats within peatlands creates the right conditions for many species. Stop to listen and you will hear the buzz of insects such as dragonfly and bird song from species such as skylarks, meadow pipits, dunlin and golden plovers. Otters, badgers, pine martens, stoats and weasels can also be found foraging in this habitat.

Historically the value of peatlands was not fully understood and various activities were undertaken to make them more economically productive, for instance draining, burning, planting trees and grazing. Many areas have been dug up for horticultural use while others are subject to erosion. Overgrazing damages the condition of peatlands causing both loss of biodiversity and soil erosion. Today over 80% of our peatlands are degraded, meaning that they are currently emitting carbon, rather than absorbing it as healthy peatlands do.

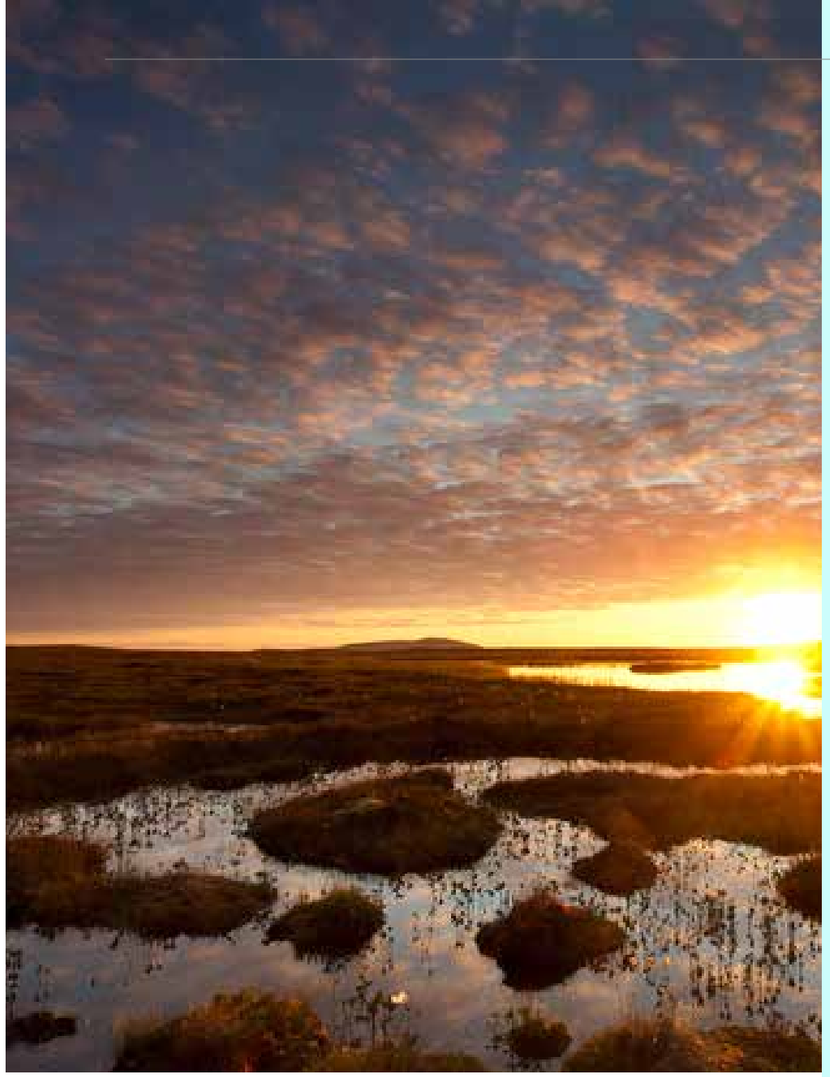
As one of the world's most peatland-rich nations, Scotland is in a strong position to show leadership by recognising the value of peatlands and by investing in restoration, protection and sustainable management. In 2019, the UK Committee on Climate Change (CCC) recommended that Scotland must increase the rate of peatland restoration and develop sustainable management practices for lowland peatland under agricultural management.[34] More recently, the CCC called for a ban on rotational burning and extraction of peat.[35] The Coronavirus (Scotland) Act 2020[36] introduced a temporary ban on muirburn for public safety, due to the potential additional burden on emergency services for out of control fires.

Adequate funding is critical for restoring all of Scotland's degraded peatland by 2045. We therefore warmly welcome the commitment in the draft 2020-21 Scottish Budget to invest over £250 million in peatland restoration over 10 years, starting with £20 million in 2020–21, enabling large-scale, multi-year projects to be developed.[37]

This is a critical first step. The long-term commitment to peatland restoration will allow Scotland to develop a green economy, giving specialists the confidence to invest in the skills and equipment that they need to deliver peatland restoration targets. Currently, delivery is limited by the number of peatland restoration specialists and access to necessary machinery. Upskilling and training will be required, alongside capital and revenue funding, to deliver restoration at the necessary scale.

It should be supported by legislative action to prevent further degradation, and policy and plans to ensure that restored peatland is sustainably managed on an ongoing basis.





## Wider benefits

**Economic –** Scaling up of peatland restoration was another recommendation from the CCC as immediate actions contributing to a green recovery. As another outdoor sector, safe jobs could be created in peatland management and restoration, with investment opportunities in specialist equipment and skills.

**Climate –** Current emissions from Scottish peatlands are estimated to be around 9 MtCO2e per year.[38] Peatland restoration needs to increase to at least 20,000ha per year to be compatible with a net zero pathway to 2045.[39] The more peatland we can restore at pace the more emissions we can avoid and the sooner we can move to sequestration.

**Water regulation –** Damaged peatlands reduce water quality and incur significant costs in the treatment of drinking water. Intact peatlands offer flood protection by reducing peak flow. They also store water providing a reserve during dry periods, which is particularly important for riparian habitats. It is also critical for our whisky and salmon fishing industries and threatened wildlife like the freshwater pearl mussel.

**Cultural –** Peatlands maintain a unique archive of our cultural past. Beneath and within the peat, evidence of large tracts of prehistoric landscapes lies protected from weathering and disturbance.

**Recreation** - Peatlands are widely used for recreation, exercise, wildlife watching and other activities.

## Steps to support implementation

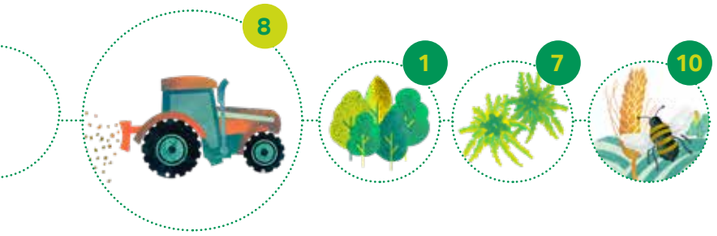
1. An end to burning on peatlands[40] could be achieved through various means, for example amending existing legislation, or making the Muirburn Code mandatory. Legislation must be supported by proper guidance, monitoring and enforcement. Licensing of grouse moors would provide an opportunity to develop scrutiny and enforcement mechanisms.

2. Scotland-wide extraction of peat for horticulture must end, alongside stopping the sale of peat for horticulture to avoid 'offshoring' markets to Ireland and Eastern Europe – moving the problem rather than resolving it. No new permissions should be granted, and action must be taken to ensure the cessation of ongoing commercial extraction under existing permissions.

3. Land management subsidies and regulations must be reformed to encourage effective management of peatland and ensure that public money is not funding damaging activities, including overgrazing, drainage and uncontrolled regeneration of non-native tree species seeding from commercial plantations.

4. Land management subsidy regimes must provide integrated whole-farm/whole-estate planning and advice as part of funding packages.

# 8. Introduce and apply new rules to improve the use of nitrogen by 2024




## Why is this important for nature?

Nitrogen deriving from human activities, in its various forms, can have considerable negative impacts on biodiversity. Agriculture is a significant source, with fertilisers, farm slurry and manures contributing 60% of nitrate pollution in UK water bodies and 90% of ammonia emissions in Scotland. Almost half of the nitrogen applied to land in fertilisers is wasted, the surplus running off into air, soil and water as nitrates, ammonia and nitrous oxide.

Nitrates are a significant diffuse water pollutant, with impacts on sensitive species such as salmon, freshwater pearl mussel and water voles. It can lead to eutrophication and algal blooms, and can have serious livestock and human health implications. Sources include fertiliser runoff, cultivation too close to watercourses, soil erosion, poaching and spreading slurry or dung, either too much or too close to rivers and wetlands. Of all water bodies in Scotland, 252 rivers and lochs are impacted, with 11% of lochs and 23% of rivers and canals classified as being in poor or bad ecological condition. These degraded watercourses are primarily associated with more intensively managed farmland.[41]

Deposition of atmospheric nitrogen is recognised as one of the greatest current threats to terrestrial biodiversity. Deposition can cause local species extinctions, with sensitive species of moss, lichen and native herbaceous plants replaced by grasses and other generalist species. The nitrogen critical load was exceeded in 62% of UK semi-natural habitats in 2014. Ammonia, predominantly from agricultural activities, is one of the principal atmospheric nitrogen pollutants. Ammonia emissions have only declined by 12% since 1990.

The Nitrates Directive, as now brought into domestic law, sets conditions for nitrogen use within Nitrate Vulnerable Zones (NVZs), aimed at minimising nitrate runoff from soils into watercourses. Within these zones, excess application of fertiliser has been reduced and nitrous oxide emissions have decreased as a result. However, NVZ designation currently covers only 14% of Scotland. The CCC has recommended that NVZ designation be extended country-wide, alongside implementation of a suite of measures to reduce nitrogen use and waste.[42]

**Ammonia, predominantly from agricultural activities, is one of the principal atmospheric nitrogen pollutants.**



**Nitrates are a significant diffuse water pollutant, with biodiversity impacts on sensitive species such as salmon, freshwater pearl mussel and water voles.**

## Wider benefits

**Climate –** Nitrous oxide is a highly potent greenhouse gas released from soils and waterbodies, with 79% arising from agricultural sources. Nitrous oxide has 310 times the warming potential of carbon dioxide. A significant reduction in nitrous oxide emissions will be essential if Scotland is to meet its net zero greenhouse gas emissions target by 2045.

**Drinking water –** High nitrate concentrations in groundwater can approach or exceed standards for drinking water. A reduction in nitrogen use can reduce nitrate diffuse pollution and associated water treatment costs in affected catchments.

**Air quality –** Ammonia is one of seven pollutants which contribute to air pollution. Air pollution is expected to reduce the life expectancy of every person in the UK by an average of 7-8 months. Whilst emissions of six of those pollutants have fallen considerably since 1990, ammonia emissions remain high. Evidence is also now emerging that people living in areas with higher air pollution are more prone to chronic respiratory conditions such as Coronavirus and it can be considered a co-factor in lethality[43].

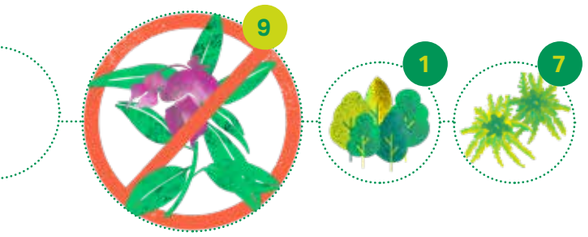
**Recreation –** Diffuse pollution from agricultural and rural sources poses a significant risk to bathing water quality, particularly during and after periods of heavy rain. In 2016, 17 bathing waters were rated poor, due to sewage and agricultural pollution.

**Angling –** Eutrophication and acidification due to nitrates and nitrogen deposition can also affect recreational fishing by disrupting food webs and reducing fish populations. Reducing nitrogen deposition could deliver benefits for the cultural services of recreational fishing and appreciation of biodiversity, valued at £87.7m in one UK study.[44]

## Steps to support implementation

1. The revised Climate Change Plan must set out a suite of policies and proposals to secure improved nitrogen use efficiency, including:
   - Introduce new rules governing nitrogen use across all of Scotland by 2024
   - Publish Nitrogen Balance Sheet for Scotland and set a target for reduction in nitrogen waste of 30% by 2030
   - Introduce compulsory soil testing and nitrogen balance sheets on all farms
   - Implementation of a suite of measures to promote efficient nitrogen use and safe storage of farm manures and slurry
   - Establish new financing mechanisms under the forthcoming Agriculture Transformation Programme to help farmers comply with new regulations, including provisions for advice and training
2. New regulations are required to strengthen cross-compliance with regards to nitrogen use.
3. The Clean Air Strategy must establish and introduce a mandatory code of practice for ammonia and set a quantitative target for the reduction of ammonia emissions.

# 9. Establish a Scottish Invasive Non-Native Species (INNS) Inspectorate, to ensure zero new establishments of damaging INNS in Scotland, by 2025




## Why is this important for nature?

When people move animals and plants around the world and allow them, either deliberately or accidentally, to escape and establish in the wild, serious environmental impacts can result. Invasive non-native species (INNS) are species moved and released by direct human actions into areas where they do not naturally occur[45], and where they cause damage to native ecosystems, human health or economy. INNS are recognised as one of the five principal drivers of biodiversity loss across the world[46] and are a major concern in Scotland.[47]

INNS can spread quickly, preying on or outcompeting native species for food and space, spreading disease or altering habitats. They choke waterways, undermine riverbanks, and some are a risk to human health, through toxins or pollen allergies. For example, the North American signal crayfish has driven native crayfish to the edge of national extinction through competition and disease transmission.

Economic impacts of INNS, as a result of crop and forestry losses, pests and disease and expenditure on control, can be huge. Total cost of INNS in Europe is estimated at €12.5b per year, with the UK cost at least £2b per year.[48] Climate change is already improving establishment conditions for species newly introduced by people – and this is set to intensify.

The increasing globalisation of trade across the world, the emergence of new trading partners and policies following Brexit, including the potential establishment of Free Ports, and post-Covid pressures to accelerate economic recovery, together present a severe risk that the arrival of new species in Scotland will accelerate and further compound an already intensifying problem. Climate change is already known to be improving establishment conditions for new arrivals, as winters become warmer and wetter.

Once INNS fully establish, it is vastly more difficult and costly to eradicate them and reverse the damage. Investing in effective steps to avoid future establishment will be a prerequisite for delivering transformative change for nature and a sustained Green Recovery.

International treaties and national strategies highlight the importance of prevention through biosecurity, of early warning and rapid response capacity for newly arriving species, and that action on established INNS must be strategic and work at the right scales - whole-island, or whole-catchment operations, for example. Action on stablished INNS must follow best practice guidance and establish long-term legacies of biosecurity for the future.

Currently, INNS biosecurity arrangements are inadequate. At least 12 new non-native species are establishing on the island of Britain each year. Northward movement of INNS established in the South continues.[49] New and highly damaging non-natives are arriving on Scottish islands, such as stoats on Orkney. Too often, INNS control projects either fail to operate at the right scale or to employ best practice, are not funded and seen through to completion, or are too short-term to establish an effective legacy.

Investment in a National INNS Inspectorate for Scotland would be preventative spend and represent a precautionary national approach to this principal driver of biodiversity loss. It would ensure government support in the long term, rather than a reliance only on short-term projects – critical for effective action. The inspectorate could also inform and underpin a 'Polluter Pays' approach to INNS responses and management.



Native red squirrels have declined as a result of competition and disease from invasive greys.



## Wider benefits

**Economic** – Preventing INNS arriving or fully establishing is essential to avoid spiralling costs of control. For example, Japanese knotweed can damage building foundations and road infrastructure, undermining property value and the ability to secure mortgages. Muntjac deer, which have gained a stronghold in southeast England, have not yet established over the border in Scotland - but SNH estimate that it could cost £1.9m to eradicate them if they arrive.

**Health -** Some INNS can be harmful to humans and animals. The invasive plant Ambrosia causes severe allergic reactions across the European mainland; the sap of giant hogweed can cause burns and blisters to skin when exposed to sunlight.

**Recreation -** Himalayan balsam can impact the recreational value of watercourses by blocking access. Plants that grow aquatically such as floating pennywort can form dense floating mats on waterbodies, blocking access, choking vegetation and killing fish and other fauna.

## Steps to support implementation

Set up a Scottish Non-Native Species Inspectorate with two broad functions:

1. To build national INNS biosecurity. This requires a focus and action on pathways of arrival for species new to Scotland. It will require a comprehensive INNS pathway analysis for Scotland to be conducted as a matter of urgency.

2. To protect biodiversity, protected areas and priority habitats at local and regional scales within Scotland. This means:

— Building and sustaining long-term preventative biosecurity and early warning/rapid response capacity to protect priority habitats, including from INNS already established in some parts of Scotland. In particular: protecting islands from invasion by mammalian predators and underpinning a rolling programme of seabird island restoration; preventing INNS arrival and establishment in uninvaded freshwater catchments and woodland; and ensuring an appropriate scale for ongoing control operations.

— Implementing INNS regulations, developing best practice and strategic approaches to biosecurity and control.

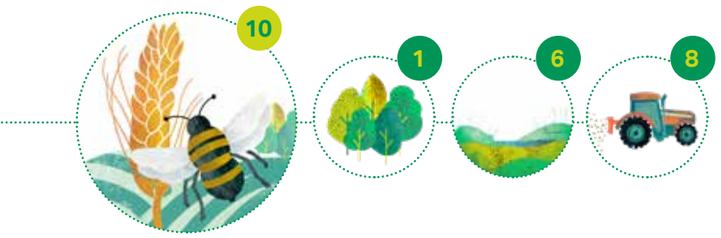
— Preventing invasion of peatlands by non-native trees, particularly seeding commercial conifers.

— Protecting native woodlands from the establishment of damaging plants, such as *Rhododendron ponticum* in Celtic rainforest habitats, and ensuring catchment scale operations, building cooperation structuring biosecurity legacies.

— Protecting marine habitats through enforcement of the IMO Ballast Water Convention, and through early action on invasive invertebrates in priority inshore habitats.

— Building sustained volunteer support for strategic INNS control.

# 10. Transform Scottish agricultural policy by 2027 so that it facilitates and rewards nature- and climate-friendly farming




## Why is this important for nature?

Scotland's farmers and crofters produce high-quality food and are responsible for management of over 70% of Scotland's land. Some farming systems play an important role in maintaining important landscapes and wildlife habitats and there are fantastic examples of wildlife thriving on farms and crofts.

However, it is widely acknowledged that agriculture today has a net negative environmental impact. On more intensively managed agricultural land, species numbers and habitat diversity have shown serious declines. Farmland biodiversity is affected by changes in management practices such as fertiliser application, changes in sowing and harvesting practices, the use of pesticides and the loss of crop diversity. Consequently, while some farmers continue or have adopted wildlife-friendly farming techniques, there is still a long way to go to ensure that Scottish farming is able to produce food in a way that protects and enhances nature and invests in natural capital.

The environmental performance of the farming industry is affected by several factors, including technological developments, markets and the prices farmers receive for their produce.  But a major driver is government policy and financial support. The rules governing farming and farm support subsidies have a key role in shaping the industry.

The current policy and financial support regime in Scotland is flawed. The majority of public subsidy is paid to farmers as basic and greening payments which disproportionately benefit the most agriculturally productive and thus most intensively farmed areas, to the disadvantage of those farmers and crofters who farm in more wildlife-friendly ways. The majority of this financial aid has few conditions attached, and only a comparatively small pot of funding is allocated to environmental measures. As a result, current farm subsidies fail to address environmental and climate impacts of farming activities. At best, this represents poor value for taxpayers' money and at worst can result in further public spending being required to mitigate the impacts. This also represents poor policy coherence with other Scottish Government priorities such as environment and climate targets.

In future, farm support payments need to be better targeted and designed to deliver improved environmental outcomes such as stable wildlife populations, clean water, carbon storage in soils and a range of other, so-called, public goods, alongside farmers producing food for market.

As a result of leaving the EU, Scotland must bring forward a new programme of policy and support for Scottish agriculture. This must be one that puts it on a path to net zero by 2045, addresses the biodiversity crisis, builds resilience and profitability and supports the farmers and crofters who need it most. In order to achieve this in a fair and equitable way, and ensure a just transition, the sector needs long-term certainty over the future direction of travel. While it is clear this will require a dramatic shift in rural support, the Scottish Government is yet to publish its long-term vision for future agriculture policy, which means that the transition, when it comes, will have to be sharper and potentially more painful for the sector. Under a reformed agricultural policy focused on delivering public goods we could see nature flourish and wildlife populations bounce back whilst also enabling Scottish agriculture to make the most of its reputation for high quality produce.



## Wider benefits

**Economic** – Current agricultural policy makes little economic sense and does not address the severe financial hardship that many farmers and crofters face. Area-based payments disproportionately benefit few large landowners, as opposed to those who most need the support, and the agriculture sector barely breaks even financially without the support of subsidies. In 2016-17, 45% of farms in Scotland generated income less than the minimum agricultural wage. Under a public money for pubic goods model, these hardest hit farms in marginal areas could benefit most from rural support.

**Climate change** – Agriculture and related land use is the second largest greenhouse gas emitting sector in Scotland. It is clear that Scotland cannot meet net zero by 2045 without emissions reduction from agriculture, coupled with greater carbon sequestration. -Dedicating a greater proportion of the rural support budget to public goods delivery would encourage more farmers to deliver activities such as farm woodland, peatland restoration and better soil management, which can increase carbon sequestration and support climate adaptation.

**Integrated land use** – A reformed agricultural policy could play an important role in breaking down the barriers that exist between land management sectors such as farming and forestry, by encouraging farmers to plant woodlands. It could also promote collaborative land management where farmers work together to deliver enhanced benefits at a larger scale. While we have seen habitat fragmentation in recent decades, a reformed policy could promote collaboration to expand and join up wildlife habitats, enhancing the landscape at the same time.

**A better use of public money** – Spending more than £650m a year supporting an industry without strict environmental conditionality and only a small proportion of the budget going on environmental measures is a poor use of public money, especially if more money is then required to rectify environmental problems caused by some farming methods. A reformed agricultural policy would make much more efficient use of precious public funds.

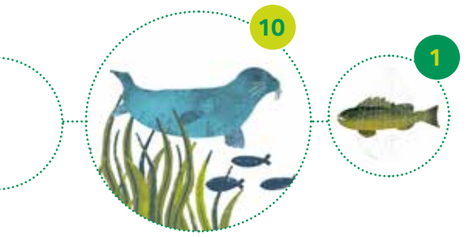
## Steps to implementation

1. Develop and publish detailed proposals for a new system of rural support payments to farmers, crofters and other land managers for the delivery of public goods, by the end of 2020.

2. By summer 2021, finalise proposals for a new support system, outline a roadmap to transition farmers from the current system to this new system by 2027 at the latest and establish pilot schemes to trial and test this new system between 2021 and 2024.

3. Bring forward agriculture legislation, establishing the purpose and legal basis for new rural support payments, no later than 2024, in order to affect changes over the transition period.

# 11. Commit to at least 30% of Scotland's seas being highly protected, with at least 10% fully protected, by 2030




## Why is this important for nature?

Scotland's seas are six times larger than its land mass, and our shores make up an astonishing 10% of Europe's coastline. A wealth of habitats and species, including seagrass meadows, coral reefs, dolphins and seabirds, can be found in Scottish waters from the coastal shallows to the deep oceans.

The legacy of historic impacts combined with emerging threats from coastal and offshore development and extraction mean that our marine environment faces intense pressures. The effects of climate change are already evident and are predicted to intensify as temperature rises. Even in the deep ocean beyond the continental shelf there are very few, if any, areas free from human impact.

Marine Protected Areas (MPAs) are tried and tested tools for conservation, delivering a range of benefits to ecosystems and communities. There are different types of MPAs, as defined by their management objectives and governance.[50] While progress has been made, and the Scottish MPA network currently covers 22% of the Scottish marine area, many sites do not have management plans in place, and those MPAs with management plans still allow damaging industrial activity to continue, offering neither protection nor recovery. The current network does not provide enough protection for features that play critical roles in supporting biodiversity or climate mitigation and adaptation which, in light of the climate and biodiversity emergencies, is a fundamental issue.

Across the globe, there is a growing need and drive to deliver more ambitious protections for nature. The European Commission's Biodiversity Strategy for 2030 commits to at least 30% of seas designated as protected areas by 2030, with at least a third of these strictly protected.

To achieve our biodiversity and climate goals we must form a new relationship with the sea, where the greatest societal value is placed on what is left behind rather than what is taken out. Fully implemented and actively managed MPAs guarding against damaging extractive activities and other harmful development would have profound positive effects for nature and underpin the regeneration of our seas.

Such a transformative change is required to deliver the biggest possible conservation gains, including increased species abundance, habitat recovery and greater resilience to climate change. Scottish residents have shown their support for sustainable use and management of our seas and creation of MPAs.[51] It is now time for decision-makers to act decisively to deliver effective protection and management of Scotland's seas.





## Wider benefits

**Climate –** The ocean plays a key role in regulating Earth's atmosphere, including through carbon sequestration. 'Blue carbon' is stored in living material, such as animals and plants, and non-living material, such as shells and skeletons. In Scotland, the carbon stored in the top 10 cm of the seabed is about 18 times larger than the carbon stored in either its forests or top 10 cm of its peatland[52]. Protecting and enhancing blue carbon habitats will ensure that their vital role in regulating the climate is locked-in and enhanced.

**Fisheries –** Effectively managed MPAs can promote recovery of critical habitats that support fish and shellfish. As the biomass and density of fish and shellfish increase within a protected area, the individuals, eggs and larvae can 'spill over' to support thriving commercial fisheries.

**Wildlife tourism –** Marine and coastal wildlife tourism already makes a vital contribution to Scotland's economy in coastal and island communities. A well-regulated nature-based tourism sector focused on wildlife-rich experiences could see Scotland become a major marine eco-tourism destination.

**Scientific understanding –** Strictly protected sites can act as reference areas to inform the sustainable management of wider seas and allow the separation of impacts of environmental change from other human pressures.

## Steps to support implementation

1. Complete Scotland's MPA network, including sites for whales, dolphins, basking sharks, seafloor habitats and marine birds, and ensure that the entire network is protected from damaging activity, as per international standards[53].

2. Commit to a minimum of 30% of Scottish seas being highly protected, of which at least a third is fully protected,[54] by 2030. To support delivery, establish an independent commission to advise on the transformation of MPA management in Scottish seas. The commission should also provide advice on the condition and ecological coherence of the existing network and consider new sites to deliver nature's recovery, including protection of features important for climate resilience.

3. Establish mechanisms for long-term budgets to support effective marine monitoring programmes and MPA management plans.

# Endnotes


1 IPBES (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

2 Walton P, Eaton M, Stanbury A, Hayhow D, Brand A, Brooks S, Collin S, Duncan C, Dundas C, Foster S, Hawley J, Kinninmonth A, Leatham S, Nagy-Vizitiu A, Whyte A, Williams S and Wormald K (2019). The State of Nature Scotland 2019. The State of Nature partnership.

3 AGER (2020). Towards a robust resilient wellbeing economy for Scotland, Report of the Advisory Group on Economic Recovery.

4 Vivid Economics (2020). Keeping Us Competitive, A UK Investment Strategy for net zero, a report prepared for WWF UK. https://www.wwf.org.uk/sites/default/files/2020-06/Keepingus_competitive.pdf

5 Scottish Environment LINK (2019). Funding the nature and climate emergency, available at: https://www.scotlink.org/funding-the-nature-and-climate-emergency-reversing-a-decade-of-austerity-for-the-environment/

6 Miller, F, and Murray, P (2017). Where the Green Grants Went Scotland, An Analysis of Grants from UK Sources for Environmental Work in Scotland, the Environmental Funders Network.

7 Scottish Wildlife Trust (2020). Trust and SEPA publish route map towards £1 billion for nature conservation https://scottishwildlifetrust.org.uk/news/route-map-to-1-billion-for-nature-conservation-published/

8 Forestry Commission (2003). Management of Semi-Natural Woodlands. 7. Native Pinewoods.

9 SNH. Woodland Habitats. https://www.nature.scot/landscapes-and-habitats/habitat-types/woodland-habitats [accessed 02/03/2020].

10 Walton P, Eaton M, Stanbury A, Hayhow D, Brand A, Brooks S, Collin S, Duncan C, Dundas C, Foster S, Hawley J, Kinninmonth A, Leatham S, Nagy-Vizitiu A, Whyte A, Williams S and Wormald K (2019). The State of Nature Scotland 2019. The State of Nature partnership

11 The Scottish Government (2019). Scotland's Forestry Strategy 2019-2029

12 Committee on Climate Change (2020). Letter: Building a resilient recovery from the COVID-19 crisis to Roseanna Cunningham MSP https://www.theccc.org.uk/publication/letter-building-a-resilient-recovery-from-the-covid-19-crisis-to-roseanna-cunningham-msp/

13 The Scottish Government (2019). Scotland's Forestry Strategy 2019-2029

14 Forestry Commission Scotland (2009). Woods for Health Strategy.

15 Scottish Government, Sustainability of fish stocks, National Indicator, available at: https://nationalperformance.gov.scot/measuring-progress/national-indicator-performance [accessed 02/03/2020].

16 86% of the Greater North Sea and Celtic Seas showing evidence of physical disturbance from bottom contacting gears, 58% of which was considered 'highly disturbed'. OSPAR Intermediate Assessment (2017), available at: https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/ and Vina-Herbon et al. (2018) UK Marine Online Assessment Tool: Extent of physical damage to predominant seafloor habitats. Available at: https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/benthic-habitats/physical-damage/

17 Esteban, A. and Carpenter, G. (2015). Managing EU fisheries in the public interest. New Economics Foundation. Available at: https://neweconomics.org/2015/03/managing-eu-fisheries-in-the-public-interest

18 Scottish Government (2019). Grouse Moor Management Review Group, Report to the Scottish Government.

19 Douglas, D. et al. (2015). Vegetation burning for game management in the UK uplands is increasing and overlaps spatially with soil carbon and protected areas. Biological Conservation. Volume 191, pp.243-250.

20 Scotland's Moorland Forum (2020). Valuing Scotland's Moorlands.

21 Scottish Natural Heritage (2020). Peatland ACTION case study: What's the connection between peat and deer management? Available at: https://www.nature.scot/peatland-action-case-study-whats-connection-between-peat-and-deer-management [accessed 02/03/2020].

22 SPICe (2013). SPICe Briefing Wild Deer in Scotland, 13/74. SPICe the Information Centre.

23 Forestry Commission Scotland (2014). Native Woodland Survey of Scotland, Results from the Native Woodland Survey of Scotland.

24 Scottish Environment LINK (2020). Herbivore Impacts, Upland Red Deer Densities, Carbon Sequestration and Storage in the Upland Red Deer Range – a Report for Scottish Environment LINK's Deer Task Force.

25 Scottish Government (2020). The management of wild deer in Scotland: Deer Working Group Report.

26 Scottish Government (2020). The management of wild deer in Scotland: Deer Working Group Report. The report states: "*levels of annual winter mortality amongst red deer on open hill range in the Highlands are unacceptable and need to be reduced.*" P.213.

27 Scottish Government (2020). The management of wild deer in Scotland: Deer Working Group Report.

28 Secretariat of the Convention on Biological Diversity (2012). Cities and Biodiversity Outlook. Montreal, Canada

29 Hitchins SP and Beebee TJC (1998). Loss of genetic diversity and fitness in Common Toad (*Bufo bufo)* populations isolated by inimical habitat. *Journal of Evolutionary Biology,* 11: 269–283.

30 Scottish Natural Heritage (2019). State of the environment indicators, Indicator 13: Soil sealing. Available at: https://www.environment.gov.scot/our-environment/state-of-the-environment/ecosystem-health-indicators/resilience-indicators/indicator-13-soil-sealing/ [accessed 02/03/2020].

31 The Planning (Scotland) Act 2019 defines Green and Blue Infrastructure as: features of the natural and built environment (including water) that provide a range of ecosystem and social benefits.

32 Committee on Climate Change (2020). Letter: Building a resilient recovery from the COVID-19 crisis to Roseanna Cunningham MSP https://www.theccc.org.uk/publication/letter-building-a-resilient-recovery-from-the-covid-19-crisis-to-roseanna-cunningham-msp/

33 Bain, C.G., Bonn, A., Stoneman, R., Chapman, S., Coupar, A., Evans, M., Gearey, B., Howat, M., Joosten, H., Keenleyside, C., Labadz, J., Lindsay, R., Littlewood, N., Lunt, P., Miller, C.J., Moxey, A., Orr, H., Reed, M., Smith, P., Swales, V., Thompson, D.B.A., Thompson, P.S., Van de Noort, R., Wilson, J.D. & Worrall, F. (2011). IUCN UK Commission of Inquiry on Peatlands. IUCN UK Peatland Programme, Edinburgh.

34 Committee on Climate Change (2019). Reducing emissions in Scotland, 2019 Progress Report to Parliament.

35 Committee on Climate Change (2020). Land use: Policies for a Net Zero UK.

36 Coronavirus (Scotland) Act 2020. http://www.legislation.gov.uk/asp/2020/7/contents

37 Scottish Government (2020). Scottish Budget: 2020-21.

38 Evans, C. et al. (2017). Implementation of an emission inventory for UK peatlands. Report to the Department for Business, Energy and Industrial Strategy, Centre for Ecology and Hydrology, Bangor.88pp.

39 Vivid Economics (2019). Delivering on Net Zero: Next Steps for Scotland. Report prepared for WWF Scotland by Vivid Economics.

40 Peatland as defined in the Muirburn code but we recommend to extend this to peat soils over 30cm

41 James Hutton Institute (2017). CAP Greening Review – Summary https://www2.gov.scot/Resource/0052/00523863.pdf

42 Committee on Climate Change (2020). Land Use: Policies for a net zero UK.

43 Conticini, E., Frediani, B. and Caro, D. (2020). Can atmospheric pollution be considered a co-factor in extremely high level of SARS-CoV-2 lethality in Northern Italy? https://www.sciencedirect.com/science/article/pii/S0269749120320601#

44 Jones, L. Provins, A., Holland, M., Mills, G., Hayes, F., Emmett, B., Hall, J., Sheppard, L., Smith, R., Sutton, M., Hicks, K., Ashmore, M., Haines-Young, R. and Harper-Simmonds, L. (2014). A review of the application of the evidence for nitrogen impacts on ecosystem services.

45 Species altering their range because of indirect human effects – for example habitat changes or climate change - are not classed as Invasive Non-Native Species

46 IPBES (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

47 Walton P, Eaton M, Stanbury A, Hayhow D, Brand A, Brooks S, Collin S, Duncan C, Dundas C, Foster S, Hawley J, Kinninmonth A, Leatham S, Nagy-Vizitiu A, Whyte A, Williams S and Wormald K (2019). The State of Nature Scotland 2019. The State of Nature partnership.

48 SPICe (2010). SPICe Briefing Invasive Non-Native Species, 10/33, SPICe the Information Centre.

49 Joint Nature Conservation Committee (2019). UK Biodiversity Indicators, B6. Pressure from invasive species, available at: https://jncc.gov.uk/our-work/ukbi-b6-invasive-species/

50 Oregon State University, IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre (2019) An Introduction to The MPA Guide. Available at: https://www.protectedplanet.net/c/mpa-guide

51 Marine Scotland (2020) Marine Social Attitudes: Survey, available at: https://www.gov.scot/publications/attitudes-scotland-marine-environment-marine-issues/

52 Marine Scotland (2020). New Blue Carbon Resource for Marine Scientists, available at: https://blogs.gov.scot/marine-scotland/2020/02/24/new-blue-carbon-reports/

53 Day, J., Dudley, N., Hockings, M., Holmes, G., Laffoley, D., Stolton, S., Wells, S. and Wenzel, L. (eds.) (2019). Guidelines for applying the IUCN protected area management categories to marine protected areas. Second edition. Gland. Switzerland: IUCN.

54 The Marine Protected Area Guide defines Fully protected as: no extractive or destructive activities are allowed, and all impacts are minimized. Highly protected is defined as: only light extractive activities are allowed, and other impacts are minimized to the extent possible. Oregon State University, IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre (2019). An Introduction to The MPA Guide. Available at: https://www.protectedplanet.net/c/mpa-guide

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