

Scottish Biodiversity Strategy

Report to the Scottish Parliament

2014 - 2016

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**Scottish Biodiversity Strategy
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2014 - 2016**

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Contents

Ministerial Foreword

1 Introduction

International framework and obligations
Scotland's approach to biodiversity
Scotland's changing biodiversity
Aims and outcomes
A Route to 2020 – delivery through partnership and collaboration

2 Action delivery and progress

Health ecosystems
Natural capital
Biodiversity, health and quality of life
Wildlife, habitats and protected places
Land and freshwater
Marine and coastal
Measuring progress

3 Next steps – The 2020 Challenge for Scotland's Biodiversity

Key issues and opportunities

Annex 1 Links between Aichi targets and Scottish Biodiversity Strategy 2020

Challenge Outcomes

Annex 2 Natural Heritage, Biodiversity and Engagement Indicators

Annex 3 Acronyms

Ministerial Foreword



This Report to the Scottish Parliament sets out progress with delivery of the Scottish Biodiversity Strategy. It records the substantial progress which has been made to fulfil our ambitions for Scotland's biodiversity. It also highlights the challenges which lie ahead if we are to meet the aims of the *2020 Challenge for Scotland's Biodiversity*.

This is the fourth such Report to the Scottish Parliament and covers the period 2014-2016. It is also part of a suite of reports which monitor biodiversity related activities and should be considered in conjunction with the first Annual Review of Progress on the

Scottish Biodiversity Strategy *a Route Map to 2020*, and the Interim Report 2016 on Scotland's Progress to 2020, the Aichi Targets. Both these reports were published by Scottish Natural Heritage in September 2016 and I am grateful to Scottish Natural Heritage for their work to support the delivery of the *2020 Challenge for Scotland's Biodiversity*.

All three reports recognise the important role which biodiversity plays in helping to support our vision for a Scotland which is more productive, cohesive and fairer. Our work to protect and restore biodiversity contributes directly to the ambitions set out in Scotland's Economic Strategy. Our natural assets, of which biodiversity is a part, underpin our productivity and I am delighted that the Natural Capital Asset Index is now included as one of Scotland's National Performance Indicators. This demonstrates how seriously we take the role of natural capital in supporting our prosperity.

This Report highlights some of the extensive work underway across Scotland to restore ecosystems. The additional £8m that has been identified to support Peatland Action in 2017/2018 is a clear indication of the Scottish Government's commitment to support ecosystem restoration. Biodiversity also benefits our health and wellbeing, as individuals and as a society, and extensive work is underway to improve the quality and increase the use of greenspaces across the country. The successful partnership work on the NHS estate between the Scottish Natural Heritage Forestry Commission Scotland and NHS Scotland demonstrates how joint working can improve the lives of individuals and benefit biodiversity.

When we think of biodiversity we often picture the species and habitats for which Scotland is world renowned. It is heartening to note the improvements being made for some species, such as some of our butterfly species, and the overall improvement in some habitats, such as our river water quality. But clearly there are areas where further improvement is needed and I am particularly concerned at the declines in some of our bird species such as breeding seabirds and waders.

As the target date of 2020 draws closer it is clear that further work lies ahead to meet the 2020 Challenge. This is a shared responsibility for the Scottish Government, public, private or third sector, and individual citizens. We can all make a difference for biodiversity and it is our responsibility to work as hard as we can to protect and enhance Scotland's nature.

A handwritten signature in black ink, appearing to read 'R. Cunningham'. The signature is fluid and cursive, with a large initial 'R' and a long, sweeping underline.

Roseanna Cunningham MSP
Cabinet Secretary for Environment, Climate Change and Land Reform

1 Introduction

This is the fourth report detailing progress on the implementation of the Scottish Biodiversity Strategy. It covers the period 2014 - 2016. The Nature Conservation (Scotland) Act 2004 requires a report on the implementation of the Scottish Biodiversity Strategy to be laid in the Scottish Parliament at the end of every three year period following its adoption. Previous progress reports were laid in 2007, 2010 and 2014.

The [2020 Challenge for Scotland's Biodiversity](#) was published in 2013 to take into account the international Aichi targets agreed as part of the Convention on Biological Diversity in 2010 and the [European Union Biodiversity Strategy](#) published in 2011. The 2020 Challenge updated the previous strategy - Scottish Biodiversity Strategy; [It's in Your Hands](#) (2004) and both documents constitute the Scottish Biodiversity Strategy.

The following section introduces the background and scope of the Strategy and key steps in its implementation since 2013; section 2 provides information on progress towards the seven 2020 Challenge outcomes, and section 3 looks ahead to what is still required to ensure we achieve the 2020 Challenge for Scotland's Biodiversity. While this report focuses on the implementation of the 2020 Challenge, further information on some of the work it refers too can be found in the Scottish Natural Heritage (SNH) progress report on implementation of the [Scottish Biodiversity Strategy – a Route Map to 2020](#).

International framework and obligations

The Scottish Biodiversity Strategy itself sits within a broad framework encompassing global, EU, UK and Scottish conventions, legislation and policy – see box 1.

Box 1: The policy framework for biodiversity

UN Sustainable Development Goals

Scotland is one of the first countries in the world to sign up the new [United Nations sustainable development goals](#) which seek global common action to tackle poverty and inequality and promote sustainable development across the globe. Progress with the Scottish Biodiversity Strategy will contribute to many of the 17 development goals, with two directly related to biodiversity conservation itself e.g.

- Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Convention on Biological Diversity

At the United Nations Conference on Environment and Development in Rio De Janeiro, Brazil in 1992 the first global strategy for biodiversity was ratified. At the tenth meeting of the Conference of the Parties in October 2010, a revised and updated Strategic Plan for Biodiversity, including the [Aichi Biodiversity Targets](#), covering 2011-2020 was adopted.

European Union Biodiversity Strategy

[The European Union Biodiversity Strategy](#) May 2011 builds on achievements to 2010 but also recognises that more needs to be done. This new approach to maintaining biodiversity aims to bring down high species-extinction rates by 2020, restore natural ecosystems in the European Union as far as possible, and contribute more to averting a global problem.

UK Biodiversity Framework

Since the publication in 2007 of [Conserving Biodiversity – the UK approach](#), the context in which the Convention on Biological Diversity (CBD) is implemented in the UK has changed. A [UK Biodiversity Framework](#) identifies the activities needed to galvanise and complement country strategies, in pursuit of the Aichi targets.

Scottish Biodiversity Strategy

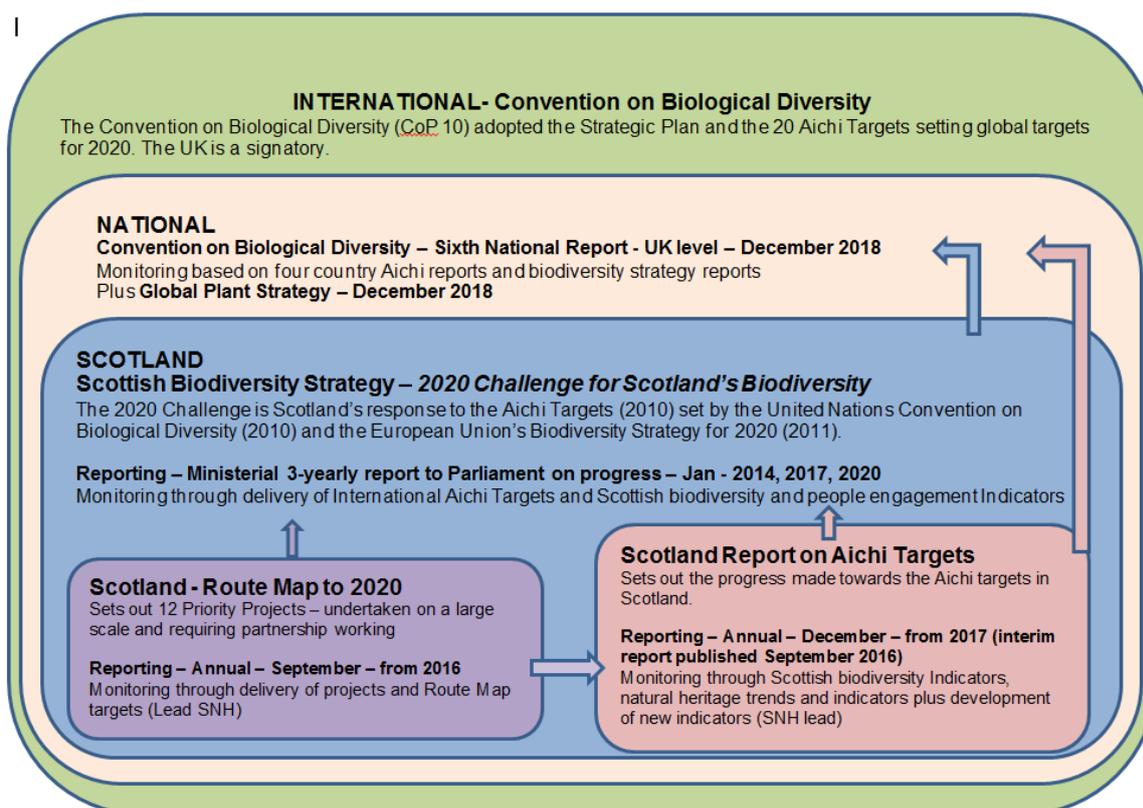
The Scottish Biodiversity Strategy: [It's in Your Hands](#) 2004 was supplemented in 2013 by the [2020 Challenge for Scotland's biodiversity](#) as a response to new international Aichi targets. The [Route Map to 2020](#), published in 2015, identified the large-scale collaborative action required to help deliver the Scottish Biodiversity Strategy outcomes.

This report is therefore one of a number of separate reporting requirements on biodiversity which are set out in diagram 1 below.

In addition to this national reporting framework, public sector bodies are required to report individually every 3 years on the delivery of their biodiversity duty under the Nature Conservation (Scotland) Act 2004. [Biodiversity Duty Guidance](#) is provided to help public bodies with their reporting. Recent Scottish Government research¹ has found that 61 (44%) of all public bodies have now produced a Biodiversity Duty report, including 30 out of the 32 local authorities. The work identified in the reports contributed to 12 of the 20 Aichi Targets.

¹ [Evaluation of the Compliance and Quality of Biodiversity Duty Reports 2015](#) Elizabeth Daly, Teresa Fenn and Jennifer Miller, Risk & Policy Analysts (RPA) Ltd (2016).

Diagram 1. Key reporting requirements for Biodiversity in Scotland.



Scotland's approach to biodiversity

Our country is very much defined by its nature and landscapes. Our range of habitats on land and sea that support some 90,000 species are a significant part of what makes Scotland special. They inspire our art and literature. They support our health, well-being and development. They provide for us the ecosystem services that sustain life and underpin Scotland's economy. The quality of our environment and the products that come from it gives Scotland a trading advantage as a small European nation. Activities which depend directly on the natural environment are estimated to realise between £17.1 billion a year, or 11% of total Scottish output². They support 242,000 jobs, or 14% of all full time jobs in Scotland³.

The effective conservation and enhancement of biodiversity therefore plays an essential role in meeting the Scottish Government's vision of smart, sustainable and successful Scotland. It is an integral aspect of [Scotland's Economic Strategy](#), the [Land Use Strategy 2016-2021](#), the [National Planning Framework 3](#) and the [National Marine Plan](#). Through many international conventions and agreements Scotland also works with other countries to protect and enhance biodiversity, especially in relation to migratory species - see box 2.

² [Valuing Our Environment: The Economic Impact of Scotland's Natural Environment](#)

³ [Valuing Our Environment: The Economic Impact of Scotland's Natural Environment](#)

Box 2: Working internationally

Many of the species that occur in Scotland are migratory and rely on the availability of suitable habitat either seasonally or as stepping stones on their annual migrations. Scotland helps biodiversity in a wider sense by providing such habitat and thereby assisting the conservation measures adopted in other countries.

Whooper swans breed in Iceland and other parts of the arctic but migrate to the UK for the winter. Scotland has established a number of Special Protection Areas (SPA) designed to ensure that they can thrive during this winter period. These include the Upper Solway Flats and Marshes, Loch of Strathbeg and River Spey – Insh Marshes. Collectively these SPAs support many hundred whooper swans and provide safe roosting and foraging areas

Some wading birds, such as knot and bar-tailed godwit, have long and complex migrations and rely on a sequence of sites during their autumn and spring migrations. Some of Scotland's big east coast estuarine SPAs, such as the Moray Firth, the Firth of Tay and the Firth of Forth provide such stepping stones and contribute to the network of such sites in England, the Netherlands and Germany.

Scotland's changing biodiversity

Scotland's biodiversity continues to change. A number of species are doing well and others are extending their range across and into Scotland as a result of climate change, investment in habitat management and restoration, and a range of positive conservation measures for species. For example, as a result of focused action; Greenland White-fronted geese and sea eagles have extended their populations through active management and reintroduction. Species of plants associated with woodlands, grassland and heath such as green shield moss and lesser butterfly-orchid have benefited through identification of new sites and a greater understanding of species needs. [The Species Action Framework \(SAF\) Handbook](#), published by SNH in 2016 and delivered with over 100 partners provides new information and management guidance for 32 species in Scotland.

At the same time, the range and population of some species are declining as a result of a range of social, economic and environmental factors, including;

- **Pollution** - from industry, agriculture and road traffic, which impacts on waterways, uplands, air quality and sensitive habitats across Scotland;
- **Land use intensification and modification** – changes in agricultural production and built development can lead to a reduction of diversity, quality and connectivity of landscapes and habitats;
- **Spread of invasive species and wildlife disease** - much of this has arisen from a growing global trade of plants and animals;
- **Lack of recognition of the value of nature** - the vital benefits that healthy stocks of nature, or 'natural capital', provide to society are not fully recognised

or appreciated and therefore are not sufficiently considered in decision making;

- **Disconnection with nature** - many people in society are disconnected with nature and therefore undervalue its contribution to their well-being and prosperity, and to wider society;
- **Climate change** - is causing a shift in weather patterns which are affecting nature across Scotland. In the seas warming, acidification and sea level rise are becoming evident, and wetter conditions on land, especially in the west are predicted; and
- **Use of marine resources** - mainly in the form of some commercial fisheries and fishing which have profoundly changed the abundance and resilience of some species, such as cod, and altered marine habitats.

The story of biodiversity change in Scotland is therefore complex, with success requiring a long term approach to managing environmental change that allows nature to flourish in ways which maximise benefits to people, alongside our traditional efforts to protect wildlife and restore habitats.

Aims and outcomes

Against this background, the *2020 Challenge for Scotland's Biodiversity* sets out three aims achieved through seven outcomes. A suite of biodiversity and people engagement indicators are used to describe progress across the Strategy outcomes.

The aims provide a broad framework which support the Scottish Government's purpose of 'creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth'.

- Protect and restore biodiversity on land and sea, and through action to support healthier ecosystems and restore species and habitats.
- Connect more people with the natural world, for their health and well-being and to involve more of them in decisions about their environment.
- Maximise the benefits of a diverse natural environment and the range of social and economic goods and services it provides.

To achieve these aims, the Strategy identifies seven outcomes:

Outcome 1: Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build our natural capital.

Outcome 2: Natural resources contribute to stronger sustainable economic growth in Scotland, and we increase our natural capital to pass on to the next generation.

Outcome 3: Improved health and quality of life for the people of Scotland, through investment in the care of green space, nature and landscapes.

Outcome 4: The special value and international importance of Scotland's nature and geodiversity is assured, wildlife is faring well, and we have a highly effective network of protected places.

Outcome 5: Nature is faring well, and ecosystems are resilient as a result of sustainable land and water management.

Outcome 6: Scotland's marine and coastal environments are clean, healthy, safe, productive and biologically diverse meeting the long-term needs of people and nature.

Outcome 7: A framework of indicators that we can use to track progress.

Section 2 of this report describes progress on each of these outcomes and a sub-set of relevant indicators are used to assist in reporting at outcome level. Annex 1 shows how each of these outcomes are linked to international Aichi targets.

A Route Map to 2020 - Delivery through partnership and collaboration

There is a wide range of activity required to implement the Strategy. A cornerstone of Scotland's approach to biodiversity is partnership working and collaboration between individuals, organisations and across public and private sectors.

To provide greater focus to this effort, one of the most significant developments since the last Report to the Scottish Parliament has been the preparation of a Scottish Biodiversity Strategy - *Route Map to 2020*. Published in 2015, the Route Map identifies large-scale collaborative action which contributes to the outcomes of the 2020 Challenge. It contains an ambitious programme of activity structured around 12 Priority Projects and targets and supported by 71 actions and 8 supporting elements of work. Collectively the work involves a large number of organisations as well as many individual land managers, NGOs and other natural resource stakeholders. The [first progress report](#) on delivery of actions within the Route Map was published in September 2016.

SNH is leading the co-ordination and delivery of the Route Map and has set up a co-ordination group and supporting working groups to assist it in this task. A number of delivery agreements with key organisations have also been developed, with more planned. SNH also organises an annual stakeholder event and produces a newsletter once a quarter.

A review of the governance arrangements for biodiversity has been undertaken and will be finalised soon. In the meantime, the biodiversity delivery support groups, in the form of the working groups, and the Scottish Biodiversity Strategy Co-ordination Group (which is chaired by Scottish Natural Heritage) have continued to meet regularly and to support and coordinate the delivery of the Scottish Biodiversity Strategy and 'Scotland's Biodiversity – a Route Map to 2020'.

Local Biodiversity Action Partnerships (LBAPs) were established across Scotland in response to the first UK Biodiversity Action Plan in 1994. These partnerships have developed and now include many key stakeholders. LBAPs operate at a local level,

to conserve and enhance biodiversity and deliver action for national priorities. They also work to protect species and habitats which are particularly important or valued locally. Although resourcing these partnerships has become more difficult as local authority budgets have been reduced, a Scottish Parliament event held in autumn 2016 to celebrate [20 years of LBAP](#) activity clearly demonstrated both the important contribution and continued relevance of LBAP activity to the implementation of the Scottish Biodiversity Strategy.

We also recognise that many young people care passionately about the environment. In order to harness this enthusiasm and creativity, SNH - in partnership with Young Scot (Scotland's youth information and citizenship charity) has created the ReRoute youth panel comprising 16 young people aged between 14 and 24. The panel are helping to deliver Scotland's Biodiversity Strategy by focusing on youth involvement on each of the Big Steps in the Route Map. Working together on residential trips every few months, the panel members are exploring issues and solutions for getting more youth involvement in nature, as well as how environmental organisations work and engage young people in their work. The panel will conclude its work in 2018 with biodiversity related events as part of Year of Young People.

2 Action delivery and progress

This section provides an overview of biodiversity action over the last three years and describes the progress that has been made in meeting the outcomes of the Scottish Biodiversity Strategy 2020 Challenge.

This assessment is supported by a series of biodiversity state and people engagement indicators which were produced by a working group chaired by RSPB following the publication of the Scottish Biodiversity Strategy in 2004. These indicators, alongside other data and trends, provided an evidence base from which to prioritise and develop action. There is also on-going work to finalise a set of ecosystem health indicators in 2017, providing further information on the status of our environment at a regional scale.

The following keys should be used to understand the indicators presented in this assessment.

Status	Symbol
Increased	
Decreased	
Divergent	
Fluctuated	
Stable	
Baseline	
No Data	

Symbol colour	Status
Red	Requires urgent remedial action
Amber	Requires remedial action
Green	Progress on track

Indicator Category	Colour code & symbol
Biodiversity State Indicator	S
Engagement	E
Natural Heritage Indicator	N
National Performance Framework Indicator	NP

An overview of these indicators is provided in [Annex 2](#).

In reading this section, it should be noted that measurable environmental change often takes place over a number of years. Some data collection used for indicators and trends are therefore collated on relatively long timeframes therefore not all indicators have been updated during this reporting period. Some indicators have been archived and others superseded.

2.1 Healthy Ecosystems

Outcome: Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build our natural capital.

Key steps

1. Encourage and support ecosystem restoration and management (also relevant to key steps in 2.2).
2. Use assessments of ecosystem health at a catchment level to determine what needs to be done.
3. Government and public bodies will work together towards a shared agenda for action to restore ecosystem health at a catchment-scale.
4. Establish plans and decisions about land-use based on an understanding of ecosystems. Take full account of land-use impacts on the ecosystem services that underpin social, economic and environmental health.

Restoration of ecosystems have been a primary focus of activity, ensuring they support biodiversity and deliver important services for society, such as flood and climate change mitigation. Targets for restoration of peatlands, freshwaters and native woodlands are identified in the Route Map to 2020. There has been a considerable amount of activity and effort across many organisations and partnerships to restore these ecosystems.

There are many landscape scale projects underway to restore ecosystems across Scotland. These include projects close to urban populations in the central belt such as the [EcoCo Life](#) plus and [Inner Forth landscape partnership](#) projects. Projects in other areas of Scotland include the [Assynt-Coigach Living Landscape](#) and the [Flows to the Future](#) project in Sutherland.

Local authorities have led successful regional land-use pilots in the Scottish Borders and Aberdeenshire, with lessons learnt feeding into the proposals for further development of this approach in the Land Use Strategy 2016 - 2021.

Peatlands

Over 10,000 hectares of peatland across Scotland have been improved through restoration management since 2013, funded through the Scottish Government's Peatland Action Fund managed by SNH. Demonstration events to share best practice help support further restoration work. Additional peatland restoration is now underway following the Scottish Government announcement in October 2016 that a further £400,000 of funding is available for this crucial work. Significant additional funding of circa £8 million funding is planned for 2017/18.

Native woodland

The Native Woodland Survey of Scotland was carried out from 2006-2013 and provided the first authoritative picture of the extent and condition of Scotland's native

woodlands. The field-based survey results were released in February 2014 by Forestry Commission Scotland (FCS) and provide valuable data to assist land managers and deer management groups identify the potential action they could take to help restore native woodlands in Scotland.

Piloting approaches to improving the condition of native woodlands designated for nature conservation are being developed, focusing on invasive non-native species and reducing herbivore impacts. FCS is working with land managers to encourage applications to the Scottish Rural Development Programme (SRDP) towards improvement in woodland condition.

An area of 7,432 hectares of new native woodland has been created by land managers with funding support through SRDP in the two years between April 2014 and April 2016. We expect that the rate of planting will increase further to meet the ambitious targets set out in the Scottish Biodiversity Strategy Route Map as applicants become familiar with the new scheme.

Scottish Government commissioned SNH to provide [an assessment of the current model of deer management in Scotland](#) which was published in November 2016. The Environment, Climate Change and Land Reform Committee heard evidence about deer management and the impacts on the natural heritage from SNH and other stakeholders during November and December of 2016. The Scottish Government will respond to the report in early 2017.

Freshwaters

The second river basin management plans for Scotland were published in December 2015. These show around 10% of water bodies and six areas protected for nature conservation are adversely affected by modifications to their beds, banks and shores. The plans set targets to improve the physical condition of 52 water bodies by 2021, and to carry out studies to help design and plan improvements to the remaining 258 water bodies and six protected areas. This work is also to be completed by 2021. Further information is available on the [Water Environment Hub](#) data tool.

Survey work on all water bodies which are below good status for physical condition has been completed by the Scottish Environment Protection Agency (SEPA). This work will inform the location and extent of required restoration work, and flood management activities. This will provide valuable data to allow prioritisation of action. The recently published [IUCN report on River Restoration and Biodiversity](#) bridges the gap between a scientific understanding of rivers and river processes, and its practical application in restoring river habitats.

Assessing progress towards this outcome

There is only one ecosystem level indicator currently available for this outcome – see Table 1. Work is continuing on development of a suite of [Ecosystem Health Indicators](#) which will allow identification of ecosystems most in need of restoration action and enable us to monitor progress. The assessment of progress towards Aichi target 15 'Restoration of degraded ecosystems' during 2017 will also provide evidence to help describe progress towards this outcome in future reporting. Further information on Aichi target development is provided in section 2.7.

Table1 Indicators relevant to monitoring progress on Outcome 1 – Healthy Ecosystems.

Indicator	Start	Updated	Trend
River water quality indicator⁴	1992	2015	

The standards for measuring water quality were modified in 2013 and the impacts of this are described in the [river water quality indicator](#). The proportion of river length classed as unpolluted rose from 83.3% in 2013 to 84% in 2015.

⁴ [Long-term river water quality indicator](#)

2.2 Natural Capital

Outcome: Natural resources contribute to stronger sustainable economic growth in Scotland, and we increase our natural capital to pass on to the next generation.

Key steps

1. Encourage wider acceptance and use of the Natural Capital Index (2012) including comparable measure for the marine environment.
2. Use this index to influence decision-making and market based approaches, so that wider monetary and non-monetary values for ecosystem services are recognised and accounted for.
3. Undertake a major new programme of conservation, management and restoration (described in Section 2.1).

There is a clear recognition in Scotland that natural capital contributes to economic growth and investment in natural capital is identified as a priority in [Scotland's Economic Strategy](#).

The Central Scotland Green Network Trust undertook [research](#) in late 2015 with over 300 senior business decision makers in central Scotland⁵. Over six in ten business who responded indicated that Scotland's natural capital was important to them and should be protected and enhanced. Over 70% considered that action to protect and enhance natural capital was urgent or extremely urgent. These findings correlate with the earlier [Scottish Natural Capital survey](#) conducted by the Scottish Forum for Natural Capital in 2014.

The [National Performance Framework](#) (NPF) provides a mechanism for monitoring progress across all Scottish Government activity. In March 2016, a new indicator on increasing [natural capital](#) was developed to complement existing indicators on improving the condition of protected nature sites; increasing the abundance of terrestrial breeding birds; increasing visits to the outdoors; and improving the state of Scotland's marine environment.

This new natural capital indicator is based on the [Natural Capital Asset Index](#) (NCAI) developed by Scottish Natural Heritage. The NCAI provides a robust and consistent framework for monitoring changes in Scotland's natural capital, helping us to make better informed decisions, based on an awareness of the relationship between nature and economic activity. When it was launched in 2011, Scotland became the first country in the world to publish such a detailed attempt to monitor annual changes in its natural capital. The NCAI was reviewed by experts in 2014, and has been subsequently revised. It continues to be updated to further refine its methodology and data.

⁵ [CSGN Business Survey 2015 - Progressive](#)

Assessing progress towards this outcome

The NCAI monitors the quality and quantity of terrestrial habitats in Scotland, according to their potential to deliver ecosystem services now and into the future. It is a composite index, using a wide range of measures. The overall stock of natural capital in 2014 is similar to that in 2000 as shown in table 2.

Table 2 Indicator relevant to monitoring progress on Outcome 2 – Natural Capital.

Indicator	Start	Updated	Trend since 2010
Natural Capital Asset Index	2000	2014	

Before 1990, Scotland's natural capital was in long term decline with the extent and condition of most habitats deteriorating, especially peatlands and grassland. Since 1990, the delivery of provisioning services – the direct products such as food, fuel and water - has stabilised or slightly improved. At the same time, there has been a reduction in our ability to provide other ecosystem services, particularly cultural ones such as recreation, education, art, and sense of place.

Inland surface water delivers a wide range of ecosystem services, including drinking water, flood management and recreation. The recovery of this habitat is a major contributor to the positive trends in Scotland's natural capital. Woodland also provides a variety of services, and the area (quantity) of woodland has increased since 2000. It is this, more than improvements in condition (quality), which has increased woodland natural capital stocks.

However, the deterioration in the condition of uplands (including peatlands and heathland) has partially offset these improvements, especially with respect to regulation & maintenance services. Our knowledge of uplands outside of protected areas is limited.

2.3 Biodiversity, health and quality of life

Outcome: Improved health and quality of life for the people of Scotland, through investment in the care of green space, nature and landscapes.

Key steps

1. Provide opportunities for everyone to experience and enjoy nature regularly, with a particular focus on disadvantaged groups.
2. Support local authorities and communities to improve local environments and enhance biodiversity using greenspace and green networks, allowing nature to flourish and enhancing the quality of life for people who live there.
3. Build on good practice being developed by the NHS and others to encourage greenspace, green exercise and social prescribing initiatives that will improve health and well-being through connecting people with nature.
4. Increase access to nature within and close to schools and support teachers in developing the role of outdoor learning across the Curriculum for Excellence.
5. Encourage public organisations and businesses to review their responsibilities and action for biodiversity (described in Section 1), and recognise that increasing their positive contribution to nature and landscape can help meet their corporate priorities and performance.

Provision of green infrastructure contributes to a range of social, economic and environmental objectives and is increasingly seen as an essential part of place-making. Outdoor activity which promotes physical activity and contact with nature has been shown to have a positive impact on our physical and mental health and well-being. Local greenspace is also an important resource for regular outdoor learning, while the care and management of nature can help build the skills and capacity of individuals and communities.

Greenspace and green networks

The Central Scotland Green Network (CSGN) continues to develop momentum, with a renewed focus on improving vacant and derelict land, increasing active travel and supporting disadvantaged communities. Since 2011, a [CSGN development fund](#) supported by the Scottish Government, FCS, Transport Scotland and SNH has provided funding for 150 woodland, greenspace, active travel and community development projects across Central Scotland totalling £5.8 million. Further targeted investment is also planned in greenspace across Scotland through the SNH led ERDF green infrastructure programme, on-going support from the FCS Woods in Around Towns initiative, as well as the funding for smaller greenspace projects through the Tesco “bags of help” [community fund](#) run by Greenspace Scotland. Planning Authorities are also playing their part too, with 25 out of the 34 now having green network plans or strategies either in place or in the process of preparation (with the corresponding figures for CSGN being 17 out of 19).

Enjoying the outdoors

There are increasing opportunities for people to experience and enjoy nature in Scotland with an expanding [National Walking and Cycling Network](#) as well as greenspace projects in major cities, such as [Cunnigar Loop Woodland Park](#) in

Glasgow, as well as several landscape partnerships funded by Heritage Lottery Fund (HLF) and others. A good example of new provision is the 134-mile coast-to-coast John Muir Way developed by SNH and opened in 2014. Running from Helensburgh to Dunbar, this trail is accessible locally to 3 million people who live in the central belt of Scotland, making a valuable contribution to encouraging more visits to the outdoors. Survey data from SNH suggested that between 240,000 to 300,000 people had used the path in its first year with nearly 1 in 5 of these intending to complete the route in stages⁶.

Developing Scotland's natural health service

Working with a range of partners from both the health and environment sector, SNH has led on the development of an ambitious [natural health service action plan](#) to complement and help support the existing National Health Service. The plan seeks a step change in the use of the outdoors within the health sector, and includes interventions around green infrastructure, local green health partnerships and NHS greenspace that could achieve a population-level change in activity in the outdoors across Scotland. The plan builds on the successful activity by the Greenspace Exercise Partnership (NHS-Health Scotland, NHS-Health Facilities Scotland, FCS and SNH), to help each mainland health board develop at least one quality greenspace around a hospital for use by patients, visitors and NHS staff.

Outdoor learning

Baseline [research](#) commissioned by SNH with Rural Affairs, Food and the Environment (RAFE) partners and Education Scotland, shows that there has been progress in increasing the amount of outdoor learning especially preschool and primary years since 2006, though there is room for further improvement across all sectors

SNH and other RAFE partners provide a number of opportunities for outdoor learning. In 2015/16, National Nature Reserves provided outdoor learning opportunities for nearly 3,500 school children, while SNH's funding of bodies such as Grounds for Learning, John Muir Trust and National Trust for Scotland (NTS) supported a further 60,000 children, many from schools serving disadvantaged areas. Other provision is provided through initiatives such as the Outdoor Woodland Learning Network, National Park travel grants and Forest Schools. SNH's Teaching in Nature project has now helped 2500 pupils engage with the natural heritage via high quality Career-Long Professional Development for over 100 teachers.

A major new project - Learning in Local Greenspace - is also underway targeting the schools serving Scotland's 20% most disadvantaged communities. This will provide practical support for at least 100 of these schools and their teachers, helping them to access and use a greenspace within walking distance, embedding its use throughout the school, across the curriculum by 2020.

Volunteering

The range of volunteering opportunities has generally been maintained, with funding used to support volunteering in bodies such as The Conservation Volunteers, NTS and Action Earth. These experiences are available across Scotland, offering a chance for people to get close to nature, contribute to its care and learn new skills. There are

⁶ John Muir Way visitor survey 2014-2015 SNH Commissioned Report No. 918 (2016)

also many social benefits to be gained through friendship, shared achievement and individual challenge, all helping to build resilient communities and restoring nature.

Assessing progress towards this outcome

The relevant indicators developed for reporting on the Scottish Biodiversity Strategy; *2020 Challenge for Scotland's Biodiversity* are presented in Table 3. All these indicators have been updated during this reporting period on the Strategy; with the exception of E2 - Greenspace, where the original indicator has been archived and a new indicator is currently under development with Ordnance Survey.

Table 3 Indicators relevant to monitoring progress on Outcome 3 – Biodiversity, Health and Quality of Life.

No.	Indicator	Start	Updated	Trend since 2010
E1	Attitudes to biodiversity	2006	2014	
E2	Greenspace	2011	2015	
	OS - spatial greenspace	2017		
E3	Visits to the outdoors ⁷	2012	2015	
E4	Involvement in biodiversity conservation	2010	2015	
E5	Membership of biodiversity NGOs ⁸	2013	2015	

Attitudes to biodiversity

On average almost 70% of adults living in Scotland expressed some interest or concern about biodiversity and feel it has some personal relevance to them. These proportions have shown some variation over time, but some of the lowest levels of engagement have been recorded in the most recent research, particularly since 2012. Perhaps critically, only about 25% of the population feel biodiversity is very relevant to their lives.

Greenspace

The original indicator developed in 2007 has been archived following publication of [Scotland's Greenspace Map](#). A new spatial indicator is currently under development by Ordnance Survey, with the first results expected in 2017. The indicator will allow quantitative changes in accessible greenspace provision within a 5 minute walk of where people live, to be monitored across urban Scotland. In 2015, data from the

⁷ 2006 to 2011 data was collected via the Scottish Recreation Survey. Post 2012 data is collected through the [Scottish Household Survey](#). A [summary](#) of how the two data sets are comparable is provided by SNH.

⁸ Data used for previous reporting from [2007 and 2009](#) was absolute member numbers provided by NGOs. Since 2013 the [Scottish Nature Omnibus survey](#) now includes a question relating to membership of an organisation which looks after the environment and is expressed as a % of the population.

Scottish Household Survey used from the [Active Scotland Outcomes Framework](#) indicates that 68% of adults considered that they have accessible greenspace within a 5 minute walk of their home, an increase of 11% increase since 2011.

Visits to the outdoors

In previous Reports to the Scottish Parliament, data has been used which measures the percentage of adults visiting the outdoors at least once in the last 12 months. The data now presented identifies those adults in Scotland that visit the outdoors at least once per week. During 2015, an estimated 49% of adults in Scotland visited the outdoors at least once per week. Around 32% visited less than once a week and 18% didn't visit the outdoors at all. While this is a significant and positive trend, the data suggests that more effort is still needed to increase use of the outdoors by people from disadvantaged communities and equality groups.

Involvement in biodiversity conservation

The Scottish Household Survey (SHS) includes a question on volunteering, the results show that the proportion of adults in Scotland doing any sort of volunteering has remained stable over the last few years (27% in 2014), as has the proportion of adults involved in environmental volunteering. In 2014, 6% of all volunteers said they'd done some environmental volunteering in the previous year.

Membership of biodiversity NGOs

In 2013 an additional question was added to the Scottish Nature Omnibus survey, which asked respondents if they were a member of any organisation which helps look after wildlife or the natural environment. There has been an increase of 3% from 10% of respondents in [2013](#) to 13% in [2015](#). Previously [membership](#) data was collected from a number of environmental NGOs.

2.4 Wildlife, habitats and protected places

Outcome: The special value and international importance of Scotland's nature and geodiversity is assured, wildlife is faring well, and we have a highly effective network of protected places.

Key steps

1. Ensure that management of protected places for nature also provides wider public benefits.
2. Align habitat restoration in protected areas with national goals for improving ecosystem health, with local priorities determined at the catchment or landscape scales.
3. Integrate protected areas policy with action for wider habitats to combat fragmentation and restore key habitats.
4. Develop a wildlife management framework to address the key priorities for sustainable species management, conservation and conflict issues, including reintroductions and invasive non-native species.
5. Involve more people that at present in this work and improve our understanding of the poorly known elements of nature.

Activity to support wildlife has been focused on protected areas and those species requiring specific action. The significant activity on tackling invasive species and wildlife crime detailed in the Route Map is also relevant here, as are the landscape-scale projects described Section 2.1.

Partnership and collaboration have been at the heart of all of this work ensuring we maximise the skills and resources across many organisations. Mechanisms such as the SRDP (described further in Section 2.4) and other funding from EU Life, HLF, SNH, Scottish Government, SEPA and many charitable trusts as well as contributions by members of conservation organisations have enabled much to be achieved.

However there are still challenges for some species in Scotland most notably breeding seabirds, upland waders and specialist butterflies. Understanding the reasons for species change is important if downwards trends are to be reversed.

Assessing progress towards this outcome

The relevant indicators developed for reporting on the Scottish Biodiversity Strategy; *2020 Challenge for Scotland's Biodiversity* are presented in Table 4. All these indicators have been updated during this reporting period on the Strategy, with the exception of S6 - vascular plant diversity - and S12 - otters.

Table 4 Indicator summaries relevant to monitoring progress on Outcome 4 – Wildlife, habitat and protected areas

No.	Indicator	Start	Updated	Trend
S3	Abundance of terrestrial breeding birds	1994	2015	
S4	Wintering waterbirds	1975	2014	
S5	Breeding seabirds	1986	2015	
S6	Vascular Plant diversity	1998	2007	Archived
	National Plant Monitoring Scheme	2015		
S8	Terrestrial insect abundance – specialist butterflies	1979	2014	
	Terrestrial insect abundance – generalist butterflies			
S10	Notified species in favourable condition	1999	2016	
S11	Notified habitats in favourable condition⁹	1999	2016	
S12	Otter – trend data¹⁰	1977	2012	Archived

Abundance of breeding birds

Scotland's terrestrial breeding birds include those commonly associated with woodland, farmland and upland habitats. Some are closely associated with one habitat type while others utilise more than one. Of the 66 bird species surveyed 40 increased in abundance and 25 declined. Between 2014 and 2015 there was a 7% increase in farmland birds but no significant change in woodland or upland bird species. The trend since 1994 show a more complicated picture as follows.

- Woodland birds increased significantly by 68%;

⁹ Includes habitats classified as unfavourable recovering and unfavourable with corrective measures agreed.

¹⁰ Otter trend analysis replaces the previous indicator from 2004 but utilises all of the original survey data and in addition includes data from 2007 and 2015 surveys.

- Farmland birds increased steadily up to the late-2000s, subsequently fluctuating between 13% and 23% above the 1994 index value. Between 1994 and 2012, overall numbers had increased by 22%;
- Upland birds decreased significantly by 14% overall.

Wintering waterbirds

Overall waterbird numbers peaked in 1997/98 since when there has been a gradual decline. As of 2010/11 the indicator stood at 93% of that recorded in 1975. Key trends are as follows:

- Goose numbers more than trebled, to peak at 340% in 2009/10 from which there has been a slight drop since 2010/11 to 300%.
- Duck and swan numbers have been relatively stable, ranging from 98% in 2009/10 and 105% in 2011/12.
- Wader numbers have been declining since 1996/97 and stood at 57% in 2011/12, the lowest value on record.

Breeding seabirds

Internationally important numbers of [breeding seabirds](#) are found in Scotland, many of which breed in large colonies. Since 1986 when the UK Seabird Monitoring Programme was established there has been a marked decline in both seabird abundance and productivity. Only two species have remained stable; Black guillemot and Common gull, others such as the Arctic tern (72%) and Blacklegged kittiwake (68%) have declined considerably since 1986. The key factors affecting seabirds are food availability, weather conditions and impact of predators. The impact of climate change through warming of the sea is thought to be a contributing factor in diminishing stocks of sand eels, the main food for source for many seabirds.

Vascular Plants

The diversity of plant species across different habitats has declined by 10% between 1998 and 2007 as shown in the Countryside Survey data. This overall loss was reflected in butterfly numbers over the same period as they rely on many plant species such as wild thyme as a food source. Competitive species such as nettle increased significantly. [The National Plant Monitoring Scheme](#) now replaces the vascular plant indicator. Volunteers began collecting data in 2015 which will provide a baseline dataset following completion of an initial three year period.

The principal drivers of plant diversity loss have been land use change, and to a lesser extent atmospheric pollution. The potential impact of plant diseases, such as sudden oak death, *Phytophthora ramorum*, on our native flora is of increasing concern. Plants underpin wild species diversity on land because they form the base of the food chain and provide the diversity of habitats that species need to survive.

Terrestrial insects - butterflies

Butterfly populations can show large natural fluctuations. These are mainly due to environmental factors, especially weather conditions. Long-term changes in abundance and distribution have been linked to habitat loss and fragmentation, land use change, and climate change.

Some generalist butterflies may be benefitting from climate change, expanding their range northwards into southern Scotland; these include Small skipper and Essex

skipper. Three generalist butterflies show climate-driven, significant long-term population increases – Peacock, Speckled wood and Orange-tip. Regular migrant butterflies, including the Red admiral are also increasing in abundance in the long-term as a response to recent warming.

Scotland's specialist butterflies have declined by 67% since 1979. Three specialist butterfly species declined significantly – Small pearl bordered fritillary; Large heath and Grayling. Habitat loss, climate change and increased nitrogen deposition are all linked to the declines.

- Generalist species long-term trends were classed as stable.
- Specialist butterflies have shown a significant and progressive decline of 67% from 1979-2014.

Site condition monitoring

Site Condition Monitoring is SNH's programme for monitoring the condition of nature conservation features of special interest on designated sites in Scotland. These features of special interest are known as 'natural features' and may be habitats (e.g. woodland, marine reef, freshwater loch), species populations (e.g. otter, dotterel, marsh fritillary butterfly) or geological formations (e.g. cave, fossil bed, volcanic exposures).

The purpose of Site Condition Monitoring is to determine the condition of the designated natural feature within a site. This is to establish whether the natural feature is likely to maintain itself in the medium to longer term under the current management regime and wider environmental or other influences. There are in excess of 5000 individual natural features of special interest hosted on designated sites which are monitored on a rolling programme through Site Condition Monitoring. In March 2016 the proportion of natural features in favourable or recovering condition was [80.4%](#). In order to provide further information the details of notified species and notified habitats in favourable condition are described below.

Notified species in favourable condition

In 2016, the condition of more than 200 of Scotland's most important species and groups of species protected within our suite of 1,866 protected areas (Sites of Special Scientific Interest, Ramsar, Special Protection Areas and Special Areas of Conservation) was measured. These areas are designated for one or more notified species, habitat or geological features, and enable Scotland to safeguard its most important wildlife, from otters to butterflies to lichens.

In total 71% of all species features were in favourable condition; 3% were unfavourable recovering; 3% were unfavourable with corrective measures agreed; and 24% were in an unfavourable condition (values do not add up to exactly 100% due to rounding).

The percentage of species features that were favourable or unfavourable recovering were:

- 88% of terrestrial mammals;
- 72% of birds;
- 76% of fish;
- 57% of marine mammals;

- 50% of amphibians and reptiles;
- 100% dragonflies;
- 87% of butterflies;
- 82% of other invertebrates;
- 82% of vascular plants;
- 65% of non-vascular plants.

From 2015 to 2016 there has been a slight increase from 73.3% to 73.8% of protected species (qualifying features) in favourable and unfavourable recovering condition.

Notified habitats in favourable condition

Protected areas represent the very best of Scotland's habitats and of the underlying geology. Their protection and management helps to ensure they remain in good condition for everyone to enjoy, both now and future generations. In Scotland there is a suite of around 1,866 protected areas covering nearly two million hectares.

In 2016, 63% of all habitat features on protected areas were in favourable condition, 9% were in unfavourable recovering condition, 11% of features were unfavourable with corrective measures agreed and 17% were unfavourable and without practical on-site steps available for recovery.

The percentage of habitat features in favourable and unfavourable recovering condition as of May 2016, are shown below:

- 98% of marine
- 82% of coastal
- 95% of geological features
- 73% of freshwater
- 70% of wetlands
- 74% of upland
- 53% of woodland
- 56% of heath
- 50% of grassland

2.5 Land and freshwater management

Outcome: Nature is faring well, and ecosystems are resilient as a result of sustainable land and water management.

Key steps

1. Promote an ecosystem approach to land management that fosters sustainable use of natural resources and puts biodiversity at the heart of land-use planning and decision making.
2. Ensure that measures taken forward under CAP encourage land managers to develop and retain the diversity of wildlife habitats and landscape features.
3. Support “High Nature Value” farming and forestry.
4. Put in place the management necessary to bring Scotland’s protected areas into favourable condition and improve the ecological status of water bodies.
5. Ensure that biodiversity and ecosystem objectives are fully integrated into flood risk management plans and restore wetland habitats and woodlands to provide sustainable flood management.
6. Restore and extend natural habitats as means of building reserves of carbon and to help mitigate climate change.
7. Provide clear advice to land and water managers on best practice.

The Land Use Strategy 2016 – 2021 was published in March 2016 and builds on the successful regional land use pilots led by local authorities in the Scottish Borders and Aberdeenshire. The adoption of an ecosystem approach is one of the cornerstones of the Strategy.

The SRDP 2014 - 2020 was formally approved by the European Commission on 26 May 2015. Implementation is underway with the 3rd round of the £350m Agricultural Environment Climate Scheme (AECS) open for applications.

CAP greening measures, including an Ecological Focus Areas (EFA) requirement designed to benefit biodiversity, have been successfully implemented from 2015 and approval was secured from the European Commission to implement an additional “nutrient management plan” requirement for grasslands farms from 2016. Increased protection for hedgerows and watercourses has also been introduced under cross compliance from 2015. It is still too early to evaluate uptake and impact of these measures which are relevant to the wider countryside.

The first batch of AECS contracts was successfully delivered during this period, providing targeted support for sustainable land management. Following the first round of applications for AECS in 2015, which attracted significant interest (more than 900 applications), contracts were offered in early 2016 to around 570 successful applicants with a total committed value of approximately £41.8m. The second batch of AECS contracts, worth approximately £62.1m, will be issued shortly.

The SRDP Farm Advisory Service is now in place, providing environmental and business advice to farmers and land managers through a £6.5m ‘one to one’ service

(including flow-through grants) awarded to Ricardo Energy and Environment and a £13.5m 'one to many' service awarded to SAC Commercial Ltd.

The design of the £10m Environmental Cooperative Action Fund (ECAAF) is currently being adjusted in order to ensure audit compliance and the scheme will be re-launched in 2017. This will support the costs of facilitating co-operation between farmers, foresters and other land managers in order to undertake landscape-scale environmental projects.

A programme of research and demonstration activities has been undertaken at the existing research farms of James Hutton Institute (JHI) and Scottish Rural College (SRUC). Work is ongoing looking at ecosystem services at Kirkton and Auchtertyre Farms, and biodiversity monitoring activities are being undertaken at JHI farms coordinated by the Centre for Sustainable Cropping. A successful LEAF demonstration event held at Balruddery Research Farm in June 2016 jointly organised by JHI and SRUC.

In the [water environment](#), the regulatory framework is facilitating environmental improvements for a number of sectors, although certain toxic substances from diffuse sources need to be addressed. Diffuse pollution and the physical condition of water bodies remain as key management challenges and is reflected in the second cycle of river basin management plans. Partnership working at a catchment-scale to address these pressures will be a key factor in meeting these targets and also realising the potential benefits for biodiversity.

Assessing progress towards this outcome

A number of indicators relevant to this outcome have been previously described in Section 2-4 and these are not repeated here.

The [Breeding Farmland Birds](#) trend note provides some further information focusing on species that are found predominantly on farmed land, though this has not been updated since 2013. Up to this point, seed eating birds show stable or increasing long-term trends but four out of five wader species show significant declines. Species, such as the corn bunting, have benefited from targeted management under SRDP. The decline in farmland waders, such as the lapwing and curlew, is an ongoing concern. Several studies have looked at ways to improve breeding success for waders but, so far, not at a sufficiently large scale to affect national trends.

Additional indicators that help describe the farmed environment and the changes that have occurred are presented in Table 5, though only one has been updated during this reporting period for the Strategy.

Table 5. Indicators relevant to monitoring progress in Outcome 5 – Land and Freshwater.

No.	Indicator	Start	Updated	Trend
	River water quality indicator ¹¹	1992	2015	
N7	Land & sea of natural heritage importance	2008	2013	

River Quality

The standards for measuring water quality were modified in 2013 and the impacts of this are described in the [river water quality indicator](#). The proportion of river length classed as unpolluted rose from 83.3% in 2013 to 84% in 2015.

Land managed for nature

By 2012, the total area of land under some form of positive management ¹² was 5,180,600ha (66% of the total land used for agriculture). The increase in the area of land was predominantly due to a larger area of Scotland being managed under the SRDP rather than the growth in the area of protected sites (including Sites of Special Scientific Interest, Natura sites and NNRs). It is expected that this figure will increase as a result of the marine protection areas designation programme.

¹¹ <https://www.sepa.org.uk/environment/water/aquatic-classification/river-water-quality-indicator/>

¹² Positive management is defined as land, water or sea which is owned or designated for nature, subject to management agreements or specific planning policies

2.6 Marine and Coastal

Outcome: Scotland's marine and coastal environments are clean, healthy, safe, productive and biologically diverse, meeting the long term needs of people and nature.

Key steps

1. Adopt a Scottish Marine Plan and develop regional marine plans to aid balanced decision-making in the marine environment.
2. Establish a coherent network of Marine Protected Areas, promoting sustainable use and conservation.
3. Collate information on the location and sensitivity of priority marine features and make this information available to support their protection.
4. Achieve good environmental status for Scottish Seas.
5. Bring Common Fisheries Policy fish stocks to levels consistent with the maximum sustainable yield wherever possible, and take account of biodiversity in managing inshore fisheries.
6. Implement a rapid response framework to prevent colonisation of new invasive species in Scotland's seas and islands.
7. Improve the monitoring of the marine environment to identify changes and guide progress towards the above outcomes.
8. Improve understanding of how coastal ecosystems are likely to adapt to climate change and develop appropriate strategies for coastal zone management.

The [Marine \(Scotland\) Act 2010](#) provides the legislative framework for the effective delivery of this Scottish Biodiversity Strategy outcome. Its main measures include:

- **Marine planning:** a new statutory marine planning system to sustainably manage the increasing, and often conflicting, demands on our seas;
- **Marine licensing:** a simpler licensing system, minimising the number of licences required for development in the marine environment to cut bureaucracy and encourage economic investment;
- **Marine conservation:** improved marine nature and historic conservation with new powers to protect and manage areas of importance for marine wildlife, habitats and historic monuments;
- **Seal conservation:** improved protection for seals and a new comprehensive licence system to ensure appropriate management when necessary;
- **Enforcement:** a range of enhanced powers of marine conservation and licensing.

The legislation also introduces a specific duty to protect and enhance the marine environment and includes measures to help boost economic investment and growth in areas such as marine renewables.

Recent steps in the implementation of this legislation have been significant, including the publication of the [Scottish Marine Plan](#) in 2015. Work has also now commenced on regional marine plans in Shetland and the Clyde, with the first phase of preparing regional assessments likely to be completed in 2017.

Considerable progress has been made with consultation and designation of Marine Protected Areas. Approximately 16% of Scotland’s marine area (including inshore & offshore waters) is now protected for nature. This includes SSSI & Natura sites plus a suite of 30 Nature Conservation Marine Protected Areas (NCMPAs) covering 10% of the seas around Scotland. These sites form a network of marine protected areas, safe-guarding much of Scotland’s marine biodiversity. Further Natura sites (Special Areas of Conservation and Special Protection Areas) and NCMPAs are also being considered that will improve the protection of our seas. A monitoring and assessment group has been established by Marine Scotland to develop and implement a strategy to support and demonstrate the effectiveness of the Marine Protected Areas network for biodiversity and other outcomes.

An [Inshore Fisheries Strategy](#) has also been produced with the aim of improving the evidence base for management, streamlining governance and increasing stakeholder engagement and embedding inshore fisheries management into wider marine planning. Five inshore fisheries groups are in place and regulations on the management of fishing within Marine Protected Areas developed.

The [National Coastal Change Assessment](#) project is nearing completion. This has reviewed historic and future changes to Scotland’s coasts and identified the extent and vulnerability of erodible coast. Its conclusions will inform policy and practice on managing the coast and addressing flood risk by agencies and local authorities.

Assessing progress towards this outcome

Relevant indicators used for measuring progress against the marine and coastal outcome are shown in table 7 below. However, only S5 – breeding sea birds – has been updated during this reporting period for the Strategy and commentary on this topic has been provided in Section 2.4. An extensive set of new indicators was developed in 2012 to report on UK progress towards achieving Good Ecological Status (at broad regional sea scale) under the Marine Strategy Framework Directive. A sub-set of these indicators is currently being used to inform the assessment of the status of UK seas, covering aspects like seal abundance and distribution, zooplankton biomass and rate of introduction of non-native species. It should be possible to use some of these indicators for SBS monitoring purposes, although the scales of assessment are different.

Table 7. Biodiversity indicators summaries relevant to Outcome 6.

No.	Indicator	Start	Updated	Trend
S5	Breeding seabirds	1986	2015	
S14	Marine plankton	1958	2010	Superseded by MSFD indicators ¹³
S15	Estuarine fish	1977	2005	Archived
S16	Commercially exploited fish stocks	1998	2007	Archived
S17	Non Native species	1950	2001	Archived

¹³ Marine Strategy Framework Directive Indicators have been developed and work is underway on assessment and selection of a suitable suite of indicators to report on progress towards SBS outcome 6.

2.7 Measuring progress

Outcome: A framework of indicators that we can use to track progress.

Key steps

- Put in place a programme of work to measure progress towards the 2020 outcomes, so that we can track progress and deal with problems.
- Work more closely with the growing number of volunteers to develop our understanding of the changing state of nature.
- Develop and support the Scottish Biodiversity Information Forum to bolster the collection and wider use of biodiversity data in Scotland.
- Publish a terrestrial habitat map for Scotland.

Much of this data is held by the [National Biodiversity Network Gateway](#) (NBN) which in Scotland is displayed through the [NBN Atlas Scotland](#). Transferring content from the NBN Gateway to the Atlas platform is approaching 4 million records Scotland. The NBN is now developing a UK Atlas from the Scotland model, and negotiating open licence terms to enable as much as possible of the Gateway content to be made accessible through Atlas. In the meantime, Scotland's Biodiversity Information Forum is undertaking a business analysis of the [biological recording infrastructure in Scotland](#). This includes establishing a register of all operational recording schemes and their operators so that data flows in Scotland are well-understood and agreed.

The *2020 Challenge for Scotland's Biodiversity* also identified the need for additional spatial indicators of ecosystem health that operate at a national and regional level. A suite of 15 [ecosystem health indicators](#) were identified for this purpose by the Scottish Biodiversity Strategy Science and Technical Group. Some of these indicators, including protected nature sites are available on [Scotland's Environment web](#). Live data can be analysed spatially helping us understand how species on protected nature sites are doing across Scotland. Work is underway to ensure the full suite of ecosystem health indicators is available through this interactive platform by September 2017.

A new [habitat map of Scotland](#) based on the Pan-European classification is under preparation by SNH and is expected to be finalised by 2019. A new EUNIS Land Cover of Scotland map was published in 2015, the first of its kind in the UK to adopt internationally recognised data and classification standards. It is a generalised map of habitats such as woodland or mires, bogs and fens, for all of Scotland. Around two-thirds of Scotland has now also been mapped to high resolution, with new outputs such as soft coast habitats being published as open data through the SNH web site. Most of the mapping to date has been accomplished through the re-use of existing data, held by SNH and a wide range of contributors in the public, private and voluntary sectors across Scotland. Mapping in the uplands is more challenging, for which new techniques are being developed.

3 Next Steps – The 2020 Challenge for Scotland’s Biodiversity

The years to 2020 will continue to be challenging for biodiversity, but the framework put in place through the Scottish Biodiversity Strategy and the targeted and ambitious programme contained in the Route Map provide a clear path to success. Some changes to Scotland’s biodiversity are inevitable, but key elements to maintaining and improving current progress will be:

- focusing on the key drivers of biodiversity loss;
- applying an ecosystem approach – doing work in a bigger more integrated way;
- mainstreaming biodiversity delivery – involving more sectors, organisations and individuals in implementation of the Strategy; and
- delivering the programme of activity in the Route Map.

Sustained effort will be needed if we are halt or reverse species losses affecting certain habitats, such as marine bird populations or iconic Scottish species such as wildcat or pearl mussel. While bringing many benefits for biodiversity, the reintroduction of the beaver will also need to be carefully managed if it is be judged a success.

Key issues and opportunities

In the [First Progress Report 2015/16](#) on the Route Map to 2020, SNH identified a number of generic issues facing delivery which are equally relevant to the Strategy as a whole. These issues included the need:

- for effective and on-going prioritisation and resourcing of this work by SNH, SEPA, FCS, Marine Scotland and Scottish Government Rural Payments and Inspections Directorate;
- for greater ownership of the work by all the key stakeholders, clear and effective delivery arrangements for the Scottish Biodiversity Strategy – *Challenge for Scotland’s Biodiversity, Route Map to 2020*, Scottish Biodiversity Strategy reporting and delivery agreements; and
- to ensure more people in Scotland experience and benefit from contact with nature and the value this has for health and well-being and the nation’s economy

A further significant challenge for all involved in the Scottish Biodiversity Strategy delivery is the need to secure resources in the light of sustained decreases in public spending. Finding alternative funding to replace possible loss of European funding will also be critical.

We also need to continue to assess progress on [Aichi targets](#); changes to the drivers of biodiversity change and their significance; and changes to natural heritage trends identified through monitoring activity. This should include views of stakeholders, including reports such as the recent [State of Nature](#) Report 2016 for Scotland.

Annex 1 - Links between Aichi targets and Scottish Biodiversity Strategy 2020 Challenge Outcomes

CBD Strategic Goal	Aichi Target (summary)	SBS Outcome/ key step
A. Addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society		
1 People are aware of the values of biodiversity what they can do.		Ch. 1 Key step 2 & 3 Ch. 3 Key steps 1,4 & 5 Ch. 4 Key step 5 Ch. 5 Key step 7 Ch. 7 Key step 2 & 3
2 Biodiversity values have been integrated into national and local development and planning processes and are being incorporated into national accounting.		Ch. 2 Outcome Ch. 2. Key step - 1
3 By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.		Ch. 1 Key step 1, 3 & 4 Ch. 2 Key step 2 & 3 Ch. 5 Key step 2 & 3 Ch. 6 Key step 1 & 5
4 By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.		Ch. 1 Outcome Ch. 2 Outcome Ch. 2 Key step 1 Ch. 3 Key step 5 Ch. 5 Outcome Ch. 5 Key step 1
5 By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.		Ch. 1 Outcome Ch. 1 Key step 2 Ch. 2 – Key step 3 Ch. 7 Key step 4
6 By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and apply ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.		Ch. 6 Outcome Ch. 6 Key step 5

B. Reduce the direct pressures on biodiversity and promote sustainable use	
7 By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	Ch. 5 Outcome Ch. 5 Key step 1, 2 & 3
8 By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	Ch. 1 Outcome Ch. 1 Key step 1, 3 & 4 Ch. 5 Outcome Ch. 5 key step 3 Ch. 6 Key step 8
9 By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	Ch. 5 Outcome Ch. 6 Key step 6
10 By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	Ch. 2 Key step 3 Ch. 4 Key step 2 Ch. 5 Key step 6 Ch. 6 Key step 2,3,4 & 8
C. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	
11 By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and there are effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	Ch. 1 Outcome Ch. 2 Outcome Ch. 4 Outcome Ch. 4 Key step 3 Ch. 6 Key step 7
12 By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	Ch. 4 Outcome Ch. 4 Key step 3 Ch. 6 Outcome Ch. 6 Key step 7
13 By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	Ch. 4 Key step 4 Ch. 5 Key step 2 & 3

D. Enhance the benefits to all from biodiversity and ecosystems	
14 By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	Ch. 1 Key step 4 Ch. 4 Key step 1 Ch. 5 Key step 5
15 By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	Ch. 1 Outcome Ch. 2 Key step 3 Ch. 4 Outcome Ch. 5 Outcome Ch. 6 Outcome
16 By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	Ch. 1 Key step 1, 3 & 4
E. Enhance implementation through planning, knowledge management and capacity building	
17 By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	2020 Challenge for Scotland's biodiversity
18 By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels	Ch. 1 Key step 4 Ch. 3 Key step 4 Ch. 4 Key step 4 Ch. 5 Outcome
19 By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	Ch. 1 key step 3 & 4 Ch. 7 Key step 1 & 4
20 By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	Ch. 5 Key step 2 Ch. 6 Key step 5

Annex 2 - Natural Heritage, Biodiversity and Engagement Indicators

Keys

Status	Symbol
Increased	
Decreased	
Divergent	
Fluctuated	
Stable	
Baseline	
No Data	

Symbol colour	Status
Red	Requires urgent remedial action
Amber	Requires remedial action
Green	Progress on track

Indicator Category	Colour code & symbol
Biodiversity State Indicator	S
Engagement	E
Natural Heritage Indicator	N
National Performance Framework Indicator	NP

Table 8 - Summary of Biodiversity State Indicators

No.	Indicator	Start	Updated	Trend
S1	Status of biodiversity action plan (BAP) priority species ¹⁴	2008	2008	Archived
S2	Status of biodiversity action plan (BAP) priority habitats ¹⁵	2008	2008	Archived
S3	Abundance of terrestrial breeding birds	1994	2015	
S4	Wintering waterbirds	1975	2014	

¹⁴ Archived following publication of 2010 UK Biodiversity framework.

¹⁵ Archived following publication of 2010 UK Biodiversity framework.

No.	Indicator	Start	Updated	Trend
S5	Breeding seabirds	1986	2015	
S6	Vascular Plant diversity National Plant Monitoring Scheme	1998 2015	2007	Archived
S7	Woodland diversity Potential new indicator being developed following Native Woodland Survey of Scotland	1995 2017	1999	Archived
S8	Butterflies - specialists Butterflies - generalists	1979	2014	 
S9	Moths	1975	2004	Archived
S10	Notified species in favourable condition	1999	2016	
S11	Notified habitats in favourable condition	1999	2016	
S12	Otter	1977	2012	Archived
S13	Freshwater macro-invertebrate diversity River Quality	1981 1992	2008 2015	Archived
S14	Marine plankton MSFD indicators ¹⁶	1958	2010	Archived
S15	Estuarine fish	1977	2005	Archived
S17	Non Native species	1950s	2001	Archived

¹⁶ Marine Strategy Framework Directive Indicators are to be developed

Engagement Indicators

No.	Indicator	Start	Updated	Trend since 2010
E1	Attitudes to biodiversity	2006	2014	
E2	Greenspace	2011	2015	Archived
E3	Visits to the outdoors ¹⁷	2012	2015	
E4	Involvement in biodiversity conservation	2010	2015	
E5	Membership of biodiversity NGOs	2014	2014	

Other Natural Heritage indicators

No.	Indicator	Start	Updated	Trend since 2010
N2	Built Development	2008	2012	
N3	Visual influence of built development	2008	2013	
N7	Land & sea of natural heritage importance	2008	2013	

¹⁷ 2006 to 2011 data was collected via the Scottish Recreation Survey. Post 2012 data is collected through the [Scottish Household Survey](#). A [summary](#) of how the two data sets are comparable is provided by SNH.

National Performance Framework Indicators

	Indicator	Start	Updated	Trend since 2010
	Increase Natural Capital	2000	2014	
	Increase people's use of the Outdoors	2006	2016	
	Improve access to local greenspace	2013	2015	
S3	Abundance of terrestrial breeding birds	1994	2015	

Annex 3 Acronyms

CSGN	Central Scotland Green Network
FCS	Forestry Commission Scotland
NCMPA	Nature Conservation Marine Protected Areas
NNR	National Nature Reserves
RAMSAR	The Convention on Wetlands of International Importance
SAC	Special Areas of Conservation
SNH	Scottish Natural Heritage
SPA	Special Protection Areas
SRDP	Scottish Rural Development Programme
SSSI	Sites of Special Scientific Interest



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Any enquiries regarding this publication should be sent to us at
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Edinburgh
EH1 3DG

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