

## 5 Invertebrate Biodiversity

This fact sheet could help if you are interested in any of the following questions:

- What are invertebrates?
- Why are invertebrates important in heather moorland?
- Which groups of invertebrates are most important?
- What sort of management favours invertebrate biodiversity?

### ***What are invertebrates***

This fact sheet will focus on the 'macro' invertebrates, easily seen by eye.

Did you know that:

- There are over 30,000 different species of insects and larger arthropods in Britain, far more than for any other group of animals
- Their small size, difficulties in surveying and identification mean that most of these species are poorly understood
- New species to Britain are regularly discovered, but sadly many have been lost, with over 200 species becoming extinct during the last 50 years

### **What are invertebrates?**

Invertebrates are animals lacking a backbone, and the term therefore encompasses a huge number of different species. These include:

- Insects (six-legged animals) such as butterflies, beetles, wasps, flies, bugs
- Arachnids – 8-legged animals such as spiders, harvestmen, ticks and mites
- Other arthropods such as woodlice, centipedes and millipedes
- Large soft-bodied animals such as earthworms, slugs and snails

The bulk of invertebrate species are microscopic, with huge numbers occurring in the soil, including many from species that have yet to be described.

### ***Why are invertebrates important in heather moorland***

Invertebrates are an essential component of the functioning of a healthy moorland ecosystem, despite their small size, and the fact that they are often overlooked, because:

- The micro-invertebrates play a key role in promoting soil nutrient cycling
- The macro-invertebrates form an important component of the diet of species higher up the food chain

- Many species of birds, in particular, rely on invertebrates in their diet through part (typically chick) or all of their life
- A small number of invertebrate species can be regarded as pests (e.g. heather beetles), vectors of disease (e.g. ticks and Lyme disease) or parasites (e.g. nematodes in red grouse)
- Invertebrates are often particularly sensitive to environmental change, and therefore can provide a good indication of the overall health of an ecosystem

Given that many invertebrates predate other species, an understanding of the complex food webs that develop, together with the habitat preferences of the different species, is an important pre-requisite towards successful management.

### ***Which groups of invertebrates are most important on heather moorland?***

'Important' groups of invertebrates in this context include those that are particularly abundant (in terms of numbers of individuals, numbers of species, or total biomass), those known to play an important role in the diets of higher animals, or those particularly sensitive to environmental change. The key groups of interest are:

- Beetles (Coleoptera)
- Flies (Diptera)
- Butterflies and moths (Lepidoptera)
- Wasps (Hymenoptera)
- True bugs (Hemiptera)
- Spiders (Araneae)
- Slugs and snails (Mollusca)

All these groups are usually abundant, with high numbers of individuals and species of beetles, flies, bugs and spiders especially on moorland. All of them form an important component of bird diets, some particularly in the larval stage (especially amongst the crane flies – Tipulidae) and Lepidoptera. Groups such as the spiders are very sensitive to changes in vegetation structure, for example as a result of grazing management.

### ***What sort of management favours invertebrate biodiversity?***

The key is:

- To maintain a mosaic of different habitat patches, so that a wide cross-section of invertebrates can survive
- To avoid the use of burning, or at least minimise it, as it is likely to reduce the overall structural diversity of the vegetation. Where burning is essential to maintain the quality of the heather, it should be done in small patches, to retain a mosaic of habitats

- To avoid, or preferably reverse past large-scale draining (gripping) which has led to a loss of boggy patches and their associated invertebrates (especially craneflies)
- A moderate amount of grazing is beneficial, as it prevents scrub encroachment, and the dung from grazing animals provides an additional habitat. Over-grazing should be avoided, and at some sites care is needed to avoid over-grazing near supplementary feeding points

**Other useful sources of information on invertebrates:**

[Royal Entomological Society](#)

[Amateur Entomologist's Society](#)

[Conserving invertebrates in upland moorland](#)

[Butterfly Conservation in the UK](#)

[British Arachnological Society \(spiders\)](#)

[Dipterists Forum \(flies\)](#)

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