

Wildlife Profiles: Water Bugs

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What?

Water bugs are insects belonging to the Order *Hemiptera*. All members of this order possess piercing and sucking mouthparts. The order is split into two groups, or Sub-Orders, the *Homoptera*, e.g. hoppers, aphids etc. and the *Heteroptera*, or 'True Bugs', which includes the water bugs.

'*Heteroptera*' means 'different wings' and this is particularly obvious in the land bugs with anterior part of the fore wings (the corium) being tough and leathery, and the posterior

area (the membrane) being thin and often transparent. Some water bugs show this feature well but many have wings that are reduced in size or even absent, and so these features may not be obvious.



Water boatman *Notonecta glauca* at water surface. Photo by Kim Taylor

If bugs are in a suitable habitat they may opt to remain there and have no need to fly. Thus reduction in wings and muscles could be an energy-saving strategy allowing more energy to be put into breeding effort. Water bugs may have other adaptations: the water boatmen have front tarsi modified to resemble flat plates, while those of the saucer bug are pointed and used for piercing prey. Some, such as the Water Scorpion have flattened bodies, suited for life under stones while others have long hairs on the legs that act as oars and aid swimming.

The water bugs themselves are split into two groups: those that live in the water, such as the water boatmen and saucer bugs and those that live on the surface of the water, such as pond skaters and water crickets. Apart from one species, all those that live in the water have to come to the surface for oxygen. The other is able to utilise the oxygen in the water and is, therefore, only found in clean, shallow, fast-flowing water.

There are 69 species in the UK, two of these being unique to Ireland. Six are mainly northern or upland species, four are coastal, some have very special requirements e.g. acid ponds and some are rare. This distribution limits the number that might be found at any one site, but any pond-dipping exercise should turn up a range of water bug species.

Water bugs vary greatly in size from the tiny species of boatmen, crickets and moss bugs, which are around 2mm, to the 30mm water stick insect. Most, however are somewhere in the middle. Most water bugs are predators and use their piercing mouthparts to catch either live prey or bodies that have been caught on the surface of the water. The boatmen have short piercing mouthparts but are also able to feed on alga and detritus. The bugs may be prey to other aquatic species, such as dragonfly and beetle larvae, as well as fish. They do, however, possess a 'stink gland' which exudes a fluid designed to deter predators.

Where?

Water bugs are found in rivers, lakes, streams, ponds and puddles. The majority of species live in still water, but some are at home in slow moving rivers and ditches or even faster flowing streams. Water crickets tend to opt for the quieter bays of the moving water, while the river skater can be seen keeping pace with the flow. Still water might be a puddle or a lake and will vary according to the organic and chemical content. Some water bugs can be found in any water body, but others are a bit more particular.

New ponds tend to have a high nutrient content and the first colonisers are usually one or two species of water boatman and possibly the common backswimmer. Still water with a high organic content attracts some different species, while others might prefer acid ponds or brackish water. The most species-rich water tends to be well-vegetated, neutral or slightly alkaline ponds and lakes. Puddles and water troughs, however, often support a large number of skaters.

The most obvious bugs on the water are the skaters but the slender, fragile water measurer may also be spotted on the still surface of the water, possibly near the vegetation and sometimes alongside the diminutive water crickets. Some bugs hide under the marginal vegetation and it is worth looking there or dragging a net along that area. Sometimes the tiny water boatmen can be seen in shoals in the very shallow, sandy areas, while other boatmen and backswimmers can be seen or netted in the deeper water, often amongst submerged vegetation.

Water scorpions may be concealed but can be caught by dragging the net along the silty bottom and the large and impressive water stick insect is found in weedy ponds, usually amongst vegetation. It can look like a plant stem in the net and is only noticed when it starts to move and it does that very slowly. Both the water scorpion and the water stick insect are impressive in flight, displaying their red abdomens, but are rarely seen in this mode.

Many water bugs are attracted to light, especially the boatmen, and on warm nights can be found in moth traps, often in large numbers.

When?

Although water bugs can be encountered at any time of year, the surface-dwelling bugs spend the winter months as adults in hibernation amongst grass tussocks or under stones. Those living in the water remain in the water over winter as adults, except for the tiny boatmen, which overwinter as nymphs. Bugs are able to survive under ice for periods of time and are often seen dashing around if the ice is clear.

Hemiptera undergo incomplete metamorphosis in their life cycle. The egg hatches out into a nymph, which is a tiny form of the adult. There are usually five moults, or instars, and with each instar the bug looks more like the adult. The 5th instar, thus, moults into the adult bug. This is unlike the butterflies, which have a pupal stage and undergo complete metamorphosis.

For most species the eggs are laid in spring on or in vegetation or on solid surfaces such as stones. Over the early summer months the bugs are nymphs and difficult to identify. They become adult around July or August when a second generation may lay eggs, the emerging adults of which will overwinter. The tiny boatmen overwinter as nymphs and mature around June when eggs are laid. There can be one or two broods per year, depending on the species and the climate. Newly emerged (teneral) adults may cause some confusion as the colours and pattern take some time to become established. They look paler than the mature bug and are soft when handled.

A good time to pond dip is in the spring, after the hibernating bugs appear. This is dependent on the weather but it is usually in April or early May when the species, apart from the tiny boatmen, are adult. The other good time is autumn, around late September or October, after the summer offspring have matured.

Why are we interested in them?

Some families tend to lend themselves to monitoring. Water Bugs, in conjunction with other aquatic insects, are very useful in conservation monitoring, for several reasons:

- Diverse enough to give fine discrimination between good, mediocre and poor sites.
- Several species found in almost all habitats.
- A manageable number of species, 69 in Britain.
- Identification less difficult than most invertebrates.
- Rich ecological and behavioural literature.



Where can I learn more?

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