

Pond Conservation

For Life in Fresh Waters

Late Spring Newsletter May 2010

Welcome to our late spring newsletter.

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What to look out for in your pond in May and June

It's surprising how many pond animals can fly – not just mayflies, alderflies and caddis, but most water beetles and even big bugs like water scorpions and water boatmen. Ponds are busy places, and as the weather warms up, if you sit quietly by a pond you'll often see animals plopping into the water, or emerging out of the pond, and "shivering" their wings to warm up, before flying off".

At this time of year, the most obvious and beautiful of the emerging insects are undoubtedly the dragonflies and damselflies. And if you get the chance, it's unfailingly wonderful watching their larvae climb from the pond where they have usually been living for the last couple of years, struggling to wrest themselves from their old body, and eventually flying free.



Large Red Damselfly
(*Pyrrhosoma nymphula*)
© Denis Greenough

Large Red Damselflies

Of all the damselflies it's the Large Red that's the one you're most likely to see in a garden pond: in our detailed garden pond surveys we've found them in roughly half of all ponds – and sometimes in huge numbers. One tiny 3 m² pond had 800 larvae! It was perhaps no accident that this pond had some of the best quality water in the survey.

Large Red's are often described a little dismissively as 'common and widespread'. But they are a good deal more interesting than this implies – not least because Pond Conservation's research shows that they are an excellent indicator of pond quality.

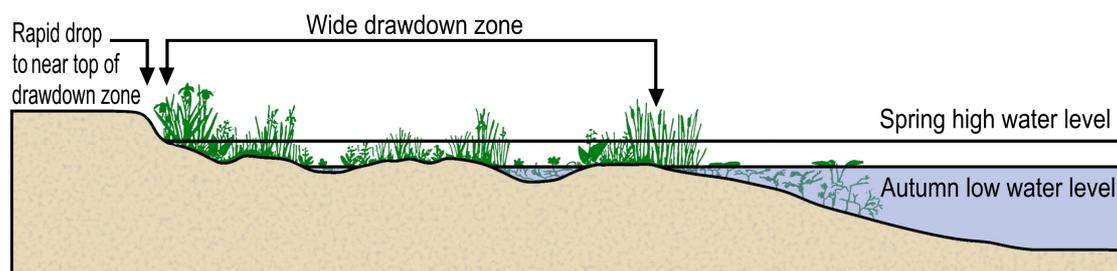
In a study using data from our National Pond Survey, French pond enthusiast Sandrine Angelibert discovered that Large Red Damselflies were most often seen in unpolluted, high quality ponds – so if you have them breeding it suggests your pond is pretty good.

Pond Clinic – What to do about falling water levels

Whilst many pond plants and animals are beginning to grow rapidly in the warm weather, many of you are contacting us with concerns about the falling water levels in your ponds as the warm weather speeds up evaporation. It's especially worrying for those with shallow wildlife ponds in full sun. As always, we advise caution before reaching for the hose to remedy the issue. The first question is of course, are falling water levels such a disaster in the first place?

The 'Drawdown' zone in countryside ponds

Surveys show that, out in the countryside, a water level drop of at least 0.5 m is quite normal in summer. In countryside ponds, these falling water levels create one of the most biologically-rich areas of a pond, known as the drawdown zone.



Almost all marginal plants start their life in the drawdown zone - because their seeds need exposure to air before they will germinate. Many of Britain's rarest wetland plants are particularly characteristic of this zone, including Starfruit, and the tiny fern Pillwort.

When it's still wet, many pond animals use the shallow drawdown zone: it's the favoured spot for baby newts and tadpoles, a host of invertebrates live in this zone and, when it's dry, dragonflies such as the Common Darter often lay their eggs there, perhaps because it is free from fish predation. If the drawdown zone is muddy, or has short vegetation, it's used by a wide variety of semi-terrestrial insects like rove beetles and long-legged flies, as well as by small mammals like voles and shrews when they go hunting for food.

So if you have a large pond with a natural base, and can create a good drawdown zone it's almost bound to create a good wildlife habitat.

Falling water levels in garden ponds

Falling water levels can be more of a problem in garden ponds for a range of reasons:

1. **Exposed liners:** Sunlight will degrade PVC liners, but not those made of synthetic rubber, referred to as butyl (IIR - isobutylene isoprene-rubber) or EPDM (ethylene-propylene rubber).

However, even with a light-resistant liner, bare exposed sides are not very attractive, and for both plants and animals, bare liner is a very dry environment. One answer, for shallow slopes, is to cover them up with a layer of hessian sacking or pond underlay, covered with washed gravel or sand. Then simply wait for your marginal plants or grasses to grow over. The lawn grass creeping bent (*Agrostis stolonifera*), which is very happy in both dry and wet environments, is particularly good for this, and as a bonus, the wet grassy edge habitat is a great favourite for many pond animals – especially water beetles.

2. **Drying out.** Very shallow water (less than 10 cm deep) isn't itself a problem for most pond animals. All of the plants and invertebrate animals commonly found in garden ponds are happy in very shallow depths. So unless you have larger animals like fish, low water levels aren't themselves too much of an issue – it's usually other factors that create more problems.



3. **Water temperature.** Oddly enough, rather than water-depth, it's things like water temperature that are more of an issue for garden pond creatures in hot weather. Warm water carries less oxygen than cool water, and either oxygen levels, or the warm water itself can sometimes be a problem for susceptible animals like tadpoles. Deeper ponds, and shallow ponds that are in shade during the hottest parts of the day, are usually OK, but shallow ponds (10-20 cm deep) exposed to full sun sometimes get so hot that some species can suffer (though others will still thrive). If you are concerned, and have a very shallow exposed pond, it can be worth topping up, to keep the pond deeper and, therefore, cooler.

4. **Lack of habitat.** An adverse factor rarely considered when thinking about falling water levels is what happens to the animals' habitats. Many pond species live right at the edge of ponds, amongst the complexes of emergent plants and grasses. Sometimes when water levels go down, these areas dry out, leaving only 'dangerous' open water where it's easy to be snapped up. One answer is to make sure that your marginal plants grow right into deeper water, another is to make sure that there the pond has abundant submerged plants, where the animals can happily skulk.

If you do 'top up' your pond, then we recommend that you use rainwater if possible. Tap water, especially in intensive agricultural and urban areas, often contains high levels of nutrients which can cause problems for ponds and pond wildlife. If you don't have an easily accessible source, why not consider installing an additional rainwater butt, perhaps leading off a garage or shed roof. You can connect it to your pond via a long hose.

The Big Pond Dip – 2009 Results

The Big Pond Dip was started in 2009 to find out more about what it takes to make a really good garden pond. In the first year of the survey there was an enthusiastic response with information supplied by hundreds of pond lovers from all over Britain. Combining this information with detailed studies on garden ponds near Oxford, has already given us some important new clues about what it takes to make a great wildlife pond.

Now in 2010 we're trying to get as many people involved as possible so we can get a much larger database of information, to confirm and extend the findings of the first year's work.



We're asking people to tell us what kinds of animals live in their ponds, and a little about the size, depth, water clarity and plants they have – and then use this information so that everyone can improve the design and management of their garden and school ponds.

The condition of the ponds in 2009

In the first year, the main findings about the wildlife and management of garden ponds from the Big Pond Dip were:

- About one in ten ponds were in 'excellent' condition, with virtually all the animal groups that should be present in a healthy pond.
- A further third of ponds were in the 'good' category, with more than half of the animal groups expected in a healthy pond.
- About half of all ponds were in poorer condition, but even these ponds still provided useful habitat for amphibians and aquatic invertebrates.

Wildlife in the ponds

- More than half of the ponds surveyed were visited by dragonflies or damselflies.
- Three quarters of ponds had water snails, water beetles and pond skaters.
- Virtually all ponds were visited by amphibians and, in around 60%, amphibians were breeding.

Common frogs accounted for most amphibian records, but four other species were also present: Smooth Newt, Palmate Newt, Great Crested Newt and Common Toad, of which the most commonly seen was the Smooth Newt. Depending on which estimate of garden pond numbers you use, that might mean there are somewhere between one and half to two and a half million breeding sites for amphibians in gardens!

Management of the ponds

- More than half of the ponds were in part filled by tap-water which in many places, especially the south, introduces pollutants.
- Most ponds were quite deep with a maximum depth of more than 30 cm.

These two factors probably reduced the variety of wildlife seen in the ponds.

On a positive note:

- The survey results showed that the more types of plants that were present in the pond, the greater the variety of animals present.

Everyone knows that plants are an important part of the habitat for animals in ponds. But the survey results showed specifically that, if you can ensure that your pond has all three main growth forms of wetland plants: marginal, floating-leaved and submerged - it will support a greater variety of wildlife.



Fish

A quarter of the ponds in the Big Pond Dip contained fish and these give us some of the most interesting results so far, since it is often assumed that fish and wildlife are incompatible:

- The fish ponds contained as wide a variety of invertebrate animals as ponds not containing fish
- Amphibians were just as likely to breed in ponds with fish as those without – although we do have to note that the survey didn't tell us anything about how many young amphibians finally emerged from the fish ponds.

It seems likely that fish ponds would produce fewer young amphibians than fish-less ponds because, except for toad tadpoles, fish eat amphibian larvae.

What next with the Big Pond Dip?

Now in 2010 we're again encouraging as many people as possible to get involved in the Big Pond Dip so we can get a much larger database of information, to extend the findings of the first year's work.

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Million Ponds Project up-date

Becky Good, our Million Ponds Project Wales Officer, has been out in the sunshine with Ecological Consultant and invertebrate expert, Andy Harmer, and North East Wales Wildlife, finding out about a special beetle, which needs special ponds.

The lesser silver water beetle (*Hydrochara caraboides*) is a priority for conservation action in Wales because it's a pretty scarce animal – just found in a handful of ponds in north-east Wales and Cheshire, with a few in the Somerset Levels too.



Lesser silver water beetle (*Hydrochara caraboides*) © Andy Harmer, www.andyharmer.com

The lesser silver water beetle needs specially overgrown ponds which are, unfortunately, often the kind which are subjected to inappropriate 'slash-and-burn' type management where everything is dragged out onto the bank and left to rot. It is a relic of more traditional farming systems, where land was gently grazed by low densities of cattle, rather than modern more intensive methods leading to over-grazing, under-grazing, or vegetation clearance.

Now, as part of the Million Ponds Project we'll be recreating ponds like these – although it'll take a while for them to get to this nicely vegetated condition.



Hydrochara Pond in Cheshire © David Orchard

This is an ideal lesser silver water beetle pond, in a late successional stage, with lots of native vegetation. It also has shallow edges, small areas of open water, access for cattle trampling and little overhanging vegetation. So, ponds that look like this in North East Wales could be home to a rarity. As part of the Million Ponds Project, Pond Conservation can help farmers and other land managers create the right kind of ponds to help this beetle.

We've also been busily beavering away at making our vision of a country-wide network of clean wildlife-rich ponds a reality. David Orchard, the Amphibian and Reptile Conservation Ponds Officer, who provides advice and guidance on creating and maintaining ponds for toads, newts and grass snakes, helped Stockport Metropolitan Borough Council dig 16 ponds on a local nature reserve with Million Ponds Project funding. This set of ponds will especially benefit the common toad,

which is now not as common as it's name suggests, as well as many other plants and animal



Pond creation in Stockport
© David Orchard

This site was funded through our Biffaward Pond Digging Fund which uses Landfill Community Funds. The total amount of money, Biffaward can provide for pond digging work, is a substantial £500,000, but it can only be unlocked if we raise £50,000 to match it.

Currently around £34,000 has been raised – enabling many hundreds of ponds to be created for some of our rarest species. But we still need help to raise the rest. Every £10 donated will generate £100 of funds which will be spent directly on digging ponds.

If you would like to support this project, you can make a donation online at:

<http://www.pondconservation.org.uk/supportus/millionpondsappeal>

Wacky world of science

Girl power rules on the pond surface - male pond skaters are forced to make music!

Most people will not need to worry too much about attracting pond skaters - in the Big Pond Dip 77% of ponds had skaters.

Spare a thought though for the unfortunate female pond skater who's life is not an especially liberated one, at least in the micro world of your garden pond.

Unenlightened male pond skaters of the genera *Gerris* and *Aquarius*, take a fairly basic approach to procreation, dispensing almost entirely with any form of courtship behaviour, the male grasping the female's thorax in order to overcome resistance, and then mating whether the female likes it or not!



Pond skater (*Gerris lacustris*)
copyright Adrian Chalkley

However, researchers in South East Asia have found that female red backed water striders (*Gerris gracilicornis*), have evolved a clever way around this, effectively forcing their males to take a more romantic approach to the courtship process. These

emancipated girls have formed their pre-genital segment into a shield, part covering their genitalia, and making it impossible for the males to force them to mate. Instead, these 'new age' males literally have to serenade their ladies - tapping out ripple signals by hitting the water's surface with their long mid-legs - for up to 15 minutes at a time. Three types of ripple signal were recorded by the researchers during the mating process: 1) grasping signals, 2) mounting signals, and finally 3) attachment signals. Only at this stage, if the females were suitably impressed would they accept the male as a mate. Needless to say all male signalling stopped once mating had finished.

If you are suspiciously interested in this subject, you can read about it in full here:

Han CS, Jablonski PG (2009) Female genitalia concealment promotes intimate male courtship in a water strider. PLoS ONE 4(6): e5793.

<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0005793>