

Pollinator Strategy for Scotland

2017–2027





Contents

Foreword	4
1 Why do we need a pollinator strategy?	5
The aim	5
The objectives	5
The outcomes	5
2 Who is this strategy for?	7
3 Why are pollination and pollinators important?	8
4 What can we do to help?	9
5 Objectives	10
To make Scotland more pollinator-friendly, halting and reversing the decline in pollinator populations.	10
To improve our understanding of pollinators and their pollination service.	12
To manage the commercial use of pollinators to benefit native pollinators.	13
To raise awareness and encourage action across sectors.	13
To monitor and evaluate whether pollinators are thriving.	14
6 Implementation plan	15

Foreword



Pollinators are a vital part of our biodiversity and wider environment. Scotland's wild and managed pollinators also help to support our economy by contributing to our food and farming industries. For us all, the familiar sight and sound of pollinators at work in our gardens, urban parks or in the wider countryside is something we value and which contributes to our enjoyment of the outdoors and our health and wellbeing.

But our wild pollinators are facing a number of significant pressures arising from changes in land use, habitat fragmentation, diseases and pesticides. We recognise these are very real threats to some pollinator populations and that is why the Scottish Government is committed to halting and reversing the decline in our native pollinators.

The Pollinator Strategy for Scotland 2017 – 2027, and the accompanying Implementation Plan, set out how we can make Scotland a place where pollinators can thrive, and the actions we need to take if we are to achieve our objectives. We can all contribute to making Scotland more pollinator friendly, from local authorities or commercial business, land managers, schools and gardeners. Even those with just a window box can include plants which are helpful to pollinators.

I am grateful to Scottish Natural Heritage who have led the development of this Strategy, and to the key environmental organisations and individuals who have been closely involved and have contributed their expertise. This Strategy and Implementation Plan will help halt and reverse the decline of pollinators in Scotland and ensure that there is bright and healthy future for these vital insects.

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

1 Why do we need a pollinator strategy?

Pollinators are an integral part of our biodiversity. If we lose the pollination services provided by insects such as bees and flies, we risk damaging not only plants and animals but agricultural yields, our economy and our well-being. However, many of our pollinators are under threat. Current pressures include land-use changes, land management, pesticides, pollution, invasive non-native species, diseases and climate change¹.

The Technical Annex to this Strategy sets out the evidence currently available on threats to Scotland's pollinators (the honey bee and species of bumble bee, solitary bee and hoverfly) and declines in their abundance or distribution. Declines that prove to be long-lasting and widespread could have serious implications: to address this we need to ensure that our pollinators survive and thrive into the future.

The Pollinator Strategy for Scotland 2017 – 2027 sets out Scotland's response to these threats. Identifying the issues, it sets out what needs to be done and, through the Implementation Plan, a phased plan to deliver a healthy future for our pollinators.

The aim:

To address the causes of decline in populations, diversity and range of our pollinator species, and to help them thrive into the future.

The objectives:

1. To make Scotland more pollinator-friendly, halting and reversing the decline in native pollinator populations.
2. To improve our understanding of pollinators and their pollination service.
3. To manage the commercial use of pollinators to benefit native pollinators.
4. To raise awareness and encourage action across sectors.
5. To monitor and evaluate whether pollinators are thriving.

The outcomes:

By 2027:

- action to support pollinators will be firmly embedded in relevant strategies, policies and practices across Government and the public sector;
- our understanding of pollinator ecology, status and trends is improved to allow policies and practices to be informed by the best evidence;
- regulation of honey bee and bumble bee importation will minimise the risks of introducing new pests and diseases;
- local bee-based industries will be better supported;
- we will have a wide understanding of the value of Scotland's pollinating insects and strong public support to restore populations and habitats, monitor populations and research pollinator biodiversity;
- there will be a strong network of good-quality pollinator habitats in place;
- it can be demonstrated that Scotland's pollinators are thriving.

¹ IPBES. (2016). Summary for policymakers of the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production. Bonn, Germany.

This Strategy links to all five of Scottish Government's Strategic Objectives, making a direct contribution to the 'Wealthier & Fairer' and 'Greener' objectives. By helping to secure and improve the resilience of our food supplies through a strong pollinator service, the Strategy contributes to the Environmental Sustainability objective of Scotland's National Food and Drink Policy: Good Food Nation, and to the development of a strategy for sustainable agriculture .

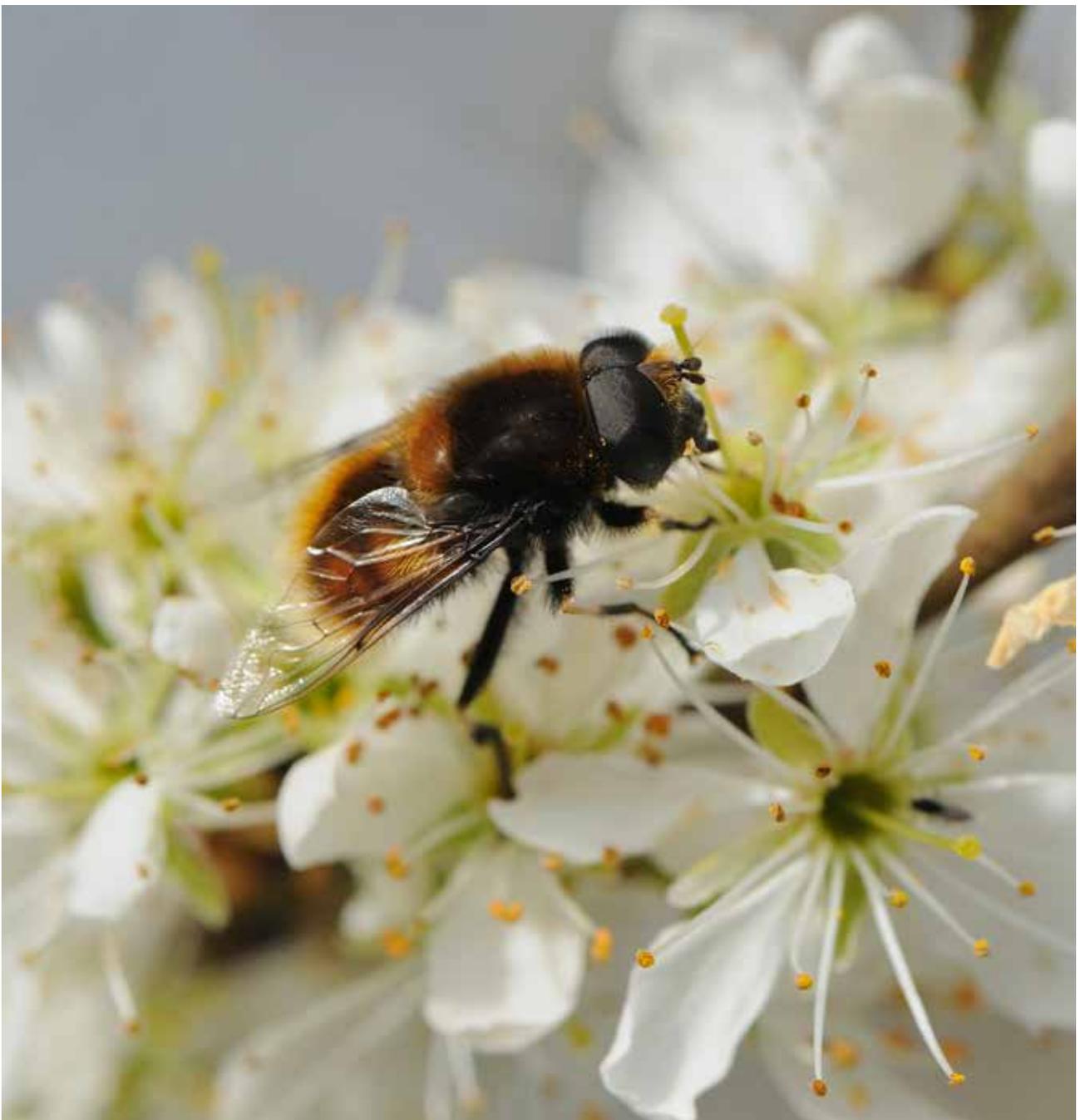
Pollinators are critical to the function of our natural environment. The Strategy is a priority project in Scotland's Biodiversity: a Route Map to 2020 (Project 9: Conservation of Priority Species), thereby supporting the 2020 Challenge for Scotland's Biodiversity, our response to the UN Convention on Biological Diversity global targets for 2020 (the Aichi Targets). Biodiversity is also recognised in Scotland's Economic Strategy where increasing Natural Capital is a stated priority. Natural capital is also an indicator in the National Performance Framework.



2 Who is this strategy for?

In December 2015, Scottish Natural Heritage launched a consultation inviting views on proposals for pollinator conservation. Responses underlined the need for collaboration across sectors to deliver action at a scale - and across activities - that would benefit our pollinators. A group led by Scottish Natural Heritage, in collaboration with Scottish Government, developed the principles and actions further as the basis of this Strategy. This group included the Bee Farmers Association, Buglife, Bumblebee Conservation Trust, Centre for Ecology & Hydrology, Scottish Environment LINK, National Farmers Union Scotland and Scottish Lands & Estates.

The resulting Strategy includes action for everyone, from Government and its agencies to conservation groups, farmers, landowners, managers, gardeners, agricultural business, commercial business and members of the public. It aims to secure an essential ecological service and encompasses land use, climate change, agriculture, biodiversity and forestry policy and practice.



3 Why are pollinators and pollination important?

Insect pollination plays a vital role in nature. Pollination involves the transfer of pollen from one plant to another, enabling them to sexually reproduce. Globally, nearly 90 per cent of flowering plant species depend, at least in part, on animals like insects to transfer pollen and to maintain healthy plant populations. Pollination is therefore an important ecological process that supports healthy plant communities and, in turn, provides food, shelter and other resources for a multitude of species. It is vital in shaping the nature and landscapes that people recognise and enjoy.

Insect pollination supports agriculture. Worldwide, over 75% of the leading food crops (mostly fruits, vegetables, nuts and seeds) need insect pollination to assure the amount, quality, or stability of yield. This includes supporting commodities such as coffee and cocoa that are highly valued by consumers. Honey bees, wild bees, flies, and a variety of other insects support such insect-pollinated crops: in Scotland the most important commercial crops benefitting from this are oilseed rape, strawberries, raspberries, currants, apples and beans, all of which contribute to a vibrant economy.

Insect pollinators have economic importance. In 2015 the global economic value of crop pollination by pollinators was estimated at around US\$ 235-577 billion per year². Recent research collected information from 90 studies on five continents, comprising nearly 1,400 agricultural crop fields, and estimated that wild bees contribute more than US\$ 3,000 per hectare to the production of insect-pollinated crops, whereas the economic value of managed honey bee colonies is estimated at approximately US\$ 2,900 per hectare³. In Scotland, the economic value of pollinators is in the order of £43 million per year for agricultural and horticultural crops, and honey⁴.

Insect pollinators contribute to our well-being. The value of pollinators goes beyond their economic benefits. Insect-pollinated crops offer us variety in our diet, providing us with crucial nutrients, minerals and vitamins that keep us healthy. Beyond this, the ecological function they perform is crucial to the maintenance of biodiversity and the natural environment. This can have an important influence on our mental and physical well-being and is often referred to as the 'Natural Health Service'.

Insect pollinators can be ambassadors for species conservation. The plight of pollinators has been well publicised in the media and has helped to increase public appreciation of the link between nature and societal benefits. School projects, such as Polli:Nation⁵, help to educate the next generation, raising their understanding of the impact our actions have on nature, the economy and our own welfare. Interest in our pollinators can also garner interest in, and raise awareness of, other essential but less charismatic species, their important roles and possible threats.

² IPBES. (2016). Summary for policymakers of the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production. Bonn, Germany

³ Kleijn, D. et al. (2015). Delivery of crop pollination services is an insufficient argument for wild pollinator conservation. *Nature Communications*, 6, 7414. DOI: 10.1038/ncomms8414

⁴ Aspinall, R. et al. (2011). Status and Changes in Ecosystems and their Services to Society: Scotland. UK National Ecosystem Assessment: Technical Report. Cambridge. UNEP-WCMC, p. 895-977.

⁵ <http://www.polli-nation.co.uk>

4 What can we do to help?

There are many ways to support and enhance our native pollinator populations. Fundamentally, pollinators require extensive, well-connected areas in which to forage, nest and overwinter, so measures to safeguard their food and habitats must be carried out at a landscape scale. We have a strong policy framework to deliver this, matched by the desire to support pollinators, but we need to set out a clear agenda to ensure any resources are used wisely in support.

Section 5 sets out key objectives and actions to focus policy and action over the next ten years. Some impacts are more easily remedied than others, but identifying what is required in the short-, medium- and longer-term allows for priority action to be undertaken quickly as well as facilitating more gradual changes and adoption of pollinator requirements into policy revisions over an extended timescale.

Insect pollinators across Britain and Ireland face similar problems and ecological needs. The Strategy has been prepared with the intention of working together on common aspects of our respective plans and learning from best practice.



5 Objectives

1. Make Scotland more pollinator-friendly, halting and reversing the decline in native pollinator populations.

Pollinators rely on flower-rich habitats, but many of these are now fragmented patches, isolated from each other by large areas of less suitable land. Climate change may have significant impacts on a range of species, particularly when disrupting the timing of seasonal events (phenological changes) and allowing the potential spread of new pests and pathogens. Action on private and public land, agricultural, woodland and green space holdings, as well as gardens and allotments, can all help to keep Scotland pollinator-friendly. Linking this Strategy with Scottish Planning Policy, agricultural, land-use, biodiversity and honey bee health strategies of the Scottish Government will help to coalesce action at a landscape scale. It is particularly important that agricultural support mechanisms foster habitat creation and management for pollinators, assisting in halting and reversing the decline in pollinator populations. Actions that help to maintain pollinators' habitats, in particular reducing habitat fragmentation to facilitate dispersal, will offset some of the impacts on pollinators.

Information is available on a range of land management operations that benefit wild plants and pollinators. It can, however, be difficult to transfer this knowledge into practical advice for specific pollinator-friendly management. Information on evidence-based practices needs to be available as clear, constructive and practical advice for farmers, land managers, local authorities and others to use.



What we need to do:

- Prevent further loss and degradation of native flower-rich habitat by maintaining and improving the current diversity of semi-natural habitats.
- Promote the restoration and creation of natural flower-rich habitats in the countryside and in urban areas, to support a national ecological network⁶.
- Retain connected habitat networks for wild pollinators and extend pollinator habitats to adjacent areas.
- Implement measures required to protect and enhance pollinator habitats.
- Recognise the importance of woodlands for wild pollinators and continue to support management to benefit pollinators and other species.
- Recognise the importance of brownfield sites and manage these to benefit pollinators and other species.
- Encourage the inclusion of pollinators' needs in land management, and development planning and management.
- Incorporate green infrastructure, such as green roofs and rain gardens, in developments to provide additional pollinator habitat.
- Support the use and development of pollinator-friendly pest control measures in agricultural and urban areas, including Integrated Pest Management (IPM). The IPM Strategy⁷ will build on the principles set out in the EU Directive on the Sustainable Use of Pesticides.
- Make available and/or develop management guidance and advice for the public, land managers and policy makers, and support continued provision, by NGOs, of information and advice on pollinators and their habitats. Signpost existing management guidance and advice for land managers.
- The Scottish Government supports Europe's precautionary approach towards the use of neonicotinoid pesticides and the continuation of the current restrictions on their use⁸.

Measures to achieve this objective:

Support mechanisms that increase the diversification of flower-rich habitats across farmland, the countryside and urban areas. For example use of perennial leguminous herbs in seed mixtures, in particular clovers; planting and protecting spring flowering shrubs and trees; protection of heathland, moorland and bogs, which support large numbers of pollinators; protection of calcareous and neutral grasslands, and broadleaf woodland as these habitats have high nectar productivity; manage green spaces, e.g. parks, playing fields, woodlands, using less intensive practices or by habitat creation.

Identify and capitalise on opportunities to encourage flower-rich, and other pollinator-friendly habitat management and connectivity under existing policies, including Scottish Rural Development Programme, Land Use Strategy, Scottish Forestry Strategy, Scottish Planning Policy and National Planning Framework 3.

Map the current extent of pollinator-friendly habitats through existing data sets and identify gaps between these areas. Identify whether these gaps are in data availability or habitats and ways to address this.

Improve targeting of land-use and management actions to ensure that they are directed to the areas where there will be greatest benefit and the impacts on pollinator habitats will be minimised.

Continue to encourage the adoption of pollinator-friendly management in policies on transport infrastructure such as road and rail verges.

Support the management of flower-rich gardens and amenity areas to help sustain pollinators in urban areas, and boost pollinator numbers in areas adjacent to farmland.

Develop demonstration sites on public land, including parkland, forests and National Nature Reserves (NNRs), and support the Scotland's Rural College (SRUC) initiative Farming for a better Climate.

⁶ <http://www.gov.scot/Publications/2014/06/3539/downloads>

⁷ <http://www.gov.scot/Topics/farmingrural/Agriculture/Environment/Pesticides/IntegratedPestManagement>

⁸ <http://www.gov.scot/Topics/farmingrural/Agriculture/Environment/Pesticides>

Encourage the production and implementation of local pollinator plans, such as the plan prepared by Aberdeenshire Council.

Encourage land managers to connect habitats valuable to pollinators at a landscape scale by targeting land use and management incentives in areas where there will be greatest benefit and minimal impact on pollinator habitats. Support policy initiatives from Planning authorities and developers that include pollinators in the planning system, for example development proposals, management of public land, road verges, railway embankments and power way leaves.

Support and promote IPM and targeted use of pesticides in agricultural and urban areas.

Encourage Scottish growers to complete an IPM plan⁹ and encourage local authorities to apply the principles of IPM in ground maintenance and management.

Consider a product labelling scheme to promote pesticide-free plants in the retail sector.

Review and signpost, or if necessary develop, pollinator friendly habitat management advice packages for farmers, local authorities, education, health and private land holdings, gardeners and developers.

Raise awareness of the benefits to pollinators of many wild plants considered to be weeds such as dandelions, thistles, common hogweed, ragwort and rosebay willowherb.

2. Improve our understanding of pollinators and their pollination service.

We need to better understand our relationship with pollinators and the service they provide. In particular, we need to improve our knowledge of specific plant-pollinator interactions to understand more clearly how they use their environment and the pressures upon them. Such information needs to be shared, especially where there are significant gaps in our knowledge that need to be addressed. This includes topics such as pesticides, IPM, climate change, habitat loss and ecosystem services. More information is also needed on the impact of managed pollinators (including importations) on wild pollinator populations.

What we need to do:

- Improve our knowledge of plant-pollinator interactions, including the relationship between wild pollinators and habitat size, quality, type and connectedness to other areas of habitat.
- Better understand the resources available to pollinators at a landscape scale and identify the measures required to protect and enhance pollinator habitats, at a range of scales, from local to landscape.

Measures to achieve this objective:

Identify the optimum plant assemblages and habitat patch size for wild pollinators in different management situations to better understand the link between pollinators and ecosystem function.

Support research on plant protection products that raise productivity and enhance sustainability whilst ensuring the maintenance of the nutritional benefits of wildflower abundance for both wild and managed pollinators.

Encourage research to evaluate climate-associated shifts in the phenology of plant-pollinator systems. Identify actions to support habitat and pollinator species adaptation to climate change.

Evaluate methods of management that benefit pollination in field, margin and habitat diversity at farm and landscape-scales, identifying those that provide multiple benefits, e.g. both pest control and pollination.

Investigate crop compositions to benefit pollinators, increasing farm-scale habitat heterogeneity for pollinators and other species in need of conservation action.

⁹ <https://consult.scotland.gov.uk/cap-reform-and-crop-policy/9a1bb2d9>

3. Manage the commercial use of pollinators to benefit native pollinators

Pollinators face a variety of threats from pests and diseases. The regulation of imported, commercially-used bees into Scotland helps to mitigate the risks of importing new parasites and diseases of honey bees, bumble bees and other wild bees. These risks could be reduced by encouraging local commercial production of pollinators.

What we need to do:

- Ensure the process of screening commercial honey bees, and imported/managed bumble bees and their hives, for pests and diseases continues to safeguard our wild pollinators.
- Review biosecurity measures for imported bees, particularly bumble bees, aiming to support healthy populations of pollinators in the wild.
- Ensure that practical advice is available to reduce the potential for pest and pathogen transfer, and disease impacts on wild pollinators.
- Reduced reliance on imported bees for commercial pollination service. Encourage and support ways to enhance the use of naturally-occurring pollinators.

Measures to achieve this objective:

Support and sustain a healthy honey bee population and beekeeping industry in Scotland through continued implementation of the measures set out until 2020 in the Honey Bee Health Strategy for Scotland¹⁰.

Identify actions required to minimise the risks of managed bees (imported and locally-produced) to native pollinator species. Review the pathways by which commercially produced pollinators enter Scotland to determine the current scale and biosecurity risks.

Encourage the production of local stocks of honey bees, bumble bees and solitary bees, so that Scotland can become less reliant on imports and the risk of introducing pests, pathogens and other invasive species.

Raise awareness of the Asian hornet, a non-native species and a significant predator of honey bees and other pollinators, that has recently become established in Europe.

4. Raise awareness and encourage action across sectors

Public involvement is crucial to help deliver this Strategy. There are many ways to do this, including through habitat management and monitoring, but it needs to be guided by information which supports a wider understanding of the importance of pollinating insects and the service they provide.

Volunteer data collection makes an essential contribution to understanding and monitoring our pollinators. To make the most of this we need to ensure that data collected through citizen science and volunteer recording projects is systematic and satisfies agreed data protocols. Good identification tools, such as keys and databases, underpin this. If our native pollinators are to continue to thrive, it is also important to encourage a strong source of recording and taxonomy skills in future generations.

What we need to do:

- Ensure the value and vulnerability of plants and their pollinators is widely recognised. Increase awareness within key sectors and amongst the public of opportunities to help pollinators and their habitats.
- Support and raise awareness of schemes and organisations that encourage people to identify and record pollinating species.

¹⁰ <http://www.gov.scot/Topics/farmingrural/Agriculture/animal-welfare/bee/strategy>

- Support initiatives by local and national environmental groups that increase the diversification and connectivity of flower-rich habitats in the countryside and urban areas.
- Encourage and support land managers to restore or create native flower-rich habitats to enhance pollinator abundance and diversity, and work together to carry out management at a landscape scale. This should include urban green space and urban fringe areas.

Measures to achieve this objective:

Develop regionally-based species advice to assist public action for pollinators in both urban and rural areas.

Develop guidance, tailored for a range of audiences, on practical action to help pollinators.

Work with partners, including policy makers and those with practical skills in the management of habitats, to raise public awareness and understanding of the needs and status of pollinator populations.

Review options, possibly through Scotland's Environment Web (SEWeb), to make information readily accessible through a 'one-stop-shop' for pollinator information, capitalising where possible on the current information available.

5. Monitor and evaluate whether pollinators are thriving

It is crucial that we understand the trends and statuses of our pollinators across habitats and landscapes. Monitoring and evaluation of species' and populations relies on long-term, systematically-collected data to understand whether, and how, they are changing in their geographical distribution and abundance. Without this it is difficult to identify appropriate actions for long-term conservation of bees and other key pollinator species.

What we need to do:

- Gather and analyse data from which to better understand pollinator population trends, habitat availability and connectivity, to ensure the correct actions are being taken for pollinators and habitats.
- Support monitoring and recording schemes for key species, notably bees, hoverflies, moths, butterflies and wild plants.
- Encourage citizen science and other volunteer projects that add value to existing monitoring initiatives and help to deliver the National Pollinator Monitoring Scheme.

Measures to achieve this objective:

Implement the National Pollinator Monitoring Scheme in Scotland¹¹ to support a better understanding of species' trends and distributions.

Explore new statistical techniques that draw the most information out of available records.

Publish regular updates on the status of pollinators and their habitats to support wider common understanding of the need for action.

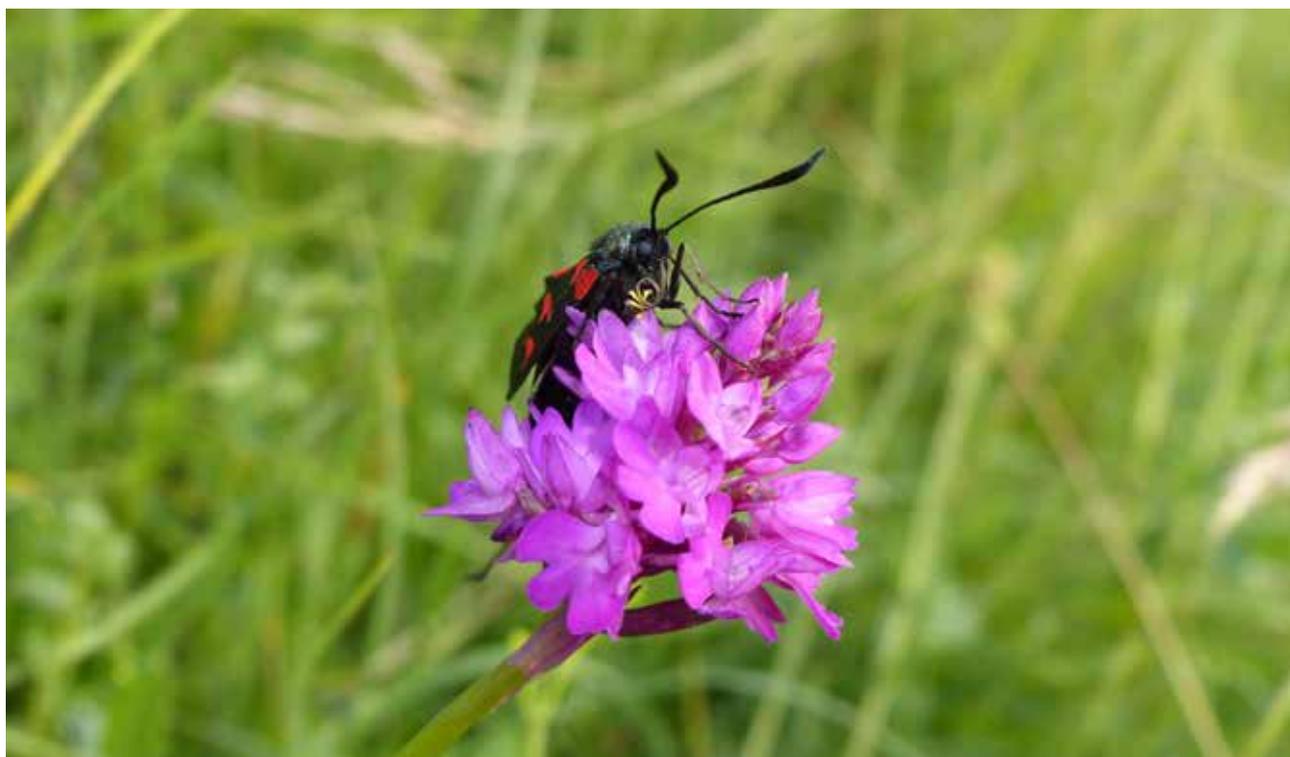
Use the Pollinator Implementation Plan to monitor achievements and direct future effort. Ensure action is reviewed regularly and new information on trends is incorporated.

Continue to support recording schemes involving volunteers and 'citizen scientists'.

¹¹ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=2&ProjectID=19259>

6 Implementation plan

This Strategy is accompanied by an Implementation Plan which develops further the actions required to achieve the five objectives. Progress against the actions will be monitored annually by a working group which will include representatives of Government, non-governmental and trade organisations to encourage participation and feedback on the success of action for our native pollinators in Scotland. New information will help to inform any adjustment required to ensure the Implementation Plan remains current and supports positive action to 2027.



Photography:

Cover: Suzanne Burgess/Buglife, Andrew Philpotts, Dave Goulson/Bumblebee Conservation Trust, Adam J. Vanbergen, Suzanne Burgess/Buglife, Mike Edwards, Dan Chapman, Lorne Gill/SNH.

P2 Lorne Gill/SNH; P6 Suzanne Burgess/Buglife; P7 Lorne Gill/SNH; P9 Suzanne Burgess/Buglife; P10 Bumblebee Conservation Trust ; P15 (top) Martin Warren, (bottom) Claire Carvell.