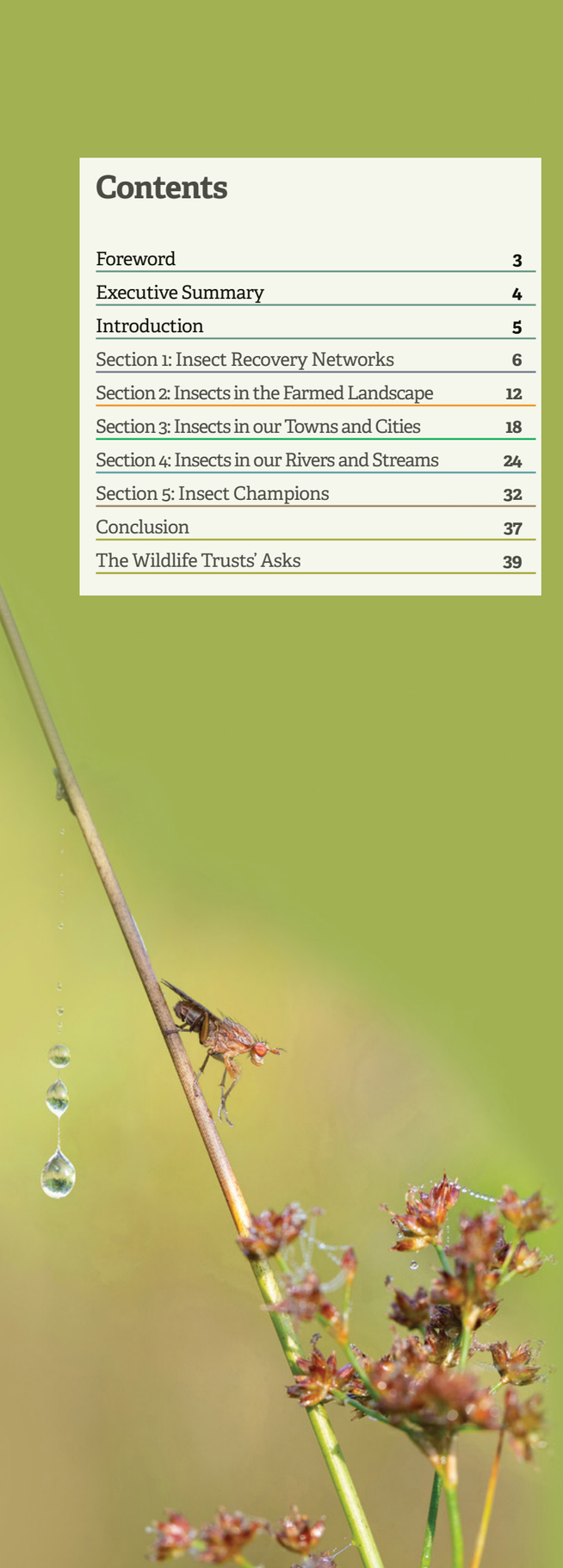
A new report from
the Wildlife Trusts

Reversing the Decline of Insects

Lead Author:
Professor Dave Goulson,
University of Sussex

Contents



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All research references in this report can be found at **www.wildlifetrusts.org/afi-references**

Front Cover Photo: Jon Hawkins/Surrey Hills Photography
Contents Page Photo: Jon Hawkins/Surrey Hills Photography

Foreword

Craig Bennett, on behalf of The Wildlife Trusts

As a five-year-old boy when I left my light on at night with the window open, my bedroom would be swarming with moths half an hour later.

Now, I'd be lucky to see one. When venturing away for a family holiday, driving up the A1 for five hours, the front number plate would be covered in squashed insects by the time we arrived at our destination. Now, there might be one or two.

Today, I'm 48 years old and the science is clear; in my lifetime 41% of wildlife species in UK have suffered strong or moderate decreases in their numbers – be it number of species, or number of individuals within a species, and it is insects that have suffered most. It shouldn't really come as a surprise. If we destroy wildlife habitat and routinely spray tons of chemicals on the land designed to kill insects, guess what? We end up with fewer insects!

The collapse in the abundance of our wildlife has been the most shocking and disturbing aspect of the war on nature that has been waged in recent decades. Much as we like to imagine we live in a green and pleasant land; the truth is that the UK is now one of the most nature depleted countries in the world. And as the abundance of key insect species declines at an alarming rate, so the critical role they perform in ecosystems is undermined and the other wildlife that depends on them suffers.

The stark fact is that we need insects and if we don't act now, and act decisively, future generations will not be able to enjoy butterflies, moths, ladybirds, pond skaters, dragonflies, ground beetles and bumblebees... Our ability to feed ourselves will be compromised and many of our beloved birds, mammals and other species will simply not survive. Nature's recovery is essential.

If government promises to '...become the first generation to leave that environment in a better state than we found it' are to mean anything, then we must start by reversing the decline of insects. The UK Government has a vital role to play, but communities and individuals can all make a huge difference too through direct action and influencing policy.
In this report we show how.

Photo: Hans Brexmeier

The Wildlife Trusts do not believe that insect declines are inevitable if enough people care and act. But for nature to have a chance, we need to see at least 30% of our land managed for its recovery and we need to stop the unnecessary use of pesticides. Whether it's making more space for insects where we live and farm, making our towns and gardens pesticide free, or setting an ambitious target for pesticide reduction...we know what we need to do; we just need to get on with it. And fast.

Craig Bennett
Chief Executive, The Wildlife Trusts
Follow Craig on Twitter: @craigbennett3

Photo: Richard Jinman

Executive Summary

Insects are beautiful, fascinating and vitally important. They make up the bulk of known life on Earth and play numerous essential roles in ecosystems, providing food, pollination, recycling, pest control and much more.

As American biologist E.O. Wilson once said, "*without insects the environment would collapse into chaos*". Thus the growing evidence that many are in rapid decline – with, for example, UK butterfly populations down more than 50% since 1976 – should be of very deep concern for all of us, but sadly not surprising. We have lost 97% of our wildflower meadows since the 1930s and 87% of our wetlands have gone. Annually, we apply 16.9 thousand tons of pesticides on our countryside every year, and that does not include what we spray in our towns and our cities, in our gardens and the chemicals we pour down our drains. A 2019 EU report on global biodiversity loss tells us that it is not too late to reverse insect declines, but only if we start now at every level of society, from local to global.

Reversing the Decline of Insects, commissioned by The Wildlife Trusts as part of their **Action for Insects** campaign, focuses on some examples of what can be done by everyone to halt and reverse this crisis. From the road verges of Stirling and Kent, to farms in Northern Ireland and Devon, the chalk streams of Wiltshire, and the urban greenspaces of Lambeth and Manchester, we highlight some of the many people and projects that are making a real difference to insects. We can learn from these successes and, with your help, scale them up and roll them out across the country. We can create a network of insect-friendly habitat to ensure that our grandchildren grow up in a world where the flash of butterflies' wings, the buzz of bumblebees and the chirp of crickets are all familiar sights and sounds.

Professor Dave Goulson
University of Sussex

What do insects do for us?

Insect populations can recover swiftly, with a little help and space. The Wildlife Trusts are working hard to inspire and help people to take action for insects where they live, learn, work and farm. We want policy makers to know that the public cares about insects and want to see changes to protect them. Everyone can help by reducing their use of harmful chemicals and by calling on the UK Government to set an ambitious pesticide reduction target. We also need to start establishing a recovery network for nature by creating insect-friendly habitats in our gardens, towns, cities and countryside that are bigger, better protected and more joined up so at least 30% of our land and seas are rich in nature. To reverse insect declines, we need to work with nature, not against it. **We can all be insect champions by taking Action for Insects today. www.wildlifetrusts.org/take-action-insects**

Introduction

We share our planet with at least one million different types of insect, though experts estimate that there are probably at least another four million more that we have yet to discover.

In the UK alone we have more than 27,000 insect species; grasshoppers, bees, silverfish, caddisflies, beetles, dragonflies, mayflies, moths and many, many more. Most of us pay them not the slightest heed, but they are the dominant life form on Earth, living all around us, burrowing in the soil in our gardens and parks, buzzing from flower to flower in farmers' fields, munching slowly through the leaves in our woodland... Insects are everywhere, performing vital roles such as pollinating wildflowers and crops, serving as a major food source for birds, bats, fish, reptiles and amphibians, recycling the nutrients in animal dung and cadavers, spreading seeds, aerating the soil, eating pests and so on.

Whether as an individual, you 'like' insects or not, we need them. Without their help in recycling nutrients and keeping soil healthy, it would be much harder to grow crops, and the three quarters of our crops that require insect pollinators would produce little or nothing. We could not feed the growing human population without the help of insects, so we have a very pressing, personal reason to look after them.

Sadly, evidence suggests that we are failing to do so. Studies from around the world, from Germany and the Netherlands to North America, Puerto Rico and Japan have found that many insects are in rapid decline. In the UK, data on butterflies, moths, ground beetles, wild bees and hoverflies all show strong decreases since the 1970s (when monitoring started), although it is likely that these declines began much earlier than that. A recent citizen science project run by Kent Wildlife Trust that looked at numbers of splatted insects on car number plates found a difference of approximately 50% fewer insects over the last

Photo: Dan Edwards

15 years. There is no doubt that insect declines are real, rapid and ongoing, and that they should be regarded as one of the major existential threats to the health of our planet and future human generations.

The causes of insect decline are much debated but undoubtedly include multiple factors, most serious of which are habitat loss and the intensification of farming systems with the associated heavy use of pesticides. The spread of diseases, non-native invasive species and light pollution also contribute to insect decline, while climate change is an additional driver. The evidence for insect declines and its causes, and more details on the vital roles they perform in ecosystems and the consequences of their ongoing demise, can be found in *Insect Declines and Why They Matter*, a report commissioned by The Wildlife Trusts in 2019 as part of their **Action for Insects** campaign.

The purpose of the current report is to inspire and support concerted action to halt and reverse insect declines in the UK.

It is not too late; insect populations can recover quickly given the right conditions. Because they live all around us, in our gardens, parks, road verges, meadows and hedgerows, we all have a part to play in their recovery.

Section 1

Insect Recovery Networks

Scientists have long been aware that nature struggles to thrive in small, isolated patches of habitat.

Small populations risk going extinct, with little chance of habitat 'islands' being recolonised if isolated from other similar patches of habitat. Additionally, small patches can easily become polluted or degraded by surrounding land uses. In practical terms, this means that conserving species diversity or abundance by looking after a portfolio of small and disconnected nature reserves is not going to work long term. This was highlighted by Sir John Lawton in *Making Space for Nature*, his review of nature conservation in England, which laid out a vision for 'landscape scale' approaches to recovering nature. This can be summarised as working for more, bigger and better protected wildlife-rich areas that are better connected – or joined up – across whole landscapes.

For the past 15 years individual Wildlife Trusts have been creating Living Landscapes – working to create, restore and reconnect nature-rich areas across whole landscapes. This approach considers the landscape and environment as one – a dynamic, complex and linked system. From the 8,500 hectares of mires and forest in Kielder in Northumberland, to the insect-rich habitats of the Gwent Levels, Coigach and Assynt in the Scottish uplands, the Taw and Torridge river catchments in Devon and the Mendip Hills in Somerset, Wildlife Trust Living Landscapes programmes cover more than more than 1.5 million hectares and provide opportunities for landowners and managers, communities and individuals to work together for nature's recovery.

Making our gardens and other urban areas more wildlife-friendly would be a big step forwards. Our villages, towns and cities are linked by a quarter of a million miles of road verges (which support 700 plant species – 45% of our native flora), plus railways, that could provide linear habitats along which wildlife could disperse if managed in the right way. Similarly, good management of our river banks and streams could help to link nature-rich areas. Widespread nature-friendly farming would help enormously. We have lost 97% of our wildflower meadows since the 1930s and 87% of our wetlands have gone. Wherever possible, it would make sense to focus conservation efforts on creating coherent networks of linked habitats, for this will give us a better return for our time and money.

"By joining up wild places and creating more across the UK we would improve our lives and help nature to flourish - because everything works better when it's connected."
Sir David Attenborough

Photo: Rosie Bleet

This approach is at the heart of The Wildlife Trust's strategy to build networks for nature's recovery, whereby looking after nature is considered in all aspects of our lives, from gardening and park management, to planning new developments, to how we farm.

Insects Need a Recovery Network...

To properly look after insects and other wildlife there needs to be more places where they can thrive – rich habitats that are free of pesticides and, crucially, linked up so that insect populations are not cut off and can move as the climate changes. The UN Convention on Biological Diversity calls for at least 30% of land and seas to be covered by wildlife-rich habitat to tackle the climate and ecological emergency. Conservation organisations cannot buy and manage the necessary tracts of land, so a recovery network for nature that encompasses our homes, highways, villages, cities and the wider countryside will make a vital contribution towards reversing insect declines.

Photo: Chris Gomersall

Photo: Katrina Martin/2020Vision

Section 1

Case Studies

Getting Cumbria Buzzing! – Cumbria Wildlife Trust

Get Cumbria Buzzing! is led by Cumbria Wildlife Trust and aims to increase the abundance and diversity of pollinators across northwest Cumbria. Using the 'B-Lines' approach, the ambition is to create a wildflower superhighway that stretches from Penrith in the east, through the iconic uplands of the Lake District and then along an extensive coastline, connecting fragmented habitat, linking natural environments and urban green spaces together. Delivered through a partnership with local Councils, community groups, conservation organisations and Highways England and funded by the National Lottery Heritage Fund (NLHF), the project is a finalist in the Highways England 'Excellence in the Environment' Awards.

- *In 2019, 83 hectares of new insect habitat created at 108 different sites*
- *Over 500 people taking part*
- *200 nectar and pollen-rich trees and 50,000 wildflower plugs planted*
- *Over 90 kg of wildflower-rich seed sown*
- *New wildflower nursery established with 4,000 plants grown to date*

"I've learnt a lot and, as a result of this project, we've created a company webpage to demonstrate what can be done on road networks to support pollinators. I'm also working with my local community to create wildflower verges in our village."
Mark Wakeman, Lead Contractor, Ground Control

Photo: Chris Lawrence

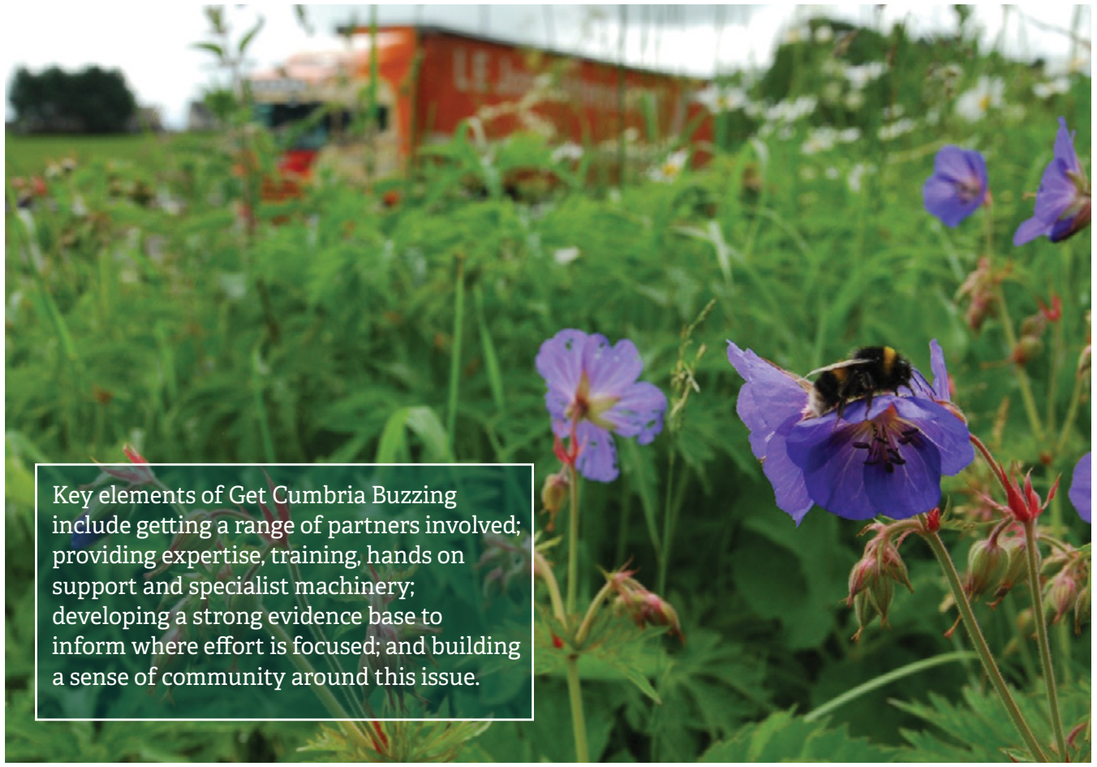
Involving the whole community to create pollinator networks...

By Edward Evans

Since April 2019, the project has created and managed 43 hectares of flower-rich verge along the A595/A66 trunk roads. Elsewhere, project partners have been transforming community parks and green spaces into pollinator havens in the coastal towns of Workington, Whitehaven, Maryport and along the Solway Coast. Many sites have been planted with kidney vetch to help boost local populations of the small blue, a nationally scarce butterfly. The residents of Cumbria have also been enlisted to help, with a call to action to get everyone's garden, school, allotment and green space buzzing. People have been asked to record their sightings, to help create the first ever Cumbrian pollinator database, which will provide a better understanding of their abundance and distribution across the county.

Many sites are already showing signs of biodiversity uplift with increased abundance and variety of wildflower species including yellow rattle, meadow crane's-bill, black knapweed and red clover. The newly-established Pollinator Database is showing unusual and unrecorded insects such as the froghopper, last recorded in Cumbria in 1924. The nine-year-old pupil who submitted this record was very excited to learn this!
www.cumbriawildlifetrust.org.uk/getcumbriabuzzing

B-Lines, developed and led by the charity Buglife, aims to identify and map 'insect pathways' running through our countryside and towns and use these to work with local partners to plan and create an insect-friendly network of habitat across the United Kingdom.
www.buglife.org.uk/our-work/b-lines



Key elements of Get Cumbria Buzzing include getting a range of partners involved; providing expertise, training, hands on support and specialist machinery; developing a strong evidence base to inform where effort is focused; and building a sense of community around this issue.

Photo: Tanya St. Pierre

***On the Verge* in Stirling** – On the Verge

On the Verge was established in 2010 with the ambition of making Stirling a haven for pollinators. Since then it has worked with more than 100 organisations to plant new native wildflower areas with local schools, community councils, churches, care homes and Stirling Council. They know their approach is working. Research by Stirling University on 30 On the Verge sites showed that they had 25 times more flowers, 50 times more bumblebees, and 13 times more hoverflies compared to adjacent grass areas that were mown. These numbers increased as the plants matured in subsequent years.

- Working with 100 local organisations
- Organised more than 100 wildflower sowing events
- Sowed 10,000 m^2 of native, nectar-rich wildflowers

Leadership can come from anyone. It doesn't have to be an organisation – it only takes an inspired and determined individual to galvanise community action.

Photo: Paul Hobson

It only takes one individual to be inspired to act...

By Leigh Biagi

I was inspired to act 10 years ago when I heard insect expert, Professor Dave Goulson, discussing drastic declines in bee populations. As a lack of flowers seemed to be a big part of the problem for bees, it seemed sensible to start there. I went on to set up On the Verge, which initially worked with schools to sow wildflowers in school grounds. Word soon spread and numerous organisations came forward, keen to sow wildflowers, including Stirling Council, who went on to sow large areas of their own. Since then On the Verge has gone from strength-to-strength, winning awards and sowing a total of 10,000 square metres of wildflowers. Last year we helped establish our first sister project; On the Verge Cambridge, and are also about to launch a new initiative called Beds for Bees to help community groups establish flowerbeds full of bee-friendly plants.
www.onthevergestirling.com

Making Space for Nature in Cornish Towns – Cornwall Council

The *Green Infrastructure for Growth* programme aimed to bring nature-rich and climate-resilient habitats closer to where people live in Cornwall. Spearheaded by Cornwall Council and part funded by European Regional Development Fund, its main objective was to improve biodiversity on 420,000 m^2 of urban green space by creating new habitats and minimising pesticide use on sites in seven Cornish towns. Practical works were completed in December 2019. Communities now enjoy 32 local green spaces where insects like the tree bumblebee, wasp beetle and rare spiders have been recorded for the first time.

www.cornwall.gov.uk/environment-and-planning/parks-and-open-spaces/green-infrastructure-for-growth/#-tab-496958

Conserving Brecks Moths Benefits other Pollinators – Butterfly Conservation

Since 2008, Butterfly Conservation and partners have been creating areas of bare ground across the Brecks in Norfolk to create and connect habitat for rare moths and pollinators. Using rotovating, turf stripping and deep ploughing to expose bare, nutrient poor soil, the project creates the ideal conditions for native plants to colonise, creating an abundance of nectar throughout the year for pollinators. Banks and ditches have been added to create micro-habitats, not only for plants to thrive, but to supply other critical resources for insects – particularly for mining bees to burrow and store pollen or food for their larvae.

www.butterfly-conservation.org/our-work/conservation-projects/england/specialist-moths-in-the-brecklands

Photo: Sharon Hearle

Roadside Nature Reserves and Bee Roads – Kent Wildlife Trust and Kent County Council

Since 1994, a partnership between Kent Wildlife Trust and Kent County Council has created a network of 146 roadside nature reserves, which are managed for wildlife by contractors and volunteers. In 2017, the Bee Roads project, part of the Bumblebee Conservation Trust-led *Making a Buzz for the Coast* project, and involving Kent County Council and Swale Borough Council, continued to build on this, setting up roadside natures reserves for wild bees and other pollinators. These wildflower-rich corridors are allowing insects to thrive, including some of England's rarest bees and the endangered fiery clearwing moth.

- 146 Roadside Nature Reserves throughout Kent covering 48 hectares
- 13 'Bee Roads' covering a total of 12.1 hectares
- Over 100 volunteers engaged in taking practical action for insects

Creating insect superhighways...

By Rosie Bleet and Beth Pateman

The landscape in Kent, like much of the UK, has become increasingly fragmented. But our road networks provide a huge opportunity to help address this issue. Kent Wildlife Trust and partners have established 146 Roadside Nature Reserves and 13 Bee Roads that are now providing important forage and refuge for insects, as well as other important wildlife. It's been amazing to see the transformation of some of the sites, which have not seen any management for decades. Just one season of work has turned dense, grass dominated areas into something more visibly flowery and buzzing with insects!

www.kentwildlifetrust.org.uk/projects/bee-roads and **www.kentwildlifetrust.org.uk/what-we-do/protecting-wild-spaces/roadside-nature-reserves**

These projects involve local Councils and the Wildlife Trust working closely together to use sympathetic cutting, grazing, scrub clearance, raking, scrapes and bee banks to create wildflower-rich corridors.

Photo: Rosie Bleet

Priddy Parish Meadow – Somerset Wildlife Trust and Priddy Parish

Somerset Wildlife Trust started work with local communities on a Parish Meadows initiative as part of the Save Our Magnificent Meadows project, a large partnership led by Plantlife. In Somerset, the Trust has helped communities to develop ideas to celebrate, restore or create meadows in their parish. In Priddy Parish, local people suggested the local churchyard as a potential meadow site. Two large areas of the churchyard were allowed to grow and flower each year over the summer before being cut, with vegetation removed to maintain its diversity of species. The parish were inspired and encouraged by their success and expanded their meadows project, running several other initiatives..

www.magnificentmeadows.org.uk/assets/uploads/8_Parish_Meadows.pdf

Photo: Somerset Wildlife Trust and Priddy Parish Council

Shrewsbury Cemetery – Caring for God's Acre

In England and Wales, there are an estimated 20,000 burial grounds, which collectively hold great potential in reversing insect declines. Many cemeteries contain traditional, species-rich grassland; full of flowering plants and fine grasses, a remnant of a once widespread habitat. By simply changing a grass cutting regime in an old section of Shrewsbury Cemetery, Caring for God's Acre, a national charity working to improve burial grounds for people and wildlife, has transformed its wildlife value.

- 5 hectares of cemetery grassland, previously mown short and now allowed to flower and set seed
- 755 species recorded on the site, including 280 invertebrates

Tranquil havens for people and wildlife...

By Hariet Carty

In Shrewsbury Cemetery, we surveyed the plants and realised that the old, Victorian section was extremely rich in wildflowers. Working with Shropshire County Council and Shrewsbury Town Council, we began to manage this area for wildlife. The cutting regime was changed from repeated strimming throughout the spring and summer to an annual cut and rake in the summer or early autumn. Ongoing management has become the responsibility of a newly formed 'Friends of' group who now regularly carry out conservation tasks and stage public events. Since the project's beginning, there has been an increase in moths, butterflies, seed-eating birds and signs of small mammals including hedgehogs.
www.caringforgodsacre.org.uk

Burial grounds are found in communities across the UK and can provide great homes for insects. Reducing mowing frequency and allowing grassland to grow long can produce dramatic shows of wildflowers that in turn attract insects.

"I was really surprised at the diversity of insects there and the quality of the site for uncommon species. I found a number of insects never previously recorded anywhere in Shropshire!"
Nigel Jones, Entomologist

Photo: Caring for God's Acre

Section 2

Insects in the Farmed Landscape

Seventy percent of the UK is farmland, so how we manage it is the biggest single factor in determining whether insects thrive or continue to decline.

The twentieth century saw the industrialisation of farming: mechanisation of tools, introduction of synthetic fertilisers and pesticides, ripping out of hedges to enlarge fields, drainage of marshes, ploughing up of ancient hay meadows and a growth in farm size. These changes were associated with greatly increased food production, but also associated with a plethora of environmental problems including declines in wildlife, pollution and eutrophication of freshwater, and degradation and erosion of soils.

Ninety seven percent of our flower-rich haymeadows and 80% of chalk downlands were destroyed in the 20th century. Pesticide use continues to increase; the number of applications per field nearly doubled in the period 1990 to 2016, with insects in farmland now routinely exposed to a harmful cocktail of insecticides, fungicides and herbicides. This is of huge concern as farmers need insects for the 'ecosystem services' they provide: pollination, dung recycling, pest control, to name but a few. Dung beetles act as a good example, estimated to save the UK cattle industry £367 million per annum through the provision of ecosystem services. Pollination alone is worth £690 million per year to British farmers.

It is important to acknowledge that this industrial, chemical-based farming system came about because of government policies, subsidies and regulations, with drivers including the need to feed a growing population, consumer preferences, the growing power of supermarkets, and marketing pressures from the agrochemical industry. Farmers have responded to these pressures and continued to try and make a living under sometimes challenging circumstances. We all have common interests in ensuring that farmers can make a living and produce sufficient healthy food, while practicing methods that look after the soil, lock up carbon, and encourage healthy populations of pollinators and other farmland wildlife.

Photo: TH G Pixabay

No farmer wants to hand over their farm to the next generation in a degraded, depleted state. It is in all our interests to recognise the problems and, together, find a way to remedy them and support farmers as they adapt to the huge challenge of producing food while reducing pesticide use, supporting healthy ecosystems and helping to tackle climate change.

Fortunately, there are wonderful examples of farmers who are moving towards more sustainable and wildlife-friendly farming: reducing pesticide and fertiliser use; reducing tillage and regenerating soils; encouraging pollinators and natural enemies of crop pests; adopting 'integrated pest management' (IPM); and planting more trees in agroforestry and sylvopasture schemes. More radical options also exist, such as organic, biodynamic and permaculture. Many farmers feel passionately about the natural world as demonstrated by the growing popularity of the Nature Friendly Farming Network. **www.nffn.org.uk**

Integrated Pest Management (IPM)
IPM is a strategy focused on suppressing pest populations by encouraging their natural enemies, through cultural practices and choice of crop variety. It treats pesticides as a last resort, used not to eliminate pests, but to keep numbers below a threshold of economic harm.

For Insects in our Farmed Landscape...

There is an exciting opportunity for a truly green revolution in the UK post-Brexit, and The Wildlife Trusts are calling for the UK Government to take advantage of this; to ensure that public funds pay for delivery of public goods by redirecting farm subsidies to support genuinely sustainable farming systems. The UK Government should set targets for major reductions in pesticides and support farmers to work with nature and to transition away from unnecessary pesticide use by adopting Integrated Pest Management and other more sustainable farming methods. Investment in initiatives that can bring farmers, conservationists, businesses, Local Authorities and independent experts together to share resources and learning could help to transform the fortunes of our insects in the wider countryside.

Photo: Chris Gomersall

Section 2

Case Studies

Farming for the Future – Clinton Devon Estates Organic Dairy

For over 600 years, Clinton Devon Estates in East Devon has been evolving to meet the needs of the times. Today their most pressing challenge is to demonstrate that their business is adding value to society and that their activities are enhancing wildlife rather than eroding it.

- 10,000 hectare estate – 1,100 hectare organic dairy farm
- 14% of estate land designated and non-designated as conservation areas
- Audit of the estate's 1,000 hectares of pebblebed heaths revealed 3,000+ species including 1,700 insect species
- Six current conservation partnership projects focusing on supporting a range of species including beavers, greater horseshoe bats and cirl buntings

Photo: Jon Hawkins/Surrey Hills Photography

Supporting citizen science projects such as the Bumblebee Conservation Trust's 'Beewalk' is helping us to improve our understanding of both species' diversity and abundance on our land. The data collected will inform our management.
www.clintondevon.com

Meeting the challenge of insect declines...
By Sam Bridgewater, Clinton Devon Estates

East Devon is so beautiful it is easy to become complacent. At first glance, a view across the Otter Valley suggests that all is right in the natural world. The landscape is rich in trees and copses with 17% woodland cover. With field sizes rarely greater than eight hectares and an excellent network of managed hedges, habitat connectivity appears to be superb. In the distance, 1,000 hectares of Open Access heathland rises to the skyline. And centre stage, the sandstone cliffs of the River Otter, home to one of the great recent conservation success stories in England – the return of the beaver. Surely this is what a nature-rich landscape looks like? But the evidence suggests that all is not well beneath the surface: the catchment's water quality is poor; 20% of the trees are ash and in decline and farmland birds are struggling. And what about insects?

The question we have posed is 'under our current trajectory, will we leave the Estate in a better or more denuded form?'

We want this to change and have introduced environmental Key Performance Indicators for our Home Farm, including the voluntary planting of pollinator margins and plots across rotational areas. At present this covers 1% of the area. This is further supplemented by rotationally leaving unharvested strips of clover-grass leys to allow flowering. We are also investing in a PhD, part of which is looking at the costs and benefits of different management regimes for pollinators.

"We don't claim to have the answers to insect declines and we can't yet claim that what we are currently doing is sufficient. But the Estate's intent to play its part is genuine. The journey starts with accepting that there is a problem, taking responsibility, and taking steps to correct the situation. "
Sam Bridgewater

Clinton Devon Estates has introduced environmental Key Performance Indicators for their Home Farm and is investing time and resource in research and in monitoring their pollinators.

Photo: Clinton Devon Estates

Photo: Nick Upton/2020Vision

A Lifelong Commitment to Wildlife – Jack Kelly

For more than 30 years, Jack Kelly, based in Northern Ireland, has been farming his land to benefit nature. Through the support of government funded agri-environment schemes and voluntary work, he has created a network of flower and seed-rich habitats, with large hedgerows and clean wetland habitat that benefits insects, mammals and birds. As a result, Jack has seen wildlife increase – from lapwing nesting on the fen, to yellowhammers feeding on seed-rich wild bird cover grown in the fields overwinter. Barn owls have also returned – a rare species in Northern Ireland. Recent surveys on the farm have also demonstrated that the creation of wildlife-friendly habitat, coupled with a reduction in inputs (herbicides and artificial fertilisers), has resulted in big wins for pollinating insects.

- Farm size - 36 hectares
- 2015 survey found a total of 355 pollinating insects of 13 different species in one sample area of the farm; compared to 63 insects of 10 different species on a neighbouring farm under different management

If you look after nature, it will look after you...
By Jack Kelly

I've always believed that if you look after nature, it will look after you. This philosophy guides all our decisions. I was one of the early adopters of agri-environment schemes, which help support the creation and management of farm habitats.

With insect populations plummeting, we must do everything we can to reverse this trend. I believe that our work shows that all farms can do their bit in bringing nature back. Reversing insect declines is key; providing the foundations for a healthy, resilient environment.
www.nffn.org.uk/steering-group-northern-ireland

It's crucial that more farm businesses are encouraged to farm in this way and that our future system of farm support facilitates this.

"Our work demonstrates what can be achieved through adopting nature-friendly farming practices and how they can help build the resilience of the business."
Jack Kelly

Agri-environment schemes that incentivise nature-friendly farming are a vital driver for change, helping to support viable farm businesses and reverse insect declines.

Lower Smite Farm – Worcestershire Wildlife Trust

Worcestershire Wildlife Trusts' Lower Smite Farm is managed to increase the diversity and abundance of wild pollinators and beneficial insects. No insecticides, slug pellets or livestock wormers are used on the farm. It acts as a demonstration site and, with support from the Defra Facilitation Fund, the Wildlife Trust works with more than 50 farms to share learning.

- 65 hectare mixed arable farm
- 4 hectares of native woodland and 2 km's of species diverse hedge planted
- 500 m of beetle banks created, 50 log piles made for nesting insects

An appetite to learn and change...

By Caroline Corsie, Worcestershire Wildlife Trust

With a variety of wildflowers on site providing nectar, one visitor to the farm said it looked as though it had been 'flower-bombed'! And recent research conducted into solitary bees on the farm suggests the approach is working. We share our experience, and when working with farmers, we focus on our Wild Pollinator Health Check - what we call 'The Big 4'. This includes:

1) providing year-round food supplies,
2) providing safe breeding and wintering habitat,
3) improving connectivity of habitat and
4) removing potential causes of stress (e.g. pesticides).

www.worcswildlifetrust.co.uk/nature-reserves/lower-smite-farm

"We are committed to biodiversity in our farming, recording 26 butterfly species including the brown hairstreak and white letter hairstreak, 38 moth species and 85 bird species. Lower Smite Farm has been inspirational, showcasing how to create and improve habitats for pollinators."
Jan, Mike, Jo, Rob, and Hattie Terry, Upper Hollowfields Farm, Droitwich

Worcestershire Wildlife Trust uses a Wild Pollinator Health Check to assess how insect-friendly a farm is and, thanks to investment in peer learning, helps other farmers to do the same.

Photo: Philip Precey

Looking after Dung beetles and bats – Luscombe Farm

Luscombe Farm is a 106 hectare beef and arable farm in Devon and was the first in the country to use the 'SP9' funding to improve its practices around cattle worming for wildlife. Known as the 'Threatened Species Supplement', and available through the government's Higher Tier Countryside Stewardship, the farm is providing more and better-connected foraging areas for a nearby colony of the rare greater horseshoe bat and has changed its use of wormers to ensure there are plenty of dung beetles for the bats to feed on. They have been supported in this work by the Devon Greater Horseshoe Bat Project; find out more at **www.devonbatproject.org/landowner-case-study**

Photo: Thomas B – Pixabay

Arable farming with fewer pesticides – Peter Lundgren

An arable farmer in Lincolnshire, Peter Lundgren stopped using neonicotinoid pest controls 15 years ago and adopted management that actively encourages 'beneficial' insects in and around the farm's cropped fields. These act as predators, successfully reducing numbers of slugs, flea beetles, aphids and other crop-damaging invertebrates. Peter found that by promoting beneficial insect populations to help with control, he also saved money on outputs such as insecticides and slug pellets, whilst maintaining yields.

- Does not use neonicotinoids or slug pellets
- Promotes beneficial insects in fields
- Saves money whilst maintaining yields

A change in mindset...

By Peter Lundgren

I am a conventional farmer growing combinable crops in Lincolnshire. However, I took the unconventional decision to stop using neonicotinoids, which meant I needed an alternative to controlling pests below a certain threshold if I was to be confident of growing financially viable crops. The obvious low-cost solution was to increase the numbers of beneficial insects that would assist me in controlling other damaging insects. I also realised it's no good creating wildflower margins for beneficial insects when the cropped area is a 'no fly zone' due to the pesticides used there.

I discovered increasing populations of beneficial insects gave unexpected benefits. For instance I've not used slug pellets for many years. Most importantly, by promoting beneficial insect populations to help with controlling pests I save a lot of money on insecticides and slug pellets whilst maintaining yields.
www.peterlundgren.co.uk

"It proved surprisingly easy and inexpensive to achieve once I had changed my mind set to accept threshold levels of pests and weeds in the crop rather that trying to eradicate them completely, and altered my thinking and practice to promote beneficial insects within the cropped area."
Peter Lundgren.

To achieve a reduction in pesticides and costs, Peter worked to increase the numbers of beneficial insects within the cropped area and field margins.

Photo: Hans Breximeier

Nurturing healthy soils – Plaw Hatch Community Farm

Plaw Hatch Farm in East Sussex is a 160 hectare community owned, mixed, biodynamic farm producing a range of fruit and vegetables, dairy, eggs and meat sold mainly though their farm shop. The farm uses practices aimed at nurturing healthy soils and wildlife, whilst also producing nutritious food and providing a space for the community to use and enjoy. Varied habitats provide a rich mosaic for insects, and recent projects have included creation of wildflower areas and hedgerows.
www.plawhatchfarm.co.uk

Photo: Plaw Hatch Community Farm

Section 3

Insects in our Towns and Cities

Insects can be found all around us, in our towns and cities, in gardens and parks, allotments, cemeteries, and on urban arteries such as road verges, railway cuttings and roundabouts, though we often don't notice them.

Urban areas can teem with life; in a 30 year study into the wildlife of her small urban garden in Leicester, Jennifer Owen identified no less than 1,997 different species of insect. The amazing stag beetle is a London resident and our towns and cities are home to a huge diversity of moths and butterflies. But there is plenty of room for improvement. Many urban greenspaces are repeatedly mown, sprayed with herbicides and insecticides, and many front gardens are hard-paved. Pesticide use in urban areas tends to be purely cosmetic, in order to make places look 'neat and tidy', an approach that we should challenge.

Making urban areas more insect friendly is a no-regret solution; there is no downside, no significant sacrifice required, aside perhaps from having to see 'weeds' differently and learn to like seeing longer grass and flowers instead of endlessly mown turf in our greenspaces.

Gardens alone cover nearly half a million hectares of the UK, a bigger area than all of our nature reserves, not counting all of the other greenspaces such as our 27,000 public parks, so there is huge potential.

In France, the government recently introduced national legislation banning pesticides in towns and cities, largely the result of a grassroots movement. Copenhagen, Vancouver, Toronto and Barcelona have done the same. In Amsterdam, a ban on pesticides on public land, and a municipal plan to convert half of the green space to native flowers, along with a grassroots campaign to put up bee hotels and plant flowers in private gardens, has led to an increase in bee diversity by 45% since 2000. We can achieve the same in the United Kingdom.

Photo: Paul Harris

Many are already taking action. Balerno in Scotland is just one community that has opted to go pesticide free, the direct result of local campaigners working constructively with local Council officers to find new approaches. And there are projects across the whole country that are bringing rare butterflies, dragonflies, bees and other insects back into our urban areas. If all our towns and cities did this, made a commitment to go pesticide free and create more space for nature, and if we all took action to create more homes for insects, our urban areas could soon become not just places for people, but places where people and nature live happily and healthily alongside one another. Imagine cities free from pesticides, where green leaves and flowers are visible in all directions, where the air is clean and children can grow up surrounded by the familiar buzzing of bumblebees, and where they could learn the names of birds and wildflowers and admire the glinting colours of damselflies.

For Insects in our Towns and Cities...

All Local Authorities must make more space for nature in towns and cities, and eliminate the routine and unnecessary use of pesticides. The UK Government should provide leadership by setting targets to drive action and we can all do our bit to create pesticide-free, insect-friendly spaces on our balconies and allotments and in our gardens and parks. We need to pay attention to the insects that live alongside us, so we better understand what is at risk and what we need to do to help. The Wildlife Trusts are involved in creating insect-rich habitats right in the middle of our biggest towns and cities and Pesticide Action Network UK (PAN UK) is leading the charge for pesticide-free towns. **www.pan-uk.org/category/pesticide-free-towns**

Photo: Paul Hobson

Section 3

Case Studies

Community-driven action – Pesticide Free Balerno, Edinburgh

After the World Health Organisation named Glyphosate, the main ingredient of most weed killers, as a 'probable carcinogen', linking it to many other serious human and animal health issues, some concerned individuals in Balerno started petitioning for their street and area to become pesticide-free. As word spread, more streets joined in, leading to the formation of Pesticide Free Balerno in 2019. This community initiative works to raise awareness about the harmful use of pesticides and to support safe, environmentally-friendly alternatives to weed management in the village. There is now a much higher level of weed acceptance within the community and sightings of many more insects – particularly butterflies and bees.

- In 2020 Balerno went pesticide free!
- Groups and individuals from across the community are participating
- Over 80% of residents report seeing more bees and butterflies and many other kinds of insects

Getting expert support, showing Council representatives alternatives to pesticides that work and mobilising youth leadership are all key factors in this successful campaign.

Photo: Nick Upton/2020Vision

Starting with one street... a whole community got involved
By Annie MacDonald

Our campaign was quick to build, with lots of voices helping to spread the word. We set up an Instagram page and petition for Pesticide Free Balerno. Pesticide Action Network UK (PAN UK) provided information to share with the Council and community regarding the dangers of pesticide exposure for humans, wildlife, and our environment. Local journalists, children, families, and businesses helped spread the word.

We knew that hot foam and other environmentally friendly methods were being used effectively around the UK to treat weeds - Foamstream is approved by the Soil Association as safe to use around humans and animals and does not pollute our air, water or soils. We set up a demonstration for our Councillors.

We took our case to the Transport and Environment Committee in February 2020, supported by PAN UK. Our deputation included young environmentalists. The Committee agreed to stop applying pesticides in Balerno! We felt we had made a small but meaningful step in the right direction and it was worth every second! **instagram: @pesticidefree.balerno**

Photo: Pesticide Free Balerno

Staggering Gains: Putting Stag Beetles on the Map – London Wildlife Trust

Stag beetles are a globally threatened species and have been in steep decline across Europe. Britain's largest land beetle, almost 8 cm in length, is easily recognised by the male's distinctive antler-shaped jaws. Destruction of the stag beetle's key habitat – dead wood – through the 'tidying-up' of woodlands and parks has been the prime reason for its decline. London Wildlife Trust has worked with partners, Local Authorities, and thousands of volunteer recorders to track their populations, develop conservation action plans and to inspire thousands of people to notice and care, providing more wild areas and the dead wood (like loggeries) in parks, woodlands and gardens that is critical to their survival. Stag beetles are now firmly on the map in London.

- From 20 stag beetle records to 26,700
- Thousands of local people take part every year
- Three Special Areas of Conservation designated for the stag beetle

An amazing creature in the heart of our biggest city...
By Mathew Frith, London Wildlife Trust

London Wildlife Trust has run a stag beetle survey since 1997 and provides guidance for planners, gardeners, and site managers to consider their conservation needs. We have seen records of the beetle grow from 20 to 26,700 and a whole range of organisations and individuals taking action. This project is just one of our initiatives to help insects thrive in London. 'Brilliant Butterflies' is restoring chalk grasslands in south London and 'Dragonfly Detectives' has helped local people understand the importance of London's freshwater habitats for these stunning creatures. There is a role everyone can play in these initiatives.
www.wildlondon.org.uk

Helping people to realise that these amazing creatures are on their doorstep and that there are simple actions all can take to help them, is at the heart of London Wildlife Trust's approach.

Photo: Dr Pooky Knightsmith

Streets without herbicide – Whalley Rangers

Streets Without Herbicide is a coalition of local residents from one Manchester community who have united to end the indiscriminate use of pesticides to control weeds on their local streets, lobbying the Council and using hand weeding and the creation of wildflower areas to help insects and other local wildlife. Find out more at **www.whalleyrangers.org**

Photo: John Bridges

Citizen science in action – City Nature Challenge

Between 24-27 April each year, the City Nature Challenge encourages people to take a closer look at the nature all around them. 244 cities from across the world take part – with ten cities participating in the UK in 2020. Records were submitted using the mobile phone app iNaturalist and all records are made available to inform local and national conservation work. 4,710 people in the UK took part in 2020's challenge, submitting an astonishing 71,665 wildlife records – including 10,129 records of 855 different insect species.

Find out more at **www.bnhc.org.uk/bioblitz-type/uk-city-nature-challenge**

Photo: Matt Postles

Pesticide free Wadebridge, Cornwall – Wadebridge Town Council

Wadebridge Town Council stopped spraying weeds in March 2016 and their Parks team and contractors no longer use any kind of pesticide. Instead, in managing their four large grassed areas, including three parks and a cemetery and the roads and pavements around town, they use a self-drive brush weeder, gas flame, strimmer and hand weeding, which they find to be as effective as chemicals. They have left some areas to go wild and moved to annual rather than weekly strimming of some areas, reducing the need for maintenance and increasing the benefits for insects and birds. By talking to the public about the reasons behind it, Council staff have had no complaints.

- Stopped using herbicides, rodenticides or insecticides
- Low cost
- No public complaints and local people love the wildflowers

Just Make the Leap!...

By Steve Wootton

Wadebridge Town Council put in place a 'pesticide free' policy with the aim of promoting the value of a quality environment to the people of Wadebridge. Although there was initial investment in a self-drive brush weeder, over time this will even itself out as the sprays were purchased on a regular basis. We have not received any complaints from the public or local businesses and local people love the wildflowers.

"Our advice is that you can do it, make the leap and don't look back! No serious problems have arisen, and the pros far outweigh the cons. The parks that we maintain, if anything, look better than they did before, and spraying has not been missed."
Steve Wootton

The Town Council simply made the commitment, established a clear policy and stuck to it. Strong leadership at a local Council level is highly effective.

Photo: Jon Hawkins/Surrey Hills Photography

Return of the Manchester Argus Butterfly – Lancashire Wildlife Trust

In May 2020, the Manchester argus (also known as the large heath) butterfly returned to Astley Moss in Greater Manchester for the first time in over 100 years. It was once a common sight across the region, but due to the destruction of its peatland homes, it had become locally extinct. Around 50 caterpillars were pupated at Chester Zoo and were then transported to Astley Moss, where Lancashire Wildlife Trust has carried out significant wetland habitat restoration to welcome them. Here they completed their magical transformations before emerging to start a whole new population!
www.lancswt.org.uk/blog/jenny-bennion/how-do-you-reintroduce-extinct-butterfly

"In Victorian times there were literally thousands of these butterflies in the mossy areas around Manchester. This reintroduction is part of a wider effort to get native wildlife back in the right areas ... Everyone here is absolutely over the moon about this."
Alan Wright, Lancashire Wildlife Trust

Photo: Stefan Johansson

Championing Local Food and a Pesticide Free Community – Incredible Edible Lambeth

Incredible Edible Lambeth wants to create connected communities through the power of food. This Community Interest Company, which is part of the Incredible Edible Network started in Todmorden (in Yorkshire) in 2008, champions local food growing and food businesses in South London and started a 'pesticide-free Lambeth' campaign 18 months ago.

- 800 community members
- 30 streets in Lambeth now opting out of pesticide spraying
- Local Authority has agreed to go pesticide free by 2021
- Network gardeners have agreed to go pesticide free

Insect friendly food bringing a community together...

By Janie Bickersteth and Marjorie Landels

Our passion is local food – so insects are really important to us! – and we were appalled to find the Council spraying glyphosate with all the impacts of this pesticide on insect populations and human health. We have been running a 'pesticide-free Lambeth' campaign for the last 18 months and have lobbied the Council to go pesticide-free, meeting with councillors, officers, spraying contractors and tenant management organisations to encourage a reduction or eradication of harmful chemicals. We developed a 3-year strategy to eliminate all pesticides and have successfully influenced the way in which the Local Authority use pesticides. It has now agreed to go pesticide free by 2021 and has already stopped spraying in all its parks. Our campaign will continue until all harmful chemicals are removed from use by Local Authority land maintenance and our many gardeners have also agree to go pesticide free.
www.incredibleediblelambeth.org/news/pesticide-free-lambeth

"Our pesticide-free campaign has been painstaking work - the Local Authority has been slow to shift, but it has now agreed to go pesticide free by 2021!"

Dogged persistence, a strong community network, and lots of conversations with a range of stakeholders have been at the heart of this campaign.

Photo: www.incredibleediblelambeth.org

Section 4

Insects in our Rivers and Streams

When I was a child, dipping a net into a stream or pond to see what would turn up was almost as exciting as Christmas.

It still gives me a thrill today – might there be a great diving beetle, or a dragonfly nymph, a water scorpion, a water boatman, or a stickleback or newt? On the surface of the water there might be pond skaters, water measurers and whirligig beetles, while above it clouds of dance flies and mayflies hang, damselflies flit and dragonflies soar.

Ten percent of all insect species are aquatic, and when healthy, freshwater teems with an abundance and diversity of insect life, it provides food for freshwater fish such as trout and young salmon, and for many species of birds and bats.

When aquatic insects thrive, we know our rivers and streams, the source of much of our drinking water, are clean.

Sadly, our rivers and streams have been hugely altered to serve as drains and for waste disposal; they have been canalised, dredged, and polluted with fertilisers, dung, silt, sewage, pesticides, industrial chemicals, and contain traces of human drugs. A recent study found more than 2,000 different man-made chemicals in West Country rivers. Water is over-extracted for our use, so rivers run dry in summer. Non-native invasive species such as the signal crayfish and water pennywort have also had major impacts. Globally, freshwaters are amongst the most threatened of all habitats.

The EU's Water Framework Directive (WFD) was introduced in 2000 to tackle these problems, and in the UK there have been significant improvements in water quality as a result. However there remains much to do.

The Salmon & Trout Conservation Trust Riverfly Census, published in May 2019, tells us that 4 out of 5 rivers in England and Wales are failing ecological health targets; that our rivers are only checked for 45 of the 300,000 chemicals that are regulated for use; and that soil is being lost from the land (and finding its way into our water) 10 times faster than the rate at which it is being created.

Photo: Jim Higham

Photo: Penny Dixie

The report suggests that 75% of caddisfly species, 54% of stonefly, 44% of dragonfly and damselfly and 40% of mayfly species are in decline. www.salmon-trout.org

And there are major questions over what new legislation will replace the WFD following the UK's exit from the European Union. This is stark indeed.

But there are some great examples of work being done to address these problems that can be expanded and replicated. Ambitious catchment-scale restoration, re-wetting of drained peatlands, the restoration of natural flow regimes to create new wetlands, such as reedbeds, wet meadows and wet woodlands. All create and protect vital habitat for our insects and have enormous potential to deliver multiple benefits for society, including locking up carbon and reducing flooding. .

For Insects in our Rivers and Streams...

It is critical that new legislation builds on and strengthens the current water protections under EU law, and that the future system of farm payments supports practices to reduce pesticides and prevent soil and chemical run-off. More can be done to ensure rivers and streams function naturally, and to restore natural processes across whole landscapes. After reducing chemical use and soil erosion at source, we also need to harness the innate ability of wetland habitats to filter the water that runs off the land and to stop our soils from being washed downstream. We need better monitoring of pollution in our water and we need water companies, farmers, Local Authorities, and conservationists to work together to safeguard our rivers. Every one of us has a role to play, through creating more ponds or wet boggy areas where we live and thinking about what we pour down our drains. This will help to reverse the decline of our freshwater insects and protect insects everywhere.

Photo: Luke Massey/2020Vision

Section 4

Case Studies

Restoring Unique Chalk Streams – Wiltshire Wildlife Trust

Invertebrates form the foundation of the entire chalk stream ecosystem, providing food for fish such as the brown trout and Atlantic salmon as well as aiding decomposition to keep the river clean. A millennium study led by the Environment Agency reported a 60% reduction in chalk stream invertebrate life in the twenty years preceding the report. Many studies tell us that phosphates, habitat loss and degradation, and climate change are all taking a toll on our freshwater invertebrates. For the last twenty years Wiltshire Wildlife Trust has been leading the Wessex Chalk Streams Project (WCSP), delivering river restoration on the Hampshire Avon catchment, one of Europe's finest chalk streams. The project is supported by Wessex Water, Natural England, the Environment Agency and the Wiltshire Fishery Association.

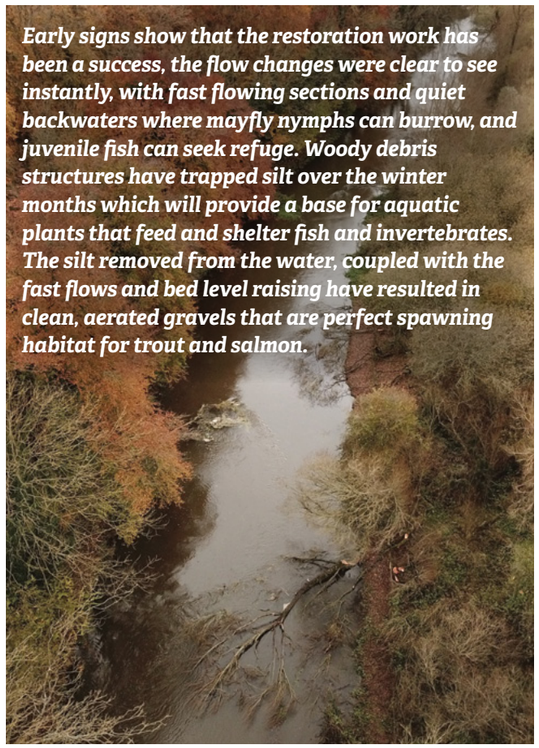
- 111 projects delivered
- 60 km of river restored

Looking after the foundation of our chalk stream ecosystem...

By Alice Baker, Wiltshire Wildlife Trust

The Hampshire Avon catchment is a unique and fragile habitat. We aim to rebuild a healthy ecosystem from its foundations by getting the conditions right for aquatic invertebrates. Clean gravel beds, fast-flowing waters and woody debris in the channel are all needed to rebuild invertebrate communities. Wiltshire Wildlife Trust has delivered 111 projects along 60 km of river over the last twenty years to restore vital river habitats.

The Gated Crossing project, completed in 2019, tackled a 550 m length of river that had suffered from historic straightening and dredging leaving an overwide, over deep channel that was uniform, lacking in features and offering poor habitat for invertebrates and other aquatic species.



Early signs show that the restoration work has been a success, the flow changes were clear to see instantly, with fast flowing sections and quiet backwaters where mayfly nymphs can burrow, and juvenile fish can seek refuge. Woody debris structures have trapped silt over the winter months which will provide a base for aquatic plants that feed and shelter fish and invertebrates. The silt removed from the water, coupled with the fast flows and bed level raising have resulted in clean, aerated gravels that are perfect spawning habitat for trout and salmon.

Photo: Cain Bioengineering

The upstream boundary was marked with a small weir which interrupted natural processes and sediment transport down the river. The river section fell within the Salisbury Plain Training Area, so the Wildlife Trust worked closely with Natural England, the Environment Agency, the Ministry of Defence and other stakeholders, including tenant farmers, the angling club and the local shoot, to develop a restoration plan. This included introducing 1,200 tonnes of gravel to raise the bed where historic dredging had taken place, removing the small weir, and installing 12 large woody debris structures to create flow diversity and provide habitat.

www.wiltshirewildlife.org/wessex-chalk-streams-project-wcsp

Working with people and organisations who have a wide range of interests, and focusing on interventions that help chalk streams to function naturally once again, is helping to rebuild freshwater invertebrate communities.

Photo: www.instagram.com/macro.paul

Creating Working Wetlands and Delivering 'Upstream Thinking' – Devon Wildlife Trust

Devon Wildlife Trust has been working with farmers to reduce agricultural pollution, restore rivers, wetlands and threatened insect rich grasslands in northern Devon for twenty years and delivering Upstream Thinking for the last ten. The Trust has worked with farmers to restore and reconnect threatened habitat like Culm grassland. These insect-rich, wet meadows, lock up carbon and act as natural filters to capture soil particles and other pollutants before they reach rivers and reservoirs. They store water, releasing it slowly to help mitigate flood risk. Culm and the range of habitats restored by this work are incredibly important for insects, such as the rare marsh fritillary butterfly.

Upstream Thinking is now a big part of this work. The programme is a multi-award winning scheme to improve water quality in river catchments in the West Country. It works with farmers 'upstream' of key water supplies, providing grants, equipment, and advice so that they can manage their business better for wildlife and for water. It is funded by South West Water and delivered through partners Cornwall Wildlife Trust, Westcountry Rivers Trust and Devon Wildlife Trust.

Working Wetlands in Devon

- Since 2000, more than 6,000 hectares of habitat restored and reconnected
- Since 2008, £15.94 million of grants secured for farmers
- Since 2015, 282 farm plans produced
- Since 2015, 22,310 hectares land brought under favourable management for wildlife

"In our experience, many farmers don't want to contribute towards pollution and care, passionately, about a sustainable future for their business. But they don't always know where to start and need expertise and financial support to change."
Ruth Testa

Initiatives that provide practical and financial help for farmers to work with nature to protect soils, prevent pollution, and keep rivers and streams clean, supports sustainable farm businesses and protects insects.

Photo: Devon Wildlife Trust

A landscape that works for insects and water...
By Ruth Testa, Devon Wildlife Trust

Much of our drinking water is sourced directly from rivers, streams, and reservoirs. To get there, it travels across a farmed landscape, collecting farmyard manure, artificial fertilisers, herbicides, pesticides, and eroding tonnes of valuable soils that pollute and silt up our waterways.

Our farm advisors work with local farm businesses to reduce pesticide use, deal with polluting farm infrastructure issues, advise on soil management and deliver habitat restoration to keep our rivers clean. Strategically placed meadows, grassland, wetlands and woodland can help to buffer water courses from diffuse pollutants, whilst providing vital habitat for our threatened insects.

The Wildlife Trust offers free advice for farmers and support with applications to the Countryside Stewardship scheme and for capital grants. Other assistance includes use of the Working Wetlands machinery ring; providing equipment such as soil aerators to help alleviate soil compaction which is a common problem on many farms. The project offers expert advice on habitat restoration and creation and undertakes the spreading of green hay, seed harvesting and scrub control. Advisers have helped landowners to undertake farm infrastructure improvements such as pesticide handling areas, biobeds/biofilters, improvements to slurry storage and nutrient management.
www.devonwildlifetrust.org/what-we-do/our-projects//working-wetlands-project

Photo: Devon Wildlife Trust

Medway Pesticide Amnesty – Medway Valley Countryside Partnership

Many farms have out of date or unwanted chemicals in store, which can be costly and difficult to dispose of safely. If stored inappropriately and over a prolonged period, containers can degrade and leach their contents. Unsafe disposal and leakage cause serious pollution in our waterways, affecting insects and other wildlife. Between January and March 2020, the Medway Valley Countryside Partnership, with the support of the National Farmers Union and a range of funders, ran a Pesticide Amnesty to collect and dispose of over 3,500 litres of out-of-date or illegal chemicals across the Medway catchment, which covers 1,857 km2 of Surrey, Kent and East Sussex.

- Cost: £25,000
- Farms involved: 75
- Area covered: 1,857 km^2
- Litres of chemicals collected: Over 3,500

Confidentialilty, funding and the involvement of landowners and their representatives made this initiative a successful one.

The leaky menace...
By Julia Hunt

The Medway Valley Countryside Partnership is acutely aware of the rapid decline in farmland birds and beneficial insects, as well as the need for clean water as the basis for a healthy environment. This project offered free, anonymous collections from a specialist contractor for up to 50 litres of chemical per working farm across the catchment. 75 individual farms registered for the scheme and many farmers paid to have extra chemicals above the capped amount collected.
www.medwayvalley.org/pesticide-amnesty

"Working in partnership on this amnesty – the first to have taken place across this catchment - has demonstrated responsibility and foresight from all partners, especially landowners."
Julia Hunt

Photo: Chemclear Limited

Wilder Waterways in the Gordano Valley – Avon Wildlife Trust

The Gordano Valley in Avon is a very important site in the South West for wet meadows, and a network of ditches criss-cross this landscape, providing crucial habitat for a whole range of insect species. With funding from Wessex Water, Avon Wildlife Trust is working with partners including Natural England, the Environment Agency, the Internal Drainage Board and North Somerset Council to protect and improve the Gordano Valley landscape. The main focus is on restoring the ditches - locally known as 'rhynes'. Managing ditches to benefit insects can involve reduced or delayed cutting of vegetation on ditch banks, and restricting fertiliser, herbicide or pesticide use on ditch banks or in fields adjoining ditches. Avon Wildlife Trust has liaised with local landowners and farmers, helping them to access funding and training them to manage their ditches..

www.avonwildlifetrust.org.uk/what-we-do/how-we-manage-natural-landscapes/north-somerset-levels-and-moors-restoration-project

- 250 landowners contacted
- Advice to 20 farmers
- Supported 12 farms to access funding for restoration work
- With partners restored 5 km's of ditches

Ditches are an often overlooked element of our freshwater networks. Small changes to land management on ditch banks or in adjoining fields can have a big impact on water quality and insect abundance.

Photo: Vaughn Matthews

Monitoring Riverflies in Dorset and Wiltshire – Dorset and Wiltshire Wildlife Trusts

Dorset and Wiltshire Wildlife Trusts, together with the Riverfly Partnership, use trained volunteers to monitor vital freshwater invertebrates, tracking population trends and helping to identify pollution incidents that require Environment Agency investigation. The Riverfly Partnership represents anglers, conservationists, entomologists, scientists, water course managers and relevant authorities, all working together to protect the water quality of our rivers. The Riverfly Partnership is hosted by the Freshwater Biological Association.

Dorset Riverfly Monitoring Scheme

- 50 river sites in Dorset were monitored in 2019
- There are 40 trained riverfly volunteers monitoring Dorset's rivers
- Extended riverfly monitoring has been successfully tested in three other areas and it is planned to roll it out nationally

Citizen Science at its Best...

By Angus Menzies, Dorset Wildlife Trust volunteer

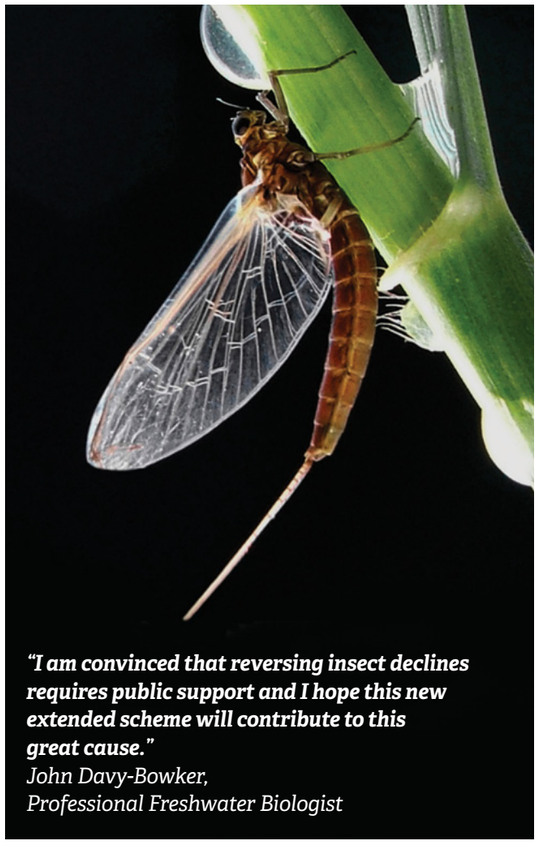
Riverflies, along with other freshwater invertebrates, are at the heart of the freshwater ecosystem and are a vital link in the aquatic food chain.

Commonly referred to as river 'canaries', they are great indicators of water health and quality.

More than 270 species of mayflies, caddisflies and stoneflies have been recorded in the UK, eight of which are threatened and recognised as a priority for conservation by the government. We feel that the Riverfly Monitoring scheme is citizen science at its best. Volunteers are from a wide variety of backgrounds and knowledge, but the scheme enables them to make an important contribution to river health and invertebrate abundance. Volunteers have been instrumental in developing the monitoring programme further, creating an extended scheme that will be rolled out in 2020.
www.riverflies.org

Species level monitoring is one of the best ways to keep an eye on the health of our rivers. Monitoring schemes that involve a whole range of volunteers and stakeholders make this possible and also raise awareness of threats to our freshwater invertebrates.

Photo: Angus Menzies



"I am convinced that reversing insect declines requires public support and I hope this new extended scheme will contribute to this great cause."
John Davy-Bowker,
Professional Freshwater Biologist

Photo: Alan Price

Norfolk Ponds Project – Norfolk Wildlife Trust and partners

Ponds across Norfolk have been largely neglected or filled in over the last 50 years. In June 2014, Norfolk Wildlife Trust, in partnership with University College London, Norfolk Rivers Trust, Farming and Wildlife Adivsory Group FWAG) and the Norfolk Non-Native Species Initiative (NNNSI) set up the Norfolk Ponds Project, with the aim of reversing the decline of Norfolk's ponds. By creating a mosaic of clean water ponds and reducing the number overgrown by trees and bushes, more wildlife-friendly habitat has been created within the agricultural landscapes of Norfolk. Now including other organisations and key landowners, the project provides advice to help landowners restore and manage ponds, to re-excavate lost ponds and to create new ones. Norfolk Ponds Project website is hosted by Norfolk FWAG.

www.norfolkfwag.co.uk/norfolk-ponds-project

Dew Ponds in East Yorkshire – Yorkshire Wildlife Trust

Yorkshire Wildlife Trust has worked with the local farming community on a two-year project to restore a network of 'dew' ponds across the Wolds; man-made ponds where water comes mainly from rainfall, clouds or mist and which provide vital water for grazing animals and for insects.

Yorkshire Wildlife Trust have fully restored ponds that have been dry for decades and helped farmers to manage the ponds.

www.ywt.org.uk/wolds-dew-ponds

Photo: Ross Hoddinott/2020Vision

Section 5

Insect Champions

Halting and reversing insect declines requires action from everyone and at all levels. Individuals in their homes and gardens, schools and community groups, farmers and food producers, businesses, local and national government...all have a role to play.

The challenge is that a great many people are not yet strongly engaged with environmental issues, least of all with the plight of insects. And those that are aware, don't always know what to do to help.

There are clear signs that the times are changing. There is growing public concern about loss of wildlife and environmental degradation that is driving grassroots campaigning. The election pledges by all the main political parties to plant vast numbers of trees are all signs that environmental issues are creeping up the political agenda at long last. Concern about climate change is lending a hand, for while parts of the UK have recently suffered from some of the heaviest flooding in living memory, eastern Australia has suffered by far the worst bush fires on record. David Attenborough's most recent series, "Blue Planet 2", "Our Planet" and "Seven Worlds", were all magnificently filmed, but have been far harder hitting than anything he made before. This is not the enchanting, sweet and pristine natural world that we have become accustomed to seeing in nature documentaries, but one ravaged by human impacts.

Even insects are starting to make the mainstream. Triggered by studies revealing dramatic declines in German insect populations, in 2019 nearly two million people in Bavaria signed a petition to save the insects, forcing the state to fund a sweeping package of actions to reverse the declines.

The developments in Bavaria spurred the German national government into action, with the environment minister announcing in February 2019 that there would be annual funding of €100 million per year for insect protection, one quarter of this to go into research on insect declines. Her plans also include a national ban on glyphosate. What an inspiring example of how concerned individuals can drive big change.

Photo: Alan Price

So far we have showcased lots of great examples of how individual and community leadership is helping to reverse insect declines in our towns and cities, on our farms and in our rivers and streams, and in this section are just some examples of how young people and businesses are doing their bit. But this local effort has to be supported by political effort. Reversing insect declines requires a strong collective voice that is calling for nature's recovery; one that is impossible to ignore.

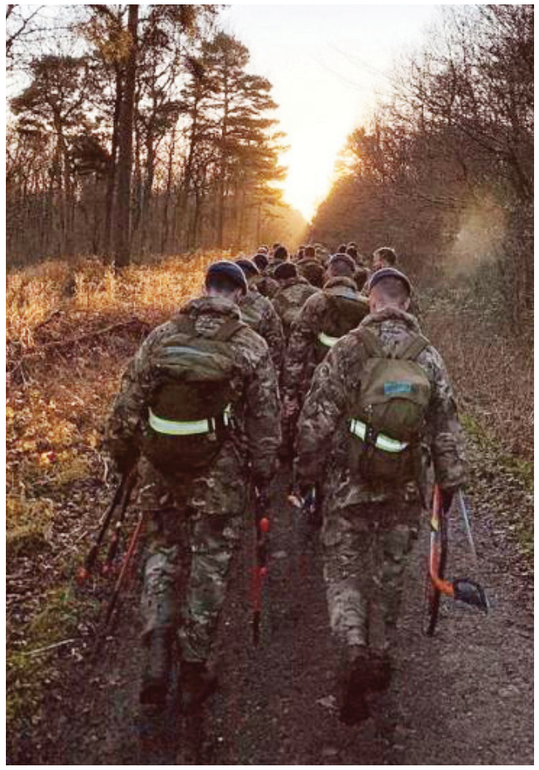


Photo: Lincolnshire Wildlife Trust

To be Insect Champions...

We must tell policy makers that we want insect declines to stop and hold our elected representatives to account. But we must also accept that our own actions have the power to alter the fortunes of our insects for better or worse. We must take action in our daily lives to create insect-rich places and stop the use of pesticides where we live and work. As consumers, we can support those farmers, food producers and businesses who are trying to make a difference, and we need to inspire future generations to care too.

Photo: Vaughn Matthews

Section 5

Case Studies

Secret Garden – Charlton Manor Primary School, Greenwich, London

From its inception, pupils at Charlton Manor Primary School in Greenwich have been at the heart of this urban school garden project. Working with landscapers, they drew up their wish list and saw their ideas develop from a derelict, overgrown area into an ideal haven for insects.

- Designed with pupils in 2005
- Has a bird hide, pond, greenhouse, composting, fruit trees, vegetable beds, beehives, and chickens!
- Produce is used in a teaching kitchen and sold in the 'Sweet Pickings' shop

Photo: Richard Burkmarr

Learning about insects as part of every school day...
By Tim Baker, Headmaster

Each corner of our Secret Garden provides insect-friendly flowers and different habitats. The children come to understand the needs of the different creatures. They make bug hotels, build frames for our honeybee hives. They feed the compost heap with waste from the kitchen and learn to grow and look after bee friendly flowers alongside fruits and vegetables that are pollinated by the insects. They build log piles for the spiders, millipedes and woodlice that prefer dark, damp areas. All pupils play a key role in looking after the garden, in daily, lunch time gardening sessions, after school gardening clubs and during class time. Many pupils do not have access to a garden at home, so this provides them with that outdoor opportunity and for everyone to get their hands dirty, to grow their own and understand where food comes from.
www.charltonmanorprimary.co.uk/learning/outdoor-learning

Photo: Tim Baker

Glow-worms in Lincolnshire – Lincolnshire Wildlife Trust

When staff from Lincolnshire Wildlife Trust needed reinforcements to clear scrub and help struggling glow worms at Chambers Farm Wood near Market Rasen, they called in local RAF cadets. The work of the cadets has proved a lifeline to the local glow-worm population as well as providing local butterflies and wildflowers space and sunlight in which to flourish. Find out more at **www.lincstrust.org.uk/blog/jade-oliver/glow-worms**

Photo: Sarah Butcher

Bee Bank at Lackford Lakes – Suffolk Wildlife Trust

At Suffolk Wildlife Trust's Lackford Lakes a small, south-facing bank (a remnant of its old quarry history) was choked by nettles and bramble. The Wildlife Trust enlisted their Young Wardens (aged 11-16) to clear the bank, which was no easy task, as it had not been touched for years. By the next summer, the sound of buzzing insects was deafening. Tiny furrow bees and mining bees were busy exploring the various holes and cracks in the bare earth looking for new nest sites. Vipers bugloss started to bloom on the lower regions, humming to the sounds of buff-tailed, common carder, red-tailed and garden bumblebees.
www.suffolkwildlifetrust.org

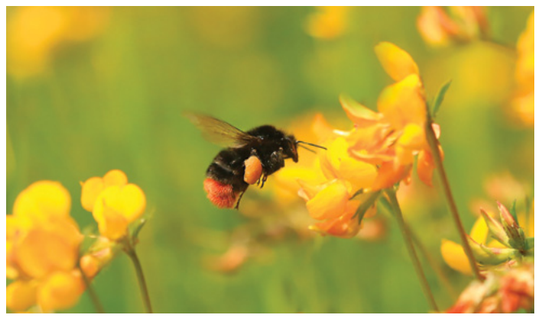


Photo: Jon Hawkins/Surrey Hills Photography

Market gardening – Little Island Leaves

One Channel Island market garden business is producing its commercial salad crop without the use of herbicides and pesticides. Little Island Leaves, based in Alderney, uses companion planting and other natural measures to attract beneficial insects, which in turn control less welcome ones. Water recycling, minimising plastic use and home-composting are all adding to their good work for wildlife.

Find out more **www.alderneywildlife.org/little-island-leaves**

Photo: Little Island Leaves

Good business for insects – Belron International

Vehicle glass repair and replacement company, Belron International, are leading the way as an example of a business helping local insects. The company has transformed its HQ gardens in Egham, Surrey, introducing long grass areas, wood piles, fruit trees, bird feeders, hibernation places, bug hotels, a wildflower bank and a pond to help insects and other local wildlife.

Find out more at **www.surreywildlifetrust.org/belron**

Photo: Belron/Surrey Wildlife Trust

Conclusion

There is still time to save our insects. Their populations can swiftly recover if we are prepared to meet their basic needs. This report shows how it could be done.

It highlights just a few of the outstanding examples of individual people, groups and communities who are coming together, united by a shared love for insects, and who are effecting positive change, creating habitat, planting flowers, reducing pollution, or finding ways to farm more sustainably. The scale of action is vital; one person can make a difference, but a community can do much more. **Leadership is vital and this can come from everyone** - through inspired community activists, individual farmers, young environmentalists, and citizen scientists and from local Councils taking charge by banning pesticides on the land they manage.

But political action is key too – new laws to ensure every space in the UK supports nature's recovery so at least 30% of our land and seas are properly connected and suitably managed to be rich in wildlife. Ambitious pesticide reduction targets and a halt to unnecessary use of pesticides where people live, work and farm. Support for all sectors to make the transition away from avoidable pesticide use and to work with, and not against, nature.

If insects are to thrive and help support healthy ecosystems, then they need **a connected network of insect-friendly habitats stretching the length and breadth of our country**. For this bold vision to become reality, we need top quality planning, so it is clear which places need protecting, where new green spaces should be created and where the green corridors connecting them will be. We also need informed and sensitive management across all types of land - from rivers and peatlands, to roadside verges, parks and farmland. Insects do not recognise man-made boundaries and need to be able to thrive everywhere.

And we need to **remove the threat to insects from pesticides**. To support farmers in finding ways to minimise pesticide use, to work with nature, and to develop truly sustainable farming methods which maintain comparable yields while sustaining a rich ecosystem and healthy soils.

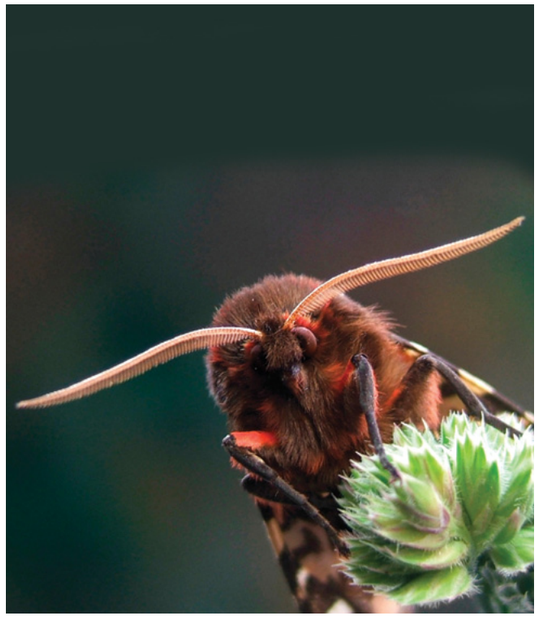


Photo: Alan Price

It is **political will, mobilised communities** and **individual action** that will achieve this. We need to change the ways we manage gardens and urban greenspaces so that they are rich in flowers, free from pesticides, and with plentiful places for insects to nest and shelter. We must clean up our rivers and wetlands, protecting them from pollution with chemicals and soil run-off, so that they once again teem with insect life.

In his bestselling book, "*The Tipping Point*", Malcolm Gladwell argues that just a few people can change the behaviour of a crowd; that there are tipping points when an idea, belief or behaviour crosses a threshold, tips, and spreads like wildfire. This is exactly what we need for insects. We need **more insect champions**; passionate, inspiring people willing to give of their time and lead the way to a world where caring for insects, and more generally for the environment, is the norm. We can all become insect champions. It is time to invite insects into our gardens, cities and farms, and into our hearts, to create a world in which people and nature live together, and where children grow up appreciating the wonder and importance of earwigs, worms, bees, beetles and dragonflies.

It is time to take Action for Insects. Become an insect champion and do something today to help save our insects. www.wildlifetrusts.org/take-action-insects

Photo: Derek Moore

The Wildlife Trusts' Asks

To reverse insect declines and help insects to thrive once more, The Wildlife Trusts want to see:

At least 30% of land and seas properly connected, better protected, and suitably managed for nature.

A halt to the unnecessary use of pesticides where people live, work and farm, with support for all sectors to make the transition towards becoming pesticide free.

Everyone taking action for insects.

Photo: Vicky Nall

Here's how:

No weakening of UK pesticide standards through future trade deals, including the UK's current hazard-based approach to pesticide authorisations.

Legally binding targets for nature's recovery which are effectively monitored and enforced – and a quantitative UK pesticide reduction target as good as, if not better than, the EU's target to reduce by 50% the overall use of – and risk from – chemical pesticides by 2030.

A network for nature's recovery: joined up habitats that provide enough space for wildlife to recover and for people to thrive.

Support for farmers to adopt Integrated Pest Management and other agroecological practices.

Leadership from local Councils to prioritise green recovery, create more nature rich places where insects can thrive, and to make cities, towns and parishes Pesticide Free.

Insect champions - everyone taking Action for Insects and becoming part of a strong collective voice for their recovery.

www.wildlifetrusts.org/take-action-insects

Photo: Penny Mason

Photo: Vicky Nall

No matter where you live in the UK, there is a Wildlife Trust inspiring people about the natural world. Each day we work to save, protect and stand up for the wildlife and wild places near you.

Supported by more than 850,000 members, we take action for insects on our 2,300 nature reserves, through our work with landowners, farmers and policy makers, and by encouraging everybody to look after insects where they live. We hope that you will join us.

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Photo: Penny Frith

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