



### Ecological surveys of water environments

Bodies of water, like ponds, rivers and ditches, are home to some amazing plants, animals and habitats, and many of them are protected by law. Knowing exactly where they are is essential if we are to minimise any impact on them. We use qualified ecologists to survey potential habitats, feeding or breeding areas. This includes looking across an extended area too, to spot any potential wider repercussions of our work, or any opportunities to enhance conservation value where we can.

Surveys need to be done at the right time of day (or night) and the right time of year, depending on what we're looking for. Our ecologists work in pairs on foot and are licensed and practised at carrying out surveys and handling wildlife. Great care is taken so that species are not harmed, but we occasionally trap animals humanely before releasing them back into the wild. Some species

are so rare they're protected by law so we need to do specific surveys for each one.

### Surveying rivers and ditches

These general non-intrusive surveys help us identify and record species and habitat features in and near water environments. They are carried out by ecologists, who walk along rivers, as well as ditches.

In some places we will also carry out specific aquatic plant and insect surveys, for instance, looking for water crowfoot species.

Water crowfoot (Latin species name *Ranunculus aquatilis*), is an important plant from a conservation point of view. Its presence can be a reason for water courses in some areas to be designated for protection.

### Species specific surveys

**Fish:** rivers support a number of fish species of high conservation importance, including sea lamprey, brook lamprey, Atlantic salmon and bullhead. Electric fishing surveys will tell us how many species there are, and where they are. Electric fishing works by generating a small electric field in the water that attracts and temporarily immobilises fish. There is no long-term harm to them though, and our ecologists are trained in this technique to make sure the fish experience as little distress as possible. These surveys are carried out between March and October.

**Great Crested Newts:** Great Crested Newts are amphibians which spend most of their lives on land. They travel to water to breed before returning to the land where they hibernate amongst tree roots, dead wood and rubble piles. They are a European protected species and can only be handled by people who are licensed to do so. When we're surveying for newts we take water samples from ponds and ditches (from mid-April to mid-June) to see if we can detect newt DNA within it. Areas which test positive will then be subject to further surveys during the same period the following year. We use a variety of techniques, such as surveying at night time with torches and catching newts overnight using bottle traps. Ecologists will visit sites early in the morning to release any newts caught in the traps.



**Water voles:** water voles are semi-aquatic mammals which live in burrows in the banks of slow moving rivers, streams and ditches that have abundant vegetation. Our ecologists will look for signs of their presence, such as footprints, droppings, burrows and feeding areas by surveying the banks of rivers and streams on foot.

**Otters:** otters are semi-aquatic mammals which live in a type of den called a holt at the water's edge of rivers or their tributaries. Our ecologists will look for signs of their presence by looking for footprints, droppings, holts and worn paths alongside water courses. Our surveys will involve walking along the banks of rivers and streams on foot.

**Aquatic invertebrates:** aquatic invertebrates are an excellent indicator of the conservation importance of river habitats near our schemes. Our ecologists mostly use a technique called kick-sampling to find and identify them. This means disturbing a small area of river bed to dislodge and capture them. We do this twice a year — from March to May and September to November.

**White-clawed crayfish:** white-clawed crayfish are the United Kingdom's only native freshwater crayfish. Largely nocturnal, they like hiding in rock crevices, gaps between stones, submerged plants and tree roots in small streams, brooks, rivers, lakes, reservoirs and water-filled quarries. They prefer clear, well-oxygenated water without too much fine sediment. Our ecologists look for the crayfish between July and October. As well as searching by hand, we install and monitor artificial hiding places which are placed under water and held down by stones. They are open-ended so that the animals cannot be trapped.

**Desmoulin's whorl snail:** Desmoulin's whorl snail is a rare wetland invertebrate species. Britain is considered to support the greatest number of Desmoulin's whorl snail populations in the EU, which has declined throughout much of its historical range. Surveys of river banks and neighbouring wetland will be carried out from July to October.

Data collected through the variety of surveys is used to identify the presence or absence of a species within the survey area. If a protected species is found to be present, appropriate further survey or mitigation will be recommended in line with best practise.