



Llywodraeth Cymru
Welsh Government

www.cymru.gov.uk

The Action Plan for Pollinators in Wales



Biodiversity Team
Biodiversity and Nature Conservation Branch
Welsh Government
Rhodfa Padarn
Llanbadarn Fawr
Aberystwyth
SY23 3UR

email: biodiversity@wales.gsi.gov.uk

Cover photos courtesy Vaughn Matthews, Michael J. Clarke, Jo Mullett,
Bumblebee Conservation Trust and Suzanne Moore Osley

WG18155
© Crown Copyright 2013
ISBN 978-1-4734-0032-0

Ministerial Foreword



It is estimated that the value of pollinators to the UK is at least £430 million per annum which makes pollination a vitally important ecosystem service. However, despite their importance, pollinator numbers have been on the decline for the last 30 years and if we don't take prompt action, this trend will continue.

Pollinators are a fundamental component of our biodiversity. They have a key role to play in our economy in terms of the food and farming industries and in relation to the strong link between wildlife and tourism in Wales. They are important to life in our city habitats including our parks, gardens and urban waterways, so their decline is worrying. Indeed the recent State of Nature report, published by a consortium of wildlife organisations, highlighted the loss of pollinators amongst many other species, and this strengthens our drive to identify the biodiversity priorities for Wales and a strategy to meet those.

The publication of this Action Plan for Pollinators is an important step towards this ambition. Our approach to the pollinator plan will also contribute directly to the Welsh Government's commitment to an integrated approach to natural resource management. This approach enables all decisions affecting natural resources to be made in a way which optimises economic, social and environmental outcomes. It is a way of looking at our natural resources and deciding how benefits for people in terms of jobs, their livelihood and health can be maximised over the long term.

I was very encouraged by the enthusiastic input to the development of the Action Plan for Pollinators in terms of the positive reaction and the detailed responses received from the public. I would like to thank all those who contributed data and information and responded so constructively. The production of this plan, the first of its kind in the UK, signals our intent and commitment to act, and sets the strategic basis for action. It is also a starting point as we begin its implementation and identify further priorities and actions.

By working together we have put a plan in place to set direction and to achieve our objective of slowing and reversing the decline of pollinator numbers here in Wales.

A handwritten signature in black ink, which appears to read 'Alun Davies'. The signature is written in a cursive style with a long horizontal stroke at the end.

Alun Davies AM
Minister for Natural Resources and Food

Summary

Pollinators are an essential component of our environment. Honeybees and wild pollinators including bumblebees, solitary bees, parasitic wasps, hoverflies, butterflies and moths and some beetles are important pollinators in Wales, for crops such as fruit and oil seed rape, clovers and other nitrogen fixing plants that are important to improving the productivity of pasture systems for livestock grazing, and wild flowers.

The value of pollination as a contribution to the UK crop market in 2007 was £430 million and the cost of hand pollination, were we to lose this valuable service, has been estimated at £1.8 billion per year in the UK. The value of honey produced in Wales is also considerable with a wholesale value in excess of £2 million in 2011.

However, bee and pollinator health and declining populations have been increasingly highlighted as a cause for concern in the UK and globally. The main areas of concern for pollinators are land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change, although the importance of each of these and the extent to which they are inter-related is less well known.

The Welsh Government has worked with industry and stakeholders to look in more detail at the evidence and issues around pollinators and their conservation in Wales. Following consultation the Action Plan for Pollinators sets the strategic vision, outcomes and areas for action to improve conditions for pollinators and work to halt and reverse their decline in Wales.

The plan describes the current situation in Wales and identifies areas where action is needed. It details our Vision for Pollinators in Wales, and puts that into the context of the Welsh Government's priorities and policies. It also lays out an Agenda for Action – the outcomes and areas for action that have been identified and how we will work towards them. The four main outcomes are:

Outcome 1: Wales has joined up policy, governance and a sound evidence base for action for pollinators

Outcome 2: Wales provides diverse and connected flower rich habitats to support our pollinators

Outcome 3: Wales' pollinator populations are healthy

Outcome 4: Wales' citizens are better informed and aware of the importance and management of pollinators

The first step towards implementing the Plan will be to establish a Pollinators Taskforce, and an implementation plan will be published separately.

The Action Plan for Pollinators in Wales

Contents

1.	Introduction	1
	<ul style="list-style-type: none">• What are Pollinators?• What Pollinators need• Why we need to take action• What are the main threats?• The Action Plan	
2.	The Current Situation in Wales	5
	<ul style="list-style-type: none">• Pollinator populations• The main areas of concern• Research and Initiatives• Governance and Infrastructure	
3.	Our Vision for Pollinators in Wales	14
	<ul style="list-style-type: none">• Natural Resource Management• Biodiversity• Other Welsh Government Strategies	
4.	An Agenda for Action	18
	<ul style="list-style-type: none">• Outcomes	
5.	Implementation of the Plan	21

1. Introduction – What’s going on?

Pollinators are an essential component of our environment. Honeybees are managed pollinators of crops and also provide us with honey. Wild pollinators including bumblebees, solitary bees, parasitic wasps, hoverflies, butterflies and moths and some beetles are also important pollinators in Wales, for crops such as fruit and oil seed rape, clovers and other nitrogen fixing plants that are important to improving the productivity of pasture systems for livestock grazing, and wild flowers. They contribute to the diversity of plant species, habitats and wildlife in Wales, as well as its resilience and natural beauty. This provides food, makes Wales a better place for people to enjoy and visit, and makes an important contribution to our economy.

What are Pollinators?

In this plan we refer to insect pollinators including all types of bees, some wasps, butterflies, moths and hoverflies, some beetles and flies.

Bees and wasps visit flowers to collect pollen and nectar to feed themselves or their developing young. Flowering plants have evolved to take advantage of this by offering nectar to insects most likely to carry their pollen to another plant.

The honeybee is the main managed pollinator of crops. Modern honeybee hives are sometimes moved from crop to crop and beekeepers may charge for the pollination services provided whilst also harvesting the honey and other products. Crops which benefit from this include orchards and soft fruits (rose family) oil seed rape and other seed brassicas (cabbage family) and peas and beans (legumes).

Bumblebees and solitary bees are also important pollinators that are essential to the maintenance of wild plant populations and to commercial crop production, particularly orchard and soft fruits and protected crops such as tomatoes. Pollinator kits are available for use in commercial glasshouses that use either non-native or UK origin bumblebees produced outside the UK. The queens are usually held captive and the colonies destroyed at the end of the growing season.

Wasps often feed on nectar whilst on the lookout for other insects to prey upon, many of which are crop pests.

Butterflies and moths pollinate plants to various degrees by the action of the adult feeding on nectar. They are not major pollinators of UK food crops, but are pollinators of many wild flowers.

Hoverflies are abundant on flowers for much of the year and the adults feed on nectar and pollen, carrots and apples being examples of crops that benefit from hoverfly pollination. However, the larvae eat a much more varied diet that often includes other insects. For this reason predatory species of hoverfly are utilised as part of Integrated Pest Management (IPM) as biological control agents.

What Pollinators need

Pollinators need food in the form of pollen and nectar foraged from a variety of flowering plant species; and diverse vegetation structure, e.g. hedgerows, scrub and tall grass for shelter, nesting and overwintering such as burrows and holes in tree trunks. The larval stages of many pollinators also have many differing requirements. In order to support a variety of pollinator species, nectar sources need to be available from early spring through to late autumn.

Although most honeybees have their shelter provided for them, all pollinators need flowering semi-natural habitats such as wildflower meadows, hedgerows and woodland edges, and agricultural landscapes which include unimproved grassland, hay meadows, clover rich grasslands, orchards and arable crops. However many of these habitats and land uses are declining or in short supply in Wales.

Food and shelter can also be provided in gardens, parks, road verges, and any other open area. Pollinators are relatively easy to provide for, for example by planting or retaining appropriate plant species such as common knapweed in wildflower meadows, red clover in pasture, hawthorn and bramble in hedgerows and woodlands and cosmos in bedding areas.

Why we need to take action

The benefits of supporting our pollinators are numerous – they are an essential part of healthy functioning ecosystems, providing, for example:

- food production – directly as honey, and indirectly as crops
- a diverse, functioning and attractive environment

and supporting:

- health and well being
- tourism
- rural economies
- urban green space

Figure 1 shows how these ecosystem services and the benefits derived by society are linked.

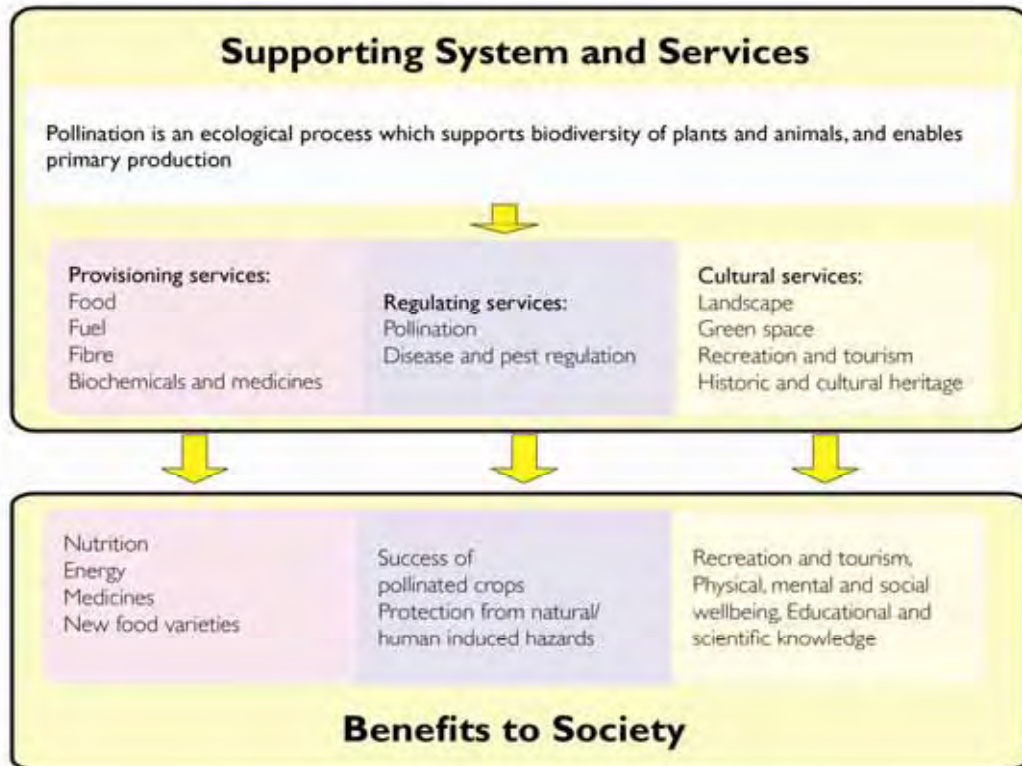


Figure 1: How pollination is linked to ecosystem services and the benefits they provide to society. Pollination is an ecological process without which we would not receive many of the other provisioning, regulating and cultural services, or the benefits to society.

The value of pollination as a contribution to the UK crop market in 2007 was £430 million¹. Although it was not possible to quantify the value in Wales, insect pollinators are known to be essential for the maintenance of many vegetation types across all land habitats of Wales. The cost of hand pollination, were we to lose this valuable service, has been estimated at £1.8 billion per year in the UK². The value of honey produced in Wales is also considerable with a wholesale value in excess of £2 million in 2011³.

However, bee and pollinator health and declining populations have been increasingly highlighted as a cause for concern in the UK and globally. Honeybees showed a 23% decline in Wales between 1985 and 2005⁴. Butterflies, hoverflies and many species of moth are also declining across Wales. Wildflower meadows and other important semi-natural habitats have also decreased in area.

¹ UK National Ecosystem Assessment (NEA), 2011, The UK National Ecosystem Assessment Technical Report. UNEP-WCMC, Cambridge.

² Breeze TD, Roberts SPM, Potts SG, 2012, The decline of England's Bees, University of Reading & Friends of the Earth <http://www.foe.co.uk/resource/briefings/beesreport.pdf>

³ National Bee Unit estimated from information provided by Bee Inspectors.

⁴ NEA as before.

What are the main threats?

The main areas of concern for pollinators are land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change⁵.

The importance of each of these and the extent to which they are inter-related is the subject of research initiatives such as the Insect Pollinators Initiative.⁶

The Action Plan

The National Ecosystem Assessment, published in 2011, highlighted the decline in pollinators. Following calls from stakeholders, the Welsh Government has worked with industry and stakeholders to look in more detail at the evidence and issues around pollinators and their conservation in Wales.

We have followed the stages of the developing Ecosystem Approach Framework⁷ in identifying the key stakeholders, understanding the key drivers, issues and opportunities, and visioning and objective setting. Our stakeholders generated a long list of options, and a draft plan was consulted on in Spring 2013. This final plan sets the strategic vision, outcomes and areas for action to improve conditions for pollinators and work to halt and reverse their decline in Wales. An implementation plan will be developed and delivered by a Pollinators delivery group, within the Wales Biodiversity Framework.

The guiding principles of precaution, of effecting early intervention, and avoiding the risk of negative economic impacts will be adopted in the actions to halt pollinator decline in Wales.

Section 2 of this plan describes where we are now, the current situation in Wales and identifies areas where action is needed.

Section 3 details our Vision for Pollinators in Wales, and puts that into the context of the Welsh Government's priorities and policies.

Section 4 lays out an Agenda for Action – the outcomes and areas for action that have been identified and how we will work towards them.

Section 5 gives further details of the next steps and the short term actions to be taken forward. The Implementation Plan will be published as a separate and evolving document.

⁵ Vanbergen, AJ and the Insect Pollinators Initiative, 2013, [Threats to an ecosystem service: pressures on pollinators](#), *Frontiers in Ecology and the Environment* doi:10.1890/120126

⁶ funded by Defra (also on behalf of Welsh Government) and the Biotechnology and Biological Sciences Research Council (BBSRC), the Natural Environment Research Council (NERC), Scottish Government and the Wellcome Trust. www.insectpollinatorsinitiative.net

⁷ [Using the Ecosystem Approach: A Framework for Natural Resources Wales - Natural Resources Wales and Welsh Government, March 2013.](#)

2. The Current Situation in Wales – Where are we now?

There is much evidence of widespread decline in pollinators globally and across the UK, and of the main causes of those declines, for example, in Vanbergen et al⁸. This evidence has been compared with data and the current situation in Wales to establish the most relevant issues. However, much more research is needed to establish the status and trends of pollinators and the interacting pressures on them.

Pollinator Populations

Managed pollinators

The National Bee Unit (NBU) runs a register of beekeepers in England and Wales (Beebase) which currently shows Wales as having 2702 beekeepers, with 3511 apiaries and 14635 colonies of honeybees.

However, it is estimated that a further 25% of beekeepers are not registered on Beebase, which would increase estimated totals to 3,377 beekeepers in Wales with 4,388 apiaries and 18,294 colonies of honey bees.

Every year new beekeepers register on Beebase and these entries have increased year on year in Wales, from 102 in 2007 to 404 in 2011 (with a decrease in 2012 to 256) showing the rising popularity of beekeeping as a hobby, although 40% of honeybee colonies are managed commercially.

In 2011, 427 tonnes of honey was produced in Wales with a wholesale value in excess of £2 million⁹.

Wild pollinators

Bumblebees and Solitary bees

UK declines of most of these species are well documented and we can say with certainty that the range of many species previously more widespread in Wales has contracted. Typically, inland populations of, for example, Shril Carder Bee, Brown-banded Bee¹⁰ and the Longhorn Bee have been lost because remaining areas of lowland semi-natural habitats tend to be small, fragmented and poorly connected. Remaining populations are confined to coastal habitats where grasslands, heaths and dunes survive relatively intact. The Large Mason Bee survives only on two remaining sites in the UK, both on the Llŷn Peninsula.¹¹ Declining distributions in a

⁸ Vanbergen, AJ and the Insect Pollinators Initiative, 2013, Threats to an ecosystem service: pressures on pollinators, *Frontiers in Ecology and the Environment* doi:10.1890/120126

⁹ National Bee Unit, estimated from information provided by Bee Inspectors.

¹⁰ Countryside Council for Wales, 1997, Action for Wildlife: biodiversity action plans: the challenge for Wales, CCW.

¹¹ Evan, RE and Potts, S, 2013, Iconic Bees: Wales, Large Mason Bee, Friends of the Earth

UK context are documented in the several provisional atlases published by the Biological Records Centre¹².

Butterflies¹³

Of the 43 species of butterfly seen in Wales, 10 are in severe decline and 17 are declining. Although 11 species are stable or increasing, overall 63% of Welsh butterflies are declining.

Moths¹⁴

There are 337¹⁵ widespread (found in more than 23 10km squares) macro (larger) moths recorded in Wales. 93 widespread macro moths that are recorded in Wales qualify as either 'endangered' or 'vulnerable' under International Union for the Conservation of Nature criteria (based on 10 year population trends over 35 years). Overall, 28% of widespread Welsh moths are severely declining.

Other species

There are a number of flies and wasps on the Section 42 list under the Natural Environment and Rural Communities Act (NERC), see Section 3, for reasons of declining populations or endangered status¹⁶.

For other pollinators such as hoverflies, although declines have been shown using data from recording schemes¹⁷ there is little or no available data specific to Wales which could establish the status and trends in populations of species. Although studies have been carried out of individual species it is difficult to assess the trends in Wales due to small sample sizes. However there are currently no reasons to believe that the declining trends shown across the UK would be different in Wales.

¹² <http://www.brc.ac.uk/>

¹³ Data derived from Fox, R., Brereton, T.M., Asher, J., Botham, M.S., Middlebrook, I., Roy, D.B. and Warren, M.S. 2011. *The State of the UK's Butterflies 2011*. Butterfly Conservation and the Centre for Ecology & Hydrology, Wareham, Dorset.

¹⁴ Data derived from Fox, R., Conrad, K.F., Parsons, M.S., Warren, M.S. and Woiwod, I.P. 2006. *The State of Britain's Larger Moths*. Butterfly Conservation and Rothamstead Research, Wareham, Dorset.

¹⁵ National Moth Recording Scheme.

¹⁶ Section 42 lists can be found here: <http://www.biodiversitywales.org.uk/en-GB/Section-42-Lists>

¹⁷ The Hoverfly Recording Scheme <http://www.hoverfly.org.uk/>

The main areas of concern

Research¹⁸ has identified several areas of concern for both managed and wild pollinators including:

- Land use intensification, habitat loss and fragmentation
- Disease
- Agro-chemicals
- Climate change

These areas have been considered for their impact in Wales and the opportunities to address them. The extent to which they are inter-related is less well known and the subject of research initiatives such as the Insect Pollinators Initiative. However the lack of suitable habitat, for example, is likely to make pollinator populations more susceptible to pressures from disease and climate change.

Land use intensification, habitat loss and fragmentation

This has been shown to be a key reason for the decline of pollinators. In Wales, just under 80% of land use is agricultural. Although the majority of that land, 61%, is permanent pasture, as farming systems have intensified, many semi-natural grasslands have been converted to temporary grass leys potentially with few flowering species to support pollinators.

There was a huge loss in species-rich (or semi-natural) lowland grassland habitat across Wales during the 20th century. An estimated 91% of semi-natural lowland grassland has been lost over a 50 to 60 year period between the 1930s and the 1990s. Dry unimproved lowland grassland loss was estimated to be as much as 97%¹⁹.

Heathlands and wetlands are very important to pollinators because they provide a great abundance of flowers late in the season. Honey producers can be reliant upon heather at such time and heather honey remains a very popular product. Heathlands have been declining due to agricultural improvement since the mid eighteenth century and some of the Welsh figures show, for example, that there was a 97% loss in wet heath and 50% loss of dry heath between 1920/2 and 1987/8 on the Llŷn Peninsula²⁰.

¹⁸ For example: Winfree, R., Bartomeus, I., & Cariveau, D.P. (2011) Native Pollinators in Anthropogenic Habitats. *Annu.Rev. Ecol. Evol. Syst.* 42, 1-22., but many others see: https://wiki.ceh.ac.uk/display/ukipi/Further+Reading?atl_token=aa45a6558b5570ba3ed88236d6583e1543fcfd92

¹⁹ Stevens, D. P., Smith, S. L. N., Blackstock, T. H., Bosanquet, S. D. S., Stevens, J. P. 2010. *Grasslands of Wales. A survey of lowland species-rich grasslands, 1987–2004*. University of Wales Press, Cardiff. Stevens et al. (2010).

²⁰ Stevens, J.P. (1992). *Vegetation change in Llyn between 1920/2 and 1987/8*. CCW Science Report 36. Countryside Council for Wales, Bangor.

Only 12% of agricultural land is currently used to grow arable crops such as oil seed rape and legumes, which both need, and support pollinators²¹. However the reliance on pollinators to meet future food security needs is likely to increase, highlighting the importance of retaining pollination as a service.

Improving conditions for pollinators throughout agricultural land is a key area for action, by providing more flowering plant species, and larger and better connected habitats. Farm land uses such as woodlands and orchards, hedgerows and field margins can help. Glastir, Wales' agri-environment scheme, which includes many pollinator friendly options, currently covers 226,134ha (13%) of agricultural land, providing opportunities to extend this cover. Other options for land not eligible for Glastir need to be devised, and management for pollinators considered in protected landscapes, designated areas and in the wider countryside.

Woodland (including farm woodlands) and forestry comprises 13% of land use and could provide better opportunities for pollinators.

10% of Wales' land area is urbanised, which includes much land sealing (for example, by concreting gardens and parking areas). There are many opportunities for providing better conditions for pollinators in urban and developed areas and along roadsides, and also for raising awareness of the importance of pollinators and their management.

Disease

Invertebrate pests and pathogens (viruses, bacteria, and microsporidian fungi) are a major source of mortality for managed pollinators and have been best studied in the honey bee. The *Varroa* mite is the vector of many viruses that are implicated in loss of honey bee colonies. *Varroa* suppresses host immunity and increases host virus load. However, bees are commonly infected with multiple pests and pathogens and these vary geographically and seasonally²².

Winter losses of honeybees are an inevitable and natural seasonal event, fluctuating according to the weather/forage conditions of the previous season and during the winter. Losses can be mitigated by good husbandry on the part of beekeepers.

Historically, beekeepers expected to lose about 10% of colonies in the winter whilst increasing colony numbers during the summer to more than make up the difference. The spread of *Varroa* from 1994 in Wales caused much greater losses. As beekeepers have learnt to control *Varroa*, there are fewer winter losses attributable to *Varroa*, however winter losses in Wales since 2011 suggest slightly higher than expected figures of 14% – 22% in 2011 and 15% – 19% in 2012²³.

²¹ Welsh Government, 2012, *Farming Facts and Figures*, <http://wales.gov.uk/topics/statistics/publications/farmfacts12/?lang=en>

²² Vanbergen et al. 2012. Insect Pollinators: Linking Research and Policy. Workshop Report of UK Science and Innovation Network (Foreign and Commonwealth Office & Dept. Of Business Innovation and Skills) Download from: <http://www.insectpollinatorsinitiative.net>

²³ Data from Beebase, National Bee Unit.

It is also becoming clear that many pests and pathogens can spread within and between populations of wild and managed bumblebee species and potentially other pollinating insects. Losses of generalist species, like many bumblebee species, from disease may increase the chance for the collapse of pollination networks and the negative effects that would have for the wider ecosystem²⁴.

Further research into these areas, and support for the monitoring of the situation with regard to pollinator health, is needed. Defra and the Welsh Government's Healthy Bee Plan is one of the main drivers for this area of work.

Agro-chemicals

Fertilisers and pesticides have been a part of the move towards more intensive farming in Wales. Although the Welsh Government's policy is 'to seek the reduction to the lowest possible level the effect of pesticide use on people, wildlife, plants and the environment while making sure that pests, diseases and weeds are effectively controlled' Wales' pesticide use accounts for less than 2% of the UK's usage.

In deciding the actions that are required to achieve this difficult balancing act we must first collect good scientific evidence to enable the best possible assessment of the risk involved. Research is used to inform the development of mitigation strategies that will ensure that the pollination of agricultural and horticultural crops are protected and biodiversity in natural ecosystems is maintained.

Recent research suggests that three neonicotinoid pesticides (clothianidin, imidacloprid and thiamethoxam) may have an adverse impact on the health of bees. Such concerns led the European Commission to restrict the use of the three neonicotinoids for seed treatment, soil application (granules) and foliar treatment on bee attractive plants and cereals. There are a few exceptions in respect of greenhouses and open-air trials. As soon as new information is available the Commission propose to review the conditions of approval of the three neonicotinoids to take into account relevant scientific and technical developments.

Further strategies to delivery Welsh Government's policy include Integrated Pest Management proposed within the National Action Plan for Pesticides and targeted reduction of pesticide use in urban areas.

Climate change

There is uncertainty about the degree of potential impact of climate change on UK pollinators. Warm, dry summers are likely to have positive effects, while wetter summers are likely to be negative. Pollinators that have a broad climatic distribution, like honeybees, may adapt. However, there could be a mismatch between flowering dates of food plants and emergence dates of pollinators if they respond differently to

²⁴ Vanbergen et al. 2012. as above

environmental cues²⁵. Blackcurrant and its pollinators have diverged by 28 days since the 1970s. This could expose pollinators to periods of starvation, particularly affecting populations of wild pollinators with little food stored. Bumblebees are particularly sensitive as they are completely dependent on the landscape, without the potential for artificial dietary supplements potentially available for managed honeybees.

Other issues

Other issues that have been raised include Invasive Non-native species (INNS). These are non-native species which can become dominant in the environment where they impact on native species, transform ecosystems and cause environmental harm. Although invasive species such as Himalayan Balsam can provide much needed late season forage, as an INNS, this plant may be required to be eradicated. Therefore, it cannot be relied upon and a greater emphasis should be placed on developing native flower rich habitats.

A lack of public awareness of the issues around pollinators is also a concern. Raising awareness amongst the general public and across business sectors is essential to improve conditions for pollinators in Wales.

Research and Initiatives

In order to establish further information about the needs, impacts on and management for pollinators, there is much research being carried out globally, in Europe and in the UK.

The STEP project (Status and Trends of European Pollinators), funded by the European Commission aims to assess the current status and trends of pollinators in Europe, quantify the relative importance of various drivers and impacts of change, identify relevant mitigation strategies and policy instruments, and disseminate this to a wide range of stakeholders.

In the UK the Insect Pollinators Initiative is a fund of up to £10m supporting several projects to improve understanding and identify priorities for further research and evidence needs.

There is much work being carried out to support and provide for pollinators. Across the UK initiatives include the Bumblebee Conservation Trust's Local Authority Toolkit, and the Co-operative's Plan Bee.

In Wales, a few examples are:

- The National Botanic Garden for Wales, our Strategic Science Partner, has several projects underway including beekeeping, and community gardening, and Barcode Wales, a plant DNA barcoding project, which, working with the

²⁵ Memmott J. *et al.*, 2007, *Ecology Letters* 10, 710-717

Universities of Swansea and Cardiff, could help to identify which plants bees have visited and why pollinators are declining.

- The Urban Pollinators project, led by the University of Bristol, under the Insect Pollinators Initiative, investigated the current status of insect pollinators found in UK urban areas by simultaneously sampling plant-pollinator communities in towns and cities in England, Scotland and Wales (including Cardiff in 2011). The project then assessed whether the addition of large-scale pollen and nectar resources in the form of introduced flower meadows can benefit urban pollinator populations.
- Many Local Authorities across Wales have projects beneficial for pollinators. Newport City Council's Biodiversity in Schools Officer helps schools develop their grounds as an educational resource and as a haven for wildlife. Fifty-five schools are part of the Biodiversity in Schools programme in Newport which is part funded by Natural Resources Wales and the schools themselves. Participating schools have plans for creating wildlife areas, planting trees, making wildlife habitats, creating willow structures and developing wetland habitats.

In Denbighshire the Highways Authority along with Denbighshire Countryside Service and the North Wales Wildlife Trust worked together to develop improved management regimes for the county's verges, especially in rural areas, to maintain and improve their value for biodiversity but without compromising road safety. However, in many areas leaving verges uncut for wildlife can meet local opposition and there is a need to improve public awareness around these issues.

- Keep Wales Tidy is currently running 'The Long Forest', a landscape scale project, in the Brecon Beacons National Park. This is an initiative aimed at encouraging community support in researching, recording and restoring the network of hedgerows in the National Park, which will benefit pollinators. The project has been funded to the value of £120,000 from the Brecon Beacons Trust and the Sustainable Development Fund operated by the National Park Authority. The initiative was launched in the autumn of 2012 and is due to run for nearly two years.
- Buglife is undertaking a 3 year project to work on five brownfield sites, in Swansea and Neath Port Talbot. The Waste Recycling Environment Network has funded Buglife to work with local councils as well as experts and local people passionate about wildlife. Wildflower-rich habitats will be created, as well as bare ground scrapes and bee banks, resulting in 48 hectares of brownfield habitat restored for the threatened invertebrates, including the Shril carder bee and the Dingy skipper butterfly.
- Pembrokeshire Beekeepers' Association is currently developing the 'Pembrokeshire Beekeeping Centre', at Scolton Manor near Haverfordwest.

The project has been funded by Environment Wales and the Prince's Countryside Fund, until 2014. The project includes establishing a working apiary to provide training facilities for beekeepers and allow safe public viewing, and a honey processing facility.

- At the Welsh Government offices in Aberystwyth and Llandudno Junction we are working with Vinci Facilities Management to install two bee hives and a colony of honey bees. The local Beekeepers Associations have advised on the positioning of the hives and mentored Vinci staff who will manage the bee hives; and landscaping for biodiversity at both sites will be improved.
- The National Beekeeping Centre for Wales (funded by the Rural Development Plan) aims to help develop a vigorous, healthy and environmentally responsible industry in Wales.

Governance and infrastructure

There are many organisations in Wales concerned with the management, conservation and monitoring of pollinators in Wales, most of whom have been involved as stakeholders with the development of this Plan.

Managed pollinators

The National Bee Unit (NBU)²⁶ delivers the Bee Health Programme on behalf of the Welsh Government and Defra under a Memorandum of Understanding. Since 2009 the NBU's work has largely been determined by the Healthy Bees Plan²⁷.

The Welsh Beekeepers' Association is a registered charity that promotes the interests of Welsh beekeepers and good beekeeping husbandry and practice, through education, information and advice.

Wild pollinators

Natural Resources Wales is the Welsh Government's statutory advisor on nature conservation, whose purpose is to ensure that the natural resources of Wales, including biodiversity, are sustainably maintained, used and enhanced.

Non Governmental Organisations concerned with the conservation and management of pollinators include Buglife, Bumblebee Conservation Trust, Butterfly Conservation Wales, Flowerscapes, Friends of the Earth Cymru, the National Federation of Women's Institutes, North Wales Libraries Partnership, Plantlife, and Wildlife Trusts Wales.

²⁶ The NBU website is Beebase: <https://secure.fera.defra.gov.uk/beebase/index.cfm>

²⁷ Healthy Bees: Protecting and improving the health of honey bees in England and Wales, 2009, Defra and Welsh Government. Downloadable from <https://secure.fera.defra.gov.uk/beebase/index.cfm?sectionid=41>

The 22 Local Authorities in Wales all have a duty to have regard to biodiversity under the NERC Act (see Section 3) in the carrying out of their functions, including planning, highways and environmental services. In many cases there are opportunities to improve conditions for pollinators through these and other Local Authority departments.

However, there is currently no central focus point in Wales for work and information on all pollinators, although many of our stakeholders work together for common aims. Bringing together all of those with an interest in pollinators and their management and conservation is an important area for action for this plan.

3. Our vision for Pollinators in Wales – Putting it in Context

Our vision is that:

Wales supports healthy populations of wild and managed pollinators to benefit the people, economy and environment of Wales.

This vision, or outcome, will also help to achieve many other policies and outcomes of the Welsh Government, and also contribute to achieving better conditions for pollinators in the UK and globally.

The approach that this plan takes is one of integrated natural resources management, addressing the needs of pollinators and the pressures on them by strengthening action through our existing policies, and maximising opportunities when developing new policies.

This action plan also provides a mandate to put in place actions that will directly benefit pollinators and therefore contribute to our overarching aims.

For example, the Programme for Government includes key actions on living within environmental limits and protecting healthy ecosystems in relation to:

- Creating sustainable places by delivering 21st Century infrastructure (in waste, water, flood risk management, energy efficiency and energy supply) that move us towards a low carbon economy and make us resilient to future environmental pressures
- Managing Wales' eco-systems (our "green infrastructure") to deliver a positive long-term outcome for water, air, soil, landscape and biodiversity
- Bringing together our environmental objectives and management of our green infrastructure with social and economic objectives in order to maximise wellbeing as a whole and helping people, communities, the public sector and businesses to do the same

Producing best practice guidance for land management for pollinators, for example, would contribute to all three of these key actions.

Natural Resource Management

The Welsh Government is committed to embedding an ecosystem approach into the way it manages all of its activities in relation to natural resources. The Ecosystem Approach is defined as 'a strategy for the integrated management of land, water and living resources that promotes nature conservation and sustainable use in an equitable way' (Convention on Biological Diversity). We are taking this work forward through the Natural Resource Management Programme, working with Natural Resources Wales, demonstrating what can be achieved through using an ecosystem approach, legislating for a more integrated approach to natural resource

management through the Environment Bill and embedding ecosystem thinking into our plans and actions.

The further development of the Action Plan for Pollinators will use the Natural Resources Wales (NRW) framework²⁸, to develop a more integrated, ecosystem based approach to managing pollination services.

Biodiversity

The headline priorities for biodiversity in Wales are derived from the Convention on Biological Diversity and the associated Aichi targets²⁹, and the response to this by the EU in 'Our life insurance, our natural capital: an EU Biodiversity Strategy to 2020.' Wales endorses the vision and target from this strategy, and the plan for pollinators will contribute to how Wales will both meet its statutory obligations to natural resources and work towards the achievement of the EUBS targets.

The EUBS 2050 vision: By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.

The EUBS 2020 headline target: Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.

The six targets of the EU Biodiversity Strategy are broadly:

- Target 1: Fully implement the Birds and Habitats Directives
- Target 2: Maintain and restore ecosystems and their services
- Target 3: Increase the contribution of agriculture and forestry to biodiversity
- Target 4: Ensure the sustainable use of fisheries resources
- Target 5: Combat Invasive Alien Species
- Target 6: Step up action to tackle the global biodiversity crisis.

These targets will be reflected in the strategy for biodiversity in Wales currently under development, and the Action Plan for Pollinators will be a key policy to help address most of these targets.

²⁸ Using the Ecosystem Approach: A Framework for Natural Resources Wales - Natural Resources Wales and Welsh Government, March 2013.

²⁹ Convention on Biological Diversity, Strategic Plan for Biodiversity 2011– 020 and the Aichi Biodiversity Targets, Living in Harmony with Nature <http://www.cbd.int/decision/cop/?id=12268>

Pollinators, biodiversity and the Ecosystem Approach

The ecosystem approach is a way of looking at our natural environment and the services it provides, such as the provision of food, fibre and clean water, the regulation of flooding, carbon and the environmental settings for recreation and tourism. It is about deciding how the benefits they provide for people (contribution to jobs, livelihoods, health) can be provided over the long term, whilst maintaining the healthy functioning of the ecosystems on which they depend. The essence of the approach is not to look at one or two aspects in isolation but to look at the big picture - the whole range of natural processes - and how they are inter-related.

Biodiversity ultimately underpins the functioning of all ecosystems and thereby the delivery of all ecosystem services.³⁰ Pollinators and the process of pollination is an excellent example of this, see Figure 1 above – we rely on the actions of pollinators to ensure an ongoing supply of plants, trees, and flowers. This in turn not only provides food for us and other animals in the food chain, but also ensures a healthy, resilient and diverse natural environment.

Generally what is good policy for pollinators is good for biodiversity, and therefore ecosystem health more widely.

The Natural Environment and Rural Communities Act

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on every public authority, under section 40, in exercising its functions, to “have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.

In Wales Section 42 of the Act specifies a list of priority species that should be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their biodiversity duty. This list contains many pollinators, including moths, butterflies, bees and many other species reliant on pollinators, especially plants, but also mammals such as dormice and red squirrel which are reliant on fruit and berries in certain seasons³¹.

The Welsh Government is committed to ensuring that the biodiversity duty is implemented and also strengthened, and is looking at a number of options to do this.

³⁰ UK National Ecosystem Assessment (NEA) as before

³¹ Section 42 lists can be found here: <http://www.biodiversitywales.org.uk/en-GB/Section-42-Lists>

Other Welsh Government Strategies

The Healthy Bees Plan³² is the key strategy for the safeguarding of honeybees, and this will continue to be supported.

There are many other Strategies and Action Plans in place throughout Welsh Government which can help to achieve our vision, but also towards which the actions in this plan will contribute.

These include actions for biodiversity in:

- The Climate Change Strategy for Wales
- Food, Farming and Countryside: Building a Secure Future – A new Strategy for Farming
- The Wales Transport Strategy
- Trunk Road Estate Biodiversity Action Plan
- Planning Policy Wales
- Planning Policy Guidance Technical Advice Notes 5, Nature Conservation and Planning and 22 Sustainable Buildings
- Woodlands for Wales – the strategy for woodlands and trees

Policies currently under development which will be central to achieving better conditions for pollinators include the Rural Development Plan for 2014 – 2021, and the reform of the Common Agricultural Policy.

We will integrate action for pollinators into each of these and other strategies and action plans within Welsh Government through the Natural Resource Management programme.

³² Healthy Bees: Protecting and improving the health of honey bees in England and Wales, 2009, Defra and Welsh Government. Downloadable from <https://secure.fera.defra.gov.uk/beebase/index.cfm?sectionid=41>

4. An Agenda for Action – Where do we want to be?

To enable us to achieve our vision for pollinators in Wales we will work together to halt and attempt to reverse the decline in pollinator populations.

Analysis of the current situation in Wales shows that this could be best achieved by providing better and more connected flower rich habitats which will support both wild and managed pollinators, in farmland, protected areas and the wider countryside, and in urban and developed areas.

This should be supported by ensuring there are healthy populations of pollinators, initially by continuing to support the Healthy Bees Plan.

However, in order to gain the greatest benefits the actions for pollinators must be endorsed and supported by all in Wales, joining up policies and governance, and bringing greater awareness of pollinators and their importance.

The following outcomes and areas for action have been agreed and supplemented following consultation. They provide a framework to work towards our vision, but will be reviewed and updated as new information becomes available.

Outcome 1: Wales has joined up policy, governance and a sound evidence base for action for pollinators

Policy and governance outcomes:

- Pollinators are recognised and managed for within policies and programmes within Welsh Government and across public, private and the third sector.
- The Welsh Government's Natural Resource Management programme recognises that biodiversity, including pollinators, underpins healthy, functioning ecosystems, and continues to embed an ecosystem approach.
- A response to the State of Nature report, leading to a strategy and action for biodiversity in Wales will include pollinators as a priority.
- The Action Plan for Pollinators is recognised and managed, drives work programmes, targets and milestones, and is monitored and evaluated to ensure that it is fit for purpose.
- Stakeholders, including those in the business and farming communities, are fully engaged in delivery of the Action Plan.
- Best practice is shared across sectors.

Area for Action 1.1: Linking together and initiating policies and programmes to produce actions that are good for pollinators and therefore wider ecosystem health

Evidence outcomes:

- The status and trends of pollinator populations in Wales, and the inter-relationships between impacts on them are better known and understood.
- Mitigation and management methods are researched and disseminated.
- The Action Plan is monitored and evaluated to ensure it continues to focus on achieving its outcomes, with appropriate indicators established.
- UK research and evidence initiatives are engaged with, to improve information for Wales and to contribute to our baseline of evidence.

Area for Action 1.2: Building an evidence base to support future action for pollinators

Outcome 2: Wales provides diverse and connected flower rich habitats to support our pollinators

- Beneficial flower rich habitats are promoted, created and enhanced wherever possible across Wales, at landscape scale, and also at smaller scales.
- Opportunities for habitat creation and enhancement for pollinators are promoted and supported on farmland, across protected areas and the wider countryside, and in urban and developed areas.

Area for Action 2.1: Promoting, creating and enhancing diverse and connected flowering habitats across farmland

Area for Action 2.2: Promoting, creating and enhancing diverse and connected flowering habitats across protected areas and the wider countryside

Area for Action 2.3: Promoting, creating and enhancing diverse and connected flowering habitats in our towns, cities and developed areas

Outcome 3: Wales' pollinator populations are healthy

- Healthy populations of pollinators are maintained in Wales to support the pollination service that they provide and for their intrinsic value.
- The outcomes of the Healthy Bees Plan are endorsed and supported by work for the Action Plan for Pollinators

Area for Action 3.1: Supporting UK action to promote healthy populations of pollinators in Wales

Outcome 4: Wales' citizens are better informed and aware of the importance and management of pollinators

- Public awareness and understanding of the importance of pollinators and their contribution to our lives, creates a better informed Wales and a collaborative approach to the support and management of pollinators.
- Wales' citizens recognise the value of pollinators to the economy and society as well as the environment.

Area for Action 4.1: Working to raise awareness of the importance of pollinators and engage our citizens in their management

5. Implementation of the Plan

We recognise the excellent work that is currently being undertaken by many across Wales, and that the need for partnership, and the integrated approach that delivering for biodiversity demands, underpins all of the areas for action for pollinators.

The first step to implementing the Plan will therefore be to establish a Pollinators Taskforce. One of the key tasks for this group will be to produce best practice guidance for land managers and policy makers within the public and private sectors. A communications plan and awareness campaign will also be a priority, as will the identification of future resource needs and sources.

A wealth of information and expertise has been gathered as a result of the preparation and consultation phases of this plan, further details of which will be provided in the Consultation Summary Report, and will be available to the Pollinators Taskforce.

The initiatives suggested below will be developed by the Taskforce, and taken forward by Welsh Government and partners, but they will evolve and be supplemented as priorities develop in the longer term, in response to the State of Nature report and a strategy for biodiversity in Wales.

The key activities identified for implementation in the short term are as follows:

Area for Action 1.1: Linking together and initiating policies and programmes to produce actions that are good for pollinators and therefore wider ecosystem health

- Establish a Pollinators Taskforce group
- Develop the draft Implementation Plan into a work programme, using Wales Biodiversity Partnership (WBP) protocols and website.
- Identify any future resource needs and sources for the implementation of the plan.
- Ensure the natural resource management programme within Welsh Government (WG) and Natural Resources Wales (NRW) takes full account of pollinators as a key ecosystem service.
- Ensure the next Rural Development Plan has the potential to deliver for pollinators.
- Ensure pollinators are an integral part of the response to the State of Nature report and any strategy for biodiversity in Wales.
- Take account of pollinators during WG NERC biodiversity audits internally, and of Local Authorities, including ensuring any funding criteria includes biodiversity and pollinators.
- Develop an indicator for the Programme for Government which will reflect work being done for pollinators across sectors.
- Produce agreed best practice guidance for pollinators for land managers and policy makers.

Area for Action 1.2: Building an evidence base to support future action for pollinators

- Establish evidence gaps and research priorities for pollinators in Wales, linking with the Defra review of pollinators evidence, and other UK initiatives including the Insect Pollinators Initiative.
- Establish baseline data and a monitoring scheme for appropriate indicators for the plan for example: agreed pollinator populations, area of flower rich habitat and an indicator of public awareness.

Area for Action 2.1: Promoting, creating and enhancing diverse and connected flowering habitats across farmland

- Consider how Glastir can improve outcomes for biodiversity and pollinators.
- Inclusion, where feasible, of biodiversity outcomes within the Common Agricultural Policy (CAP) reform process and the development of the next RDP.
- Linking outcomes for pollinators with WG work on Payments for Ecosystem Services (PES).
- Raising awareness of best practice with farmers and land managers through Farming Connect, and dissemination of best practice guidance.

Area for Action 2.2: Promoting, creating and enhancing diverse and connected flowering habitats across protected areas and the wider countryside

- Work with NRW to ensure action for pollinators on designated sites, and within the woodland estate.
- Ensure National Park and AONB outcomes and indicators include biodiversity and pollinators.
- Review key regulations and designations which impact on pollinators to ensure they are fit for purpose.

Area for Action 2.3: Promoting opportunities and creating and enhancing diverse and connected flowering habitats in our towns, cities and developed areas

- Instigate an Urban Pollinators Initiative for Wales as part of the Pollinators work programme.
- Review Local Authority management of roadside verges, parks and public green spaces.
- Promote community led projects to benefit pollinators and local communities through current annual funding streams such as *Tidy Towns* and *Tranquil, Cleaner and Greener Places*, and with partners: Keep Wales Tidy, local authorities and communities.
- Incorporate pollinator friendly practice within WG landscaping and commercial property management contracts.

- Include pollinator guidance within the review of sustainable housing policy.
- Contribute to any review of WG transport guidance and policies and the Trunk Road Estate Biodiversity Action Plan with guidance for management for pollinators.

Area for Action 3.1: Supporting UK action to promote healthy populations of pollinators in Wales

- Continue to support the Healthy Bees Plan and fund the National Bee Unit
- Work with the NBU and Defra to develop the current England and Wales contingency plan for exotic pests and diseases of honey bees.
- Support beekeeping and associated awareness activities under the Rural Development Plan.
- Provide support for honey producers through marketing programmes.
- Engage with the National Action Plan for Pesticides

Area for Action 4.1: Working to raise awareness of the importance of pollinators and engage our citizens in their management

- Produce a Communications Plan as part of the Pollinators work programme.
- Establish a website to centralise information, and promote best practice for pollinators. The Wales Biodiversity Partnership website will provide an initial host for this.
- Improve information and facilities in schools on pollinators and their importance, initially through the Eco Schools programme in Wales.
- Promote best practice guidance to Local Authorities, land managers and the public, and seek to work with award schemes to promote pollinator friendly practice, building on previous work towards this.
- Promote pollinator friendly practice to farmers through Gwlad and the Farming Connect knowledge transfer programme.

The Implementation Plan will detail these actions, and others as they develop, and how they will be progressed by the Pollinators Taskforce, within Welsh Government and by Natural Resources Wales.