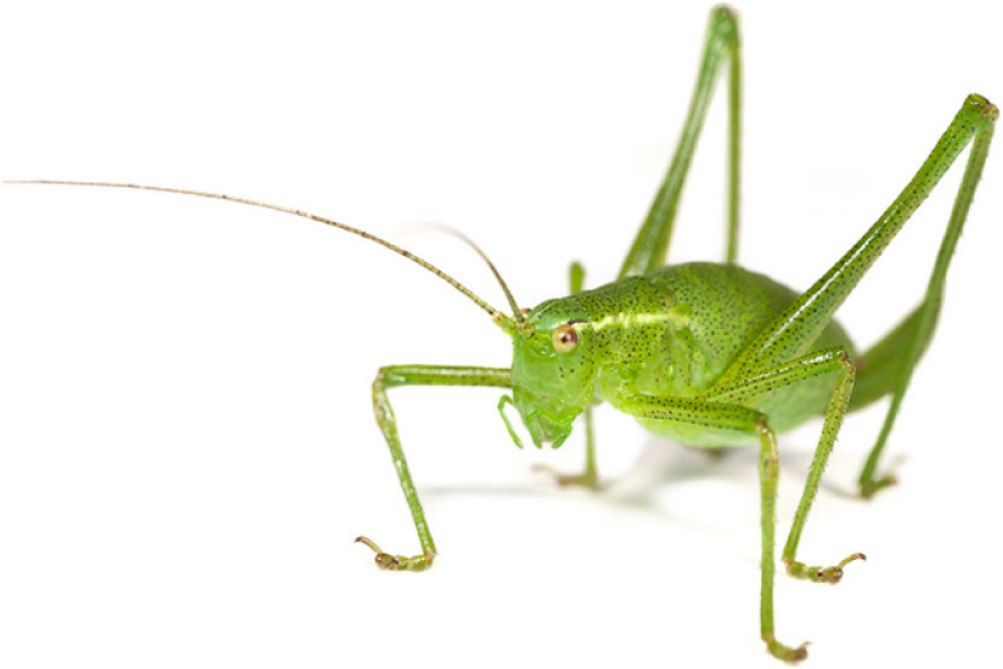
NO insectinction



Buglife's campaign to resolve the insect declines crisis

> If the invertebrates were to disappear, the world's ecosystems would collapse
>
> **Sir David Attenborough**

BUGLIFE'S CAMPAIGN TO RESOLVE THE INSECT DECLINES CRISIS

Insect populations are in crisis. Recent studies paint a grim picture of the decline of insects across the planet. A well-publicised review recently concluded that current rates of declines could lead to the extinction of 41% of the world's insect species over the next few decades.

Butterflies, moths, bees, wasps, and dung beetles are amongst the most at risk, along with freshwater-dependent insects such as stoneflies, caddisflies and mayflies. A small number of unfussy, very mobile and pollutant-tolerant species are able to cope with the damage that humans are doing to our planet. These generalist species are replacing the rich diversity of species that make up the fabric of life on Earth.

It is becoming increasingly clear that our planet's ecological balance is breaking and there is an urgent need for an intense and global effort to halt and reverse these dreadful trends. Allowing the insect eradication crisis to become a catastrophe is not a rational option for anyone.

Insects make up over half the species on Earth, our planet's health depends on them, so their enduring disappearance is intensely concerning. The rate of loss of insect life is much faster than that of higher profile wildlife like birds and mammals – the local extinction rate for insects is eight times higher! There are many causes, and they all need to be addressed, but the evidence is clear, we will not halt the crisis without urgently reversing habitat loss and degradation, preventing and mitigating climate change, cleaning-up polluted waters, and replacing pesticide dependency with sustainable farming methods.

We believe that there should be sustainable populations of all insects. '**No Insectinction**' is Buglife's response to the current crisis – a prescription for healing our planet, by restoring our depleted and devastated insect populations (and indeed all other invertebrates such as earthworms, spiders and snails).

Leading by example in the UK and EU, we call upon governments and decision makers around the world to take decisive action to tackle this ecological crisis.

We can stop, and reverse the global declines in our insects, but only if everyone pulls together to do their bit.

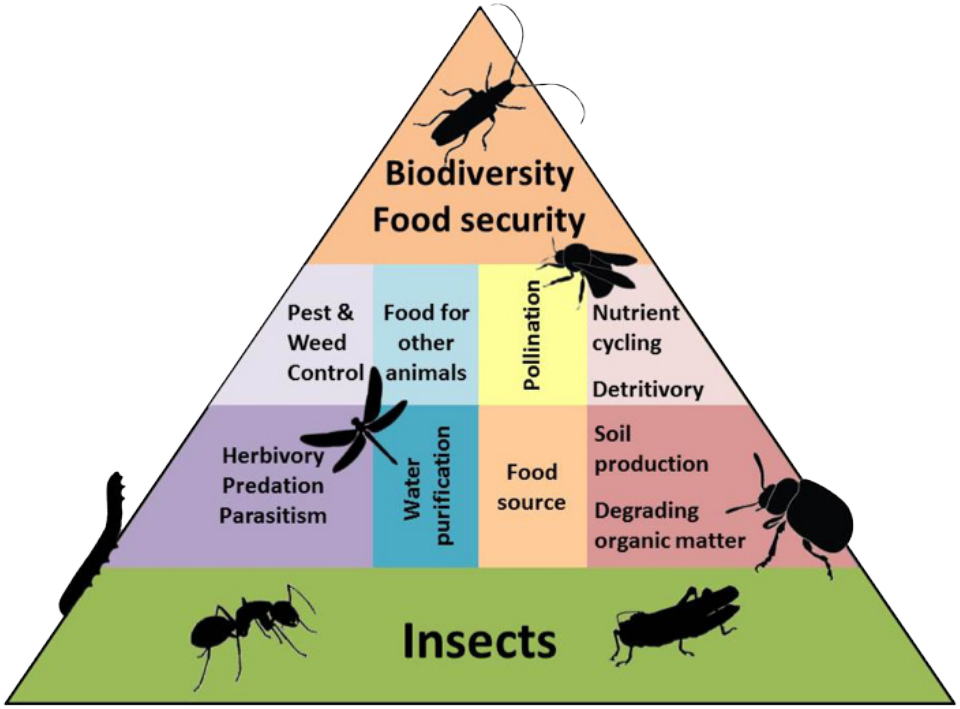
Colletes species © Rory Dimond

ROOM FOR INSECTS TO THRIVE

We all need room to thrive, but like other wildlife insect populations have been pinned into tiny fragments of habitat where their needs are not being looked after.

The first priority to achieve 'No Insectinction' is to protect and expand the best areas, and restore sufficient additional habitat so that there is enough room for insects to thrive and to move into.

We need to repair connections through our damaged landscapes, ultimately restoring a vibrant land where insects are abundant, where they can fulfil their important ecological roles, and where they will continue to delight and inspire future generations.



Insects fulfil important ecological roles and provide a wide variety of essential services. Adapted from: We are losing the "Little things that run the world", UN Environment 2019

PROTECTING THE MOST IMPORTANT AREAS FOR INSECTS

Many of our most threatened insects are only found in a small number of places. These places are often remnants of once widespread wildlife-rich habitats such as flower-rich grassland, ancient woodlands, dunes, heathlands and wetlands. Yet agricultural intensification, and the pressure for new development, means that we are continuing to lose these irreplaceable wildlife refuges at an alarming rate.

The most important places must be identified and recognised - given formal protection to prevent their loss, or damage. It is vitally important that these places, and the special species that call them home, are protected from harm and managed in the right way to protect and enhance their wildlife riches.

Working with the leading experts and other conservation charities good progress has been identifying the UK's 'Important Invertebrate Areas' that must be given protection from development and other land-use changes. The 'Important Invertebrate Areas' must be appropriately protected and time and effort invested into ensuring they are safe and well-managed.

CONNECTING LANDSCAPES AND WILDLIFE

Wildlife-rich landscapes and the vibrant populations of insects and other wildlife that they support are incredibly important for people – our lives, and our descendants' lives, will be richer and healthier by making more space for wildlife in the countryside.

Recent insect declines are part of a long-term loss of diversity and abundance caused by habitat loss and fragmentation. The very latest research shows that many of the best wildlife sites are now very isolated, and that a lack of connected habitat across landscapes means that species are marooned on islands of suitable habitat, unable to move in response to environmental pressures such as climate change, and vulnerable to local extinction. Habitats must be made bigger, better and, crucially, more joined up. Restoring networks for insects is now a top priority.

Habitat restoration must be at a big scale – leaving field edges and corners to nature plays its part, and indeed helps to produce more robust and productive agriculture, but to adequately tackle the insectinction crisis and to restore wildlife to our countryside we must be far more ambitious – large areas of high-quality habitat must be created, restored and connected.

Wildlife-friendly habitat mosaics must be reinstated at a landscape scale, in some places 'rewilding' would help to create more varied and complex habitats that favour many insect species.

ACCOMMODATING AQUATIC INSECTS

Over 4,100 invertebrate species in the UK spend at least part of their lifecycle in freshwater – and they deserve more of our attention.

These include well-known freshwater invertebrates like dragonflies, mayflies, pond skaters and water beetles. These insects play a vital role in maintaining clean water, recycling organic matter, and in providing a food source for fish, birds and mammals.

The presence of aquatic insects is the standard indicator of the health of freshwaters.

However, aquatic insects have been just as squeezed for room to live as terrestrial species, and freshwaters are haemorrhaging biological diversity faster than any other group of ecosystems on Earth.

Small water-bodies are particularly important for small animals, but their wellbeing has been largely ignored by regulators and policy makers.

There have been big losses of ponds in the countryside, and chalk streams and other headwaters are suffering from drying out in many places, while naturally temporary streams, such as winterbournes are flowing for shorter periods.

There is an urgent need to bring the habitat area and quality of rivers, streams, ditches, springs, seepages, ponds and lakes up to the point where freshwater insects can thrive again.

Peat bogs straddle the aquatic and terrestrial environment; not only do they form an important habitat for many aquatic and semi-aquatic insect species, they are also important stores for carbon, preventing climate change.

Despite this, the past damage from drainage of bogs and peat extraction has not been rectified, and indeed is still being allowed to continue, and Government commitments have failed to stop the use of peat in gardening.

It is essential that we stop removing peat from bogs and phase out the sale of peat for gardening and horticulture.

Freshwater insect such as mayflies are the standard indicator of the health of freshwaters © Matt Eastham

INSECT HAVENS IN TOWNS AND CITIES

Our wildlife is not limited to the countryside. Many insect species share our urban areas with us, and some are found nowhere else.

Local authorities, businesses and individuals can all take action that will help the recovery of insect populations and make space for wildlife in towns and cities.

Our spatial planning system must be much more insect-friendly. Increased use of green infrastructure such as green roofs, wildflower areas, ponds and rain gardens in development proposals will provide habitat and stepping stones for insects, allowing them to move and disperse to urban green-space and the wider landscape.

Brownfield sites can support a huge diversity of wildlife, often providing refuges for insects that have been lost elsewhere. Brownfields can include quarries, disused railway lines, spoil heaps, and former industrial sites that have been allowed to return to nature.

Often these are the only wildlife-rich areas left in our towns and cities. However, development pressure is threatening the future of many key sites.

Urban green-space can include a wide variety of land uses including parks, cemeteries, communal ground in residential areas, school grounds, road verges, gardens, golf courses, business parks, hospitals, company premises, brownfield sites, river banks and railway lines.

There are good examples of public green-space being managed for insects, but we must ensure that this becomes the norm.

Urban green-space signs as parks can be critically important for insects © Robin Oliver

SAFE SPACES FOR INSECTS

Having enough space is not enough to reverse the decline in insects if those spaces are poisoned by chemicals, pollution, emitted by humans, or are being invaded by environmentally harmful species that we have irresponsibly introduced into their habitats.

Freeing our land and waters from pollutants and invasive species that are driving widespread declines in biodiversity is the second priority of 'No Insectinction'.

SAFE FROM HARMFUL CHEMICALS

Recent history is peppered with cases of pesticides causing huge damage to wildlife, most notably pollinator declines caused by neonicotinoid insecticides, but also cypermethrin sheep dip, which ravaged freshwater systems and may have caused the extinction of a rare caddisfly species. By improving pre-approval testing and being much more careful and prudent about their use we can limit the damage these chemicals cause to ecosystems and wildlife. There are over four hundred pesticides approved for use in the EU. Since the approval process started in 1991, over a hundred products have been banned due to their detrimental effect on the environment or human health, despite being, until very recently, deemed safe and used extensively. This shows that the current testing procedure for approval is inadequate, demonstrated by the EU introducing a ban on the use of neonicotinoid insecticides in 2018.

Gardens and urban green-space have become refuges for many bees and insects; the use of insecticides in gardens cannot be justified on food production or other public good grounds. Plant-protection pesticides are not the only chemicals that can harm invertebrate populations; there are also significant risks from veterinary and human medicines. There is little targeted regulation to protect wildlife from medicines. Pesticides in the garden, and in urban areas by Local Authorities, must be banned to ensure that insects are protected from harm.

Pollution is a particular problem for water quality, despite the introduction of legislation such as the Water Framework Directive in Europe. Almost half of sites monitored across Europe continue to suffer from chronic chemical pollution leading to long-term negative impacts on freshwater organisms. One in ten sites suffered acute pollution with potential lethal impacts for freshwater organisms. Harmful chemicals, nutrients and plastic fragments are emitted in sewage effluent and run-off from urban and industrial areas, with pesticides from farmland posing the most immediate risk to freshwater ecosystems.

Increased concentrations of nutrients in the environment can also have an adverse effect on habitats and associated insects. Despite efforts to reduce pollution in the aquatic environment, more needs to be done to prevent excess nutrients entering rivers and lakes. Excess nutrients such as nitrogen continue to also be a serious problem in terrestrial ecosystems. An increase in nutrients in the soil as a result of nitrogen deposition or excessive use of fertilisers leads to changes in the composition of the vegetation. Habitats such as bogs and heathland, forests, montane areas, and unimproved grassland, and the insects they support, are all under threat from eutrophication.

SAFE FROM ADVERSE CONDITIONS

Climate change is widely recognised as being one of the major long term threats to biodiversity.

Most recent predictions are that our climate will become warmer, patterns of rainfall will change, and the number and frequency of extreme weather events will increase as a result of climate change, and this will inevitably have an impact on insect populations. Indeed with the majority of species having relatively short life cycles and good powers of mobility they are likely to be one of the first groups to show the impact of a changing climate.

Cold-loving species will retreat northwards and uphill, while warm-loving species will increase their range and species normally found further south in Europe may become established in the UK. Temperature plays a vital role in the breeding success of cold-blooded organisms and therefore the population size and viability of many invertebrate species. It is probable that small changes in temperature will be enough to jeopardise the survival of some invertebrate populations.

This effect will most likely be seen in cold-adapted montane species whose very survival may be at stake; however, it is also evident in other habitats. Extreme events such as sustained warm spells and heavy rain will become more common.

Drier, warmer conditions, coupled with increased pressure on water supplies will lead to low flows in chalkstreams and headwaters, or their flow stopping altogether. Wetter conditions and an increase in the frequency of floods is also likely to have a significant effect on insect populations.

Ground-dwelling insects may be drowned or washed away, and for those that survive, the catastrophic loss of their food resource may prove fatal.

SAFE FROM LIGHT POLLUTION AND OTHER RADIATION

Technology increasingly emits electromagnetic radiation; it forms a growing and valued part of modern life. Yet we have been failing consider how this radiation may affect other animals.

Night-time light pollution disrupts the lives of nocturnal insects such as moths and glow worms. It has been established as a cause of insect decline that can impact on the pollination of plants and the health of ecosystems. While the problem of light pollution is widely recognised and there are a number of Dark Sky Reserves/Parks, and although we know what needs to be done to reduce the pollution, there is no coordinated effort to reduce light pollution.

Radar, radio, telecommunications and electrical fields pervade the atmosphere. We know that insects can detect, and are affected by, types of electromagnetic radiation and scientists are concerned that the radiation is capable of damaging the environment. However, there has been insufficient work on understanding how this might affect insect populations and ecosystem health.

glow-worm © Dom Greves

SAFE FROM INVASIVE SPECIES

Invasive Non-Native Species (INNS) are one of the greatest threats to biodiversity across the planet. The introduction of INNS to ecosystems typically leads to a reduction in species richness and abundance, and to the general degradation of the environment. The annual cost of INNS such as Signal crayfish, Carpet sea squirt and the Killer shrimp to the British economy is estimated to be at least £1.7 billion.

The international trade in pot plants poses a particular threat. Billions of pounds worth of plants and trees are transported around the world every year. They may bring colour to homes and gardens but with them they bring unwanted organisms in the soil. Non-native species such as flatworms can wreak havoc on native wildlife, while invasive slugs can harm garden plants and crops. Local horticulturalists are quite capable of growing plants for domestic markets, so almost all international trade in live plants is unnecessary.

Aquatic organisms are accidentally transported between water-bodies by recreational water users. The introduction of invasive non-native species to freshwater ecosystems leads to a reduction in species richness and abundance, with mayflies, caddisflies, snails, freshwater shrimps and other crustaceans being particularly vulnerable – it is also likely that invasive clams have caused the extinction of the Witham orb mussel.

Eradicating invasive species after they have become established can be expensive or impossible, and so preventing the spread of invasive non-native species is key to limiting harm. Improved biosecurity practices are essential. For aquatic ecosystems the GB Non-Native Species Secretariat (GBNNSS) promotes the 'Check, Clean, Dry' message, but the effectiveness of this approach has not been assessed.

Crayfish: Invasive non-native species such as the Signal crayfish cost the British economy at least 1.7 billion annually. Signal crayfish © Pete Sibley

FRIENDLIER RELATIONSHIP WITH INSECTS

"We will conserve only what we love; we will love only what we understand" (Baba Dioum, 1968).

We need to act now to stop insectinction. However, the scale and quality of that action is still limited by our lack of understanding and awareness. Unless we understand the needs of insects we cannot act effectively. And if society's attitudes are dominated by prejudice and ignorance, rather than enlightenment and knowledge, then we will fail to achieve a happy coexistence with nature.

BIG-UP SMALL ANIMALS

Although insects and other invertebrates are essential for our survival, and over 99% of species are beneficial, people often first think of harmful or unloved species. While attitudes are changing – in particularly with regard to bees – insects still have an image problem that must be addressed.

It is still the case that huge vested interests make massive profits by killing insects, this can have direct impacts on wildlife, but the PR produced by these industries also serves to taint our attitude towards small animals and encourage prejudice. Newspapers also find that scary stories about small animals sell papers and they are willing to produce stories that ignore science, evidence and the bigger environmental picture to exploit the fears of individuals.

Collective understanding of the harm caused by light pollution, pesticides, invasive species and other factors will be key to securing behaviour change and support for measures that may have financial and societal implications.

Attitudes can change and raising awareness of the wonder, beauty and essential roles of invertebrates will develop greater tolerance and respect for insects and other invertebrates.

We must take action to tackle the insectinction crisis so insects can continue to delight and inspire future generations.

IMPROVE OUR KNOWLEDGE

Knowledge is key to people being able to take effective action to protect and sustain insect populations. Insects are a highly diverse group that is subject to variable levels of recording, monitoring and popularity.

Some have national recording schemes and are served by good species identification resources (e.g. butterflies, moths, hoverflies, bumblebees). But many key insect groups are not well recorded or monitored and identification resources are either unavailable or difficult to use.

The design of monitoring schemes is critical to the type and quality of data collected, and the right sort of monitoring will provide sound information for gauging how insects are faring, and/or determining what we can do to protect and enhance their populations. We must keep track of insect populations, just as we would track any other key environmental or economic asset.

We know that habitat loss and fragmentation, pollution and climate change are major factors working in conjunction to cause declines.

However, there remain significant gaps in knowledge and understanding about what aspects of these factors are most significant and which habitats and habitat features are crucial for maintaining and restoring insect populations.

In addition the impacts of emerging factors such as imported diseases, invasive species and 5G radiation are poorly understood. A better understanding of insect ecology and the causes of decline will enable the design and implementation of conservation measures.

While general improvements to the room we provide for insects to thrive, and the safety of this space, will help most species, there are many specific interventions required – for instance, providing particular habitat requirements, such as continuity of the right types of dead wood for internationally threatened beetles that survive on a handful of refuges.

We have to foster an understanding relationship with the species we have pushed to the edge and make sure that we are looking after them.

The fate of species is the bottom line of nature conservation – their status is the tell-tale for how well we are looking after our land and water.

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© Pseudoscorpion - Chthonius ischnocheles

NO INSECTINCTION IS OUR CALL TO ACTION TO HALT AND REVERSE INSECT DECLINES.

Small steps can have a huge impact if they all fall at the same time.

We can stop, and reverse the global declines in our insects, but only if everyone pulls together to do their bit. We are calling on Governments, businesses, landowners, members of the public – everyone – to take action.

Together, we can save the small things that run the planet.

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Black-tailed Skimmer © Dr David Chesmore

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HELP SAVE THE SMALL THINGS THAT RUN OUR PLANET

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IT'S NOT TOO LATE