

The ecology of conserving biodiversity (the Lawton principles)

Biodiversity is a term that we use to give a name to ALL of the life on this planet, and comprises all of the plants and animals, bacteria and fungi, humans and every other organism. The term is also used to encompass all of the genetic diversity of those organisms and to encourage us to think about the habitats and ecosystems within which those organisms live and the ecological processes that they are a part of. It is anything and everything that is alive in the world around us, and even within us, and its presence is critical to our own.

However, it is not just the actual presence of biodiversity that is important to us but also how the different species interact with each other and with their surrounding environment – this is what we call the ecology of biodiversity. If those interactions are compromised – for example, by significant human interference – then so is the integrity of the surrounding biodiversity. It is therefore essential that we give space for nature to operate as naturally as possible.

At its very simplest, these natural interactions include familiar concepts such as predators eating prey leading to food webs and trophic layers; mating and migration leading to the mixing of genes within a population and to the possibility of adaptation and evolution in the long term; and to changes in habitats and ecosystems that we sometimes call ‘succession’. None of these concepts can arise if species (or rather, their genes) cannot move across the landscape in some way. As a result, trying to find space for nature and human beings in the same landscape is perhaps our greatest challenge.

As we have through history made greater and more intensive use of the resources available to us in the landscapes that surround us, we have adopted perhaps 3 different ways of dealing with nature: to domesticate it, to eradicate it or to ‘protect’ it. Despite our best efforts, it is increasingly clear that the nature and biodiversity with which we share the landscape is changing, and probably not for the better. We need to do things differently.

The two major drivers of change are habitat loss and habitat deterioration, and alongside or within those changes also sits the loss of species and genes, and the deterioration of populations of species and genes – because we have either removed these from the landscape or prevented them from moving and mixing. There have been gains, of course, but in the main they are outweighed by the losses.

In the past we have tended to protect species and habitats either by creating protective legislation or by creating ‘protected’ sites – and this is how we now have laws such as the Wildlife & Countryside Act and areas such as nature reserves. However, as we continue to use more land for people, growing food and for various other purposes, the amount of landscape available for species to interact has become limited, and inadequate: many species and habitats now survive in small, isolated sites: this is difficult for many species, and often impossible in the longer term, as they rarely contain the level of resources or diversity of habitats needed to sustain populations.

Therefore we need to find a way to create more space for nature and allow it to move and interact more naturally.

In 2010, Professor John Lawton presented a report to the UK Government, called 'Making Space for Nature, that highlighted this. The report called for the creation of a healthy ecological network operating across the landscape as a whole, not in isolated reservoirs. This approach is now being taken forward widely across the UK, and elsewhere in the World, and is integral to the current Environment Bill.

Five components are needed for an ecological network to be effective:

1. **Core areas** – these are the areas of highest wildlife value
2. **Corridors and stepping stones** – the places that allow movement and interaction
3. **Restoration areas** – areas where species and habitats can be restored
4. **Buffer zones** – these protect the core areas, corridors, stepping stones and restoration areas from the pressures of human influence
5. **Sustainable use areas** – areas of greater human influence and resource use.

To create an ecological network that operates more naturally and effectively, the Lawton report called for some simple measures - more, bigger, better and joined-up sites within the landscape.

