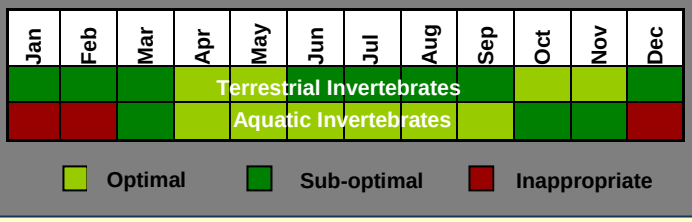
Invertebrates

Protected Species Guidance Note: 2014

Survey Season Calendar



Why Survey?

Invertebrates are increasingly being taken into account in conservation as their usefulness as indicators of environmental conditions becomes more widely recognised. Larger, more appealing species have always been considered, but the small species that comprise the vast majority of our fauna have usually been ignored. The UK Biodiversity Action Plan changed this point of view by broadening the range of invertebrate conservation to all groups.

- **Impact assessment and mitigation** – developers are legally required to assess whether their proposals will harm wildlife. Surveys will show the presence of any species of conservation concern and mitigation can be implemented to minimise impacts on populations (e.g. development boundaries that safeguard good habitats).
- **Management advice** – surveys will identify the relative value of different habitat features and highlight those of particular importance to invertebrates.
- To assess the value of an area for **invertebrate conservation** (e.g. site selection for local reserves or SSSIs).
- **Species recovery and monitoring** – sites where conservation is the main reason for their management should be monitored to assess the populations of their protected species.

SERVICES:

- Invertebrate scoping and monitoring surveys
- Habitat quality assessments
- Mitigation design and implementation
- Advice on legislation and best practice
- Habitat creation and enhancement
- Liaison with Statutory organisations

Methodology

There is a wide range of methods available for collecting samples in the field and usually a mixture of several techniques would be used, following the guidelines produced by Natural England.

- **Ground searching** – methods include dissecting grass tussocks, sieving leaf litter through a coarse sieve, turning over stones and logs, etc., and searching of bare ground. This method primarily targets small ground-dwelling beetles but is also useful for collecting other invertebrates such as bugs, ants and snails.
- **Beating** – species living on the branches and foliage of trees and shrubs are collected by sharply hitting branches with a stick. The invertebrates are collected as they fall onto a tray or net held beneath. Mainly useful for caterpillars, spiders, beetles, bugs, lacewings and barkflies.
- **Sweep-netting** – a heavy-duty or lightweight net is used to sweep through tall vegetation, with each type of net likely to catch different assemblages of the species present. This is a particularly simple sampling method and can be used quickly over a large area. Individuals of most species groups will be collected in this way.

Data Analysis:

Species lists are analysed using the ISIS package produced by Natural England. This computer application helps identify the broad assemblage types and then the specific assemblage types present at a site – i.e. which habitats or microhabitats support specialist invertebrate species. Evaluation of the species and habitats present defines the significance of the site for invertebrates and will determine the level of mitigation required.

- **Spot-sweeping** – this is the targeted catching of specific individuals with a net and collecting is directed at suitable localities such as clumps of flowers and areas of bare ground. This is the most effective way of capturing (or recording and releasing) some of the larger and faster insects, such as bees and butterflies.
- **Pond-netting** – this is the most convenient and versatile method of sampling areas of shallow water such as ponds and streams. Vegetation is sampled by being collected in the net and then spread on a plastic sheet, whereupon invertebrates can be picked out. The substrate can be disturbed by the surveyor's feet so that specimens are moved up into the water to be caught in the net. Many groups can be sampled using this method, including the larvae of dragonflies, damselflies, stoneflies and caddisflies; and water beetles, bugs and molluscs.
- **Suction sampling** – a petrol-engine suction sampler is vigorously probed into vegetation or placed over patches of short sward or bare ground. A very wide selection of invertebrate species can be collected in this way.
- **Pitfall trapping** – steep-sided plastic pots are sunk into the ground so that the rim is flush with the soil. Active ground-dwelling invertebrates such as beetles and spiders are collected as they fall in.
- **Water trapping** – dishes of water are placed on the ground or on posts at the level of the vegetation. These collect individuals that fly or leap in and different coloured dishes attract different groups. They are particularly effective for capturing flies, bees and wasps.
- **Light-trapping** – a trap using a bright light (such as a mercury vapour lamp) is left running overnight in the habitat to be surveyed. This is an excellent way of determining the assemblage of moth species inhabiting the area, and will also attract a large variety of other flying insects.

Mitigation

Developers should try to retain a mixture of habitats similar to those present prior to development. In addition, new landscaping for a site should include:

- the creation of grassland in free-draining locations, ideally with a range of local topographies including south-facing slopes (such slopes need not be very large)
- re-using existing soil from the site, rather than imported topsoil.
- Allowing natural re-vegetation of disturbed areas rather than using commercial seed mixes (any re-sowing should preferably be undertaken using seeds collected from the site)
- managing grassland with annual cutting, with some areas left uncut each year on a rotational basis, to allow for a range of sward conditions
- exposing some areas of grassland to incidental disturbance from cyclists and pedestrians, resulting in some areas of bare ground and heavy trampling, grading gradually to longer grass
- some patches of scrub and other tall woody vegetation, as part of a mosaic with grassland habitats
- areas of water and wet vegetation.