

BIO-DIVERSITY

Biodiversity is one of the current buzz words, but what does it mean, does it affect us, and can we do anything about it?

In simple terms, biodiversity refers to how many species are present in an area. Usually, it refers to species of plants and animals (including insects), but it should also include some less commonly understood organisms such as Fungi. In the millions of years since the world started, life forms have developed, initially as simple single celled organisms, but with time evolving into the complex animals and plants we recognise today. The numbers of species in existence that we know about are mind blowing, with over 70,000 species of animals, plants, fungi and single-celled organisms found in the UK, or About 8.7 million (give or take 1.3 million) in the world, and we believe there are many more species that have yet to be recognised. As studies of species continue, we are constantly adding to the numbers.

Why there are so many species is a question we cannot answer, but a species will generally evolve to fill a particular role, which may be similar to that of another species, but is rarely identical. For example, Blackbirds and song thrushes are closely related, and have very similar appearance and habits. Blackbirds feed largely on earthworms, insects and berries, but the song thrush has a slightly different diet eating, snails, insects and worms, and so has found a niche position unfilled by other birds. The “balance of nature” means that if the availability of snails decreases, then the number of thrushes is likely to decrease in response, or they have to change their preferred diet and eat more insects! Does it matter if we lose the occasional species if others are filling a similar role? Life has been likened to an aeroplane in flight. Imagine that during your

flight, you look out at the wing, and there is someone knocking out rivets (species). If you ask why, he says “well there are thousands of them, who will miss a few?” Would you be happy for him to continue, or would you suspect that sooner or later the wing may fall apart? Sudden end of flight!

There are 9 million different species, so would we miss the odd one? The answer has to be that we know so little about the natural world that we do not know what we can afford to lose. Imagine that the penicillin mould had become extinct in 1900. At that time no one would have noticed or cared. But then the discovery of penicillin, and introduction of antibiotics by Alexander Fleming in 1928 would never have occurred – I assume none of us would welcome a world without antibiotics? We know little about many moulds and fungi but almost all are thought to have beneficial functions. Many plants rely on fungi around their roots in order to survive, as there are many minerals that plants require but cannot absorb in their normal state. The fungi break down these minerals making them “plant friendly”. In exchange the plants provide sugars for their fungal associates. Fungi also help breakdown dead plant materials. – Just imagine all the trees that have died and fallen to the ground over the last few million years. Without fungi to breakdown the dead wood, we would have a planet meters deep in old timber.

Flies get a bad press, accused of spreading dirt and disease, they are also great pollinators, and many species help break down rotting plant life. They also dispose of less pleasant material such as rotten flesh and faeces. It’s an unpleasant job but it needs to be done! More palatable, there is one fly species that pollinates coffee beans and another one that pollinates coco beans. If we lost both of them life would continue, but would it be worth living without coffee and chocolate?

The interactions between the different species are very complex, and we know only a tiny part of what is involved. The marmalade hoverfly is an insect you will all have seen around flowers, but perhaps not recognised. About 1 cm long, many hatch out in this country, but in some years, thousands join them in mid-summer, migrating from Europe. They come to enjoy the available nectar, and incidentally help pollinate our flowers. No doubt they have a great party, because soon after their arrival eggs are laid, which hatch out and the larvae start to feast on any



Marmalade Hoverfly

available aphids – so they help with pollination and with pest control, both valuable contributions to our existence.



Elephant Hawk Moth

as it goes, before laying eggs back on the willow herbs. Thus, it acts as pollinator, and its young help to control the willow herb. Most insects have quite short lives, before unwittingly becoming food for other species – again the balance of nature taking place. Too many insects will result in more predators surviving, because food is plentiful. The increase in predator numbers means more of the insects get eaten, resulting in less insects and reducing predators until a balance is reached. The interactions of even common insects such as moths is poorly understood. We know a bit about Elephant hawk moths – they are big and showy, one of the prettier of the 900 species of moth found in the UK. There are however another 1,600 moths (so called micro-moths), some of which we know almost nothing about. For example *Nemophora degeerella*. We know its body is less than 8 mm long (shorter than



Nemophora degeerella

its name!), although its antennae are about four times its body length. It is actually a very striking little moth, but we know almost nothing about its life other than immediately before adulthood it is associated with dead leaves. The smallest UK moth is *Enteucha acetosae*, with wings less than 1.5 mm long, we know almost nothing about it, except it is from a family of “leaf miners” that is the larvae actually live and feed in living leaves between the top and bottom surface of the leaf.

The total numbers of insects has declined by some 70% since the 1970’s. Those of us who are baby boomers remember driving in the summer months, when you had to stop every hour or so to clear all the dead insects off the windscreen, or you could not see to drive. The number of species being lost is also significant, but the reasons are not always obvious. Climate change is one, with unusual periods of drought, damp, or floods having a more devastating effect on many species than the slight

rise in average temperature. Insecticides and herbicides are also likely to be playing a large part, killing the intended species, but also frequently also killing other species up the food chain.

Is there anything we as individuals can do to reverse this? Well yes, quite small changes can have a good affect even without reducing the global warming.

- You may have heard of “No mow May”? Delaying mowing the lawn will help, but better still why not leave an area of lawn unmowed until August when wildflowers will have set seed? Wildflowers will grow there (more with every year you do it). The resultant increase in numbers of insects seen can be quite surprising, and a few colourful butterflies will enhance any garden.
- It may be too late for last year, but don’t fall into the trap of having a completely tidy garden! Let some leaves lie, and don’t be tempted to cut down all the flowering spikes of plants. The birds love those seeding flower heads, and the leaf litter is home to a great many species looking for somewhere to overwinter. – a treble win, you can relax with a nice glass of wine instead of tidying the garden, enjoy the feeling of helping biodiversity, and save energy!
- Finally, try to avoid the use of insecticides and herbicides. The odd aphid for example won’t do major harm to your plants, but if they get excessive, try washing them off with water and soap, rather than using chemicals which inevitably get into the environment. With this minor help from you, ladybirds, other insects, and birds and small mammals will soon get things back into balance.

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