

# Pond Conservation

*For Life in Fresh Waters*

## POND CONSERVATION - THE BIG POND DIP: SUMMARY OF FINDINGS FROM THE 2009 SURVEY

### Introduction

The Big Pond Dip was started by Pond Conservation in 2009 to gather information specifically about the wildlife of garden ponds. The results of the first year's survey are summarised below, and you can download the full report from our web-site at: <http://www.pondconservation.org.uk/bigponddip/firstresultsbigponddip.htm>

The Big Pond Dip is running annually and, in 2010, is being carried out in association with the OPAL Water Survey.

The new information collected in 2010 will add to the 2009 data allowing us to continually improve and update the advice we give on garden ponds and their wildlife. At the same time we are also carrying out more detailed garden pond research to complement the Big Pond Dip results.



Pond Dipping © Darren Rowley

### The 2009 Results

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

#### The condition of garden ponds as wildlife habitats

- 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.



Pond Olive (mayfly) larva (*Cloeon Dipterum*)  
© Pond Conservation

To achieve 'excellent' status, ponds needed to have three of the following four groups of animals: damselflies, dragonflies, caddisflies and alderflies.

A greater proportion of large ponds was in 'excellent' condition (25%), compared with small ponds, where only 2% were in 'excellent' condition, and medium-sized ponds where only 9% were in excellent condition. This suggests that it may be harder to maintain the quality of small and medium sized garden ponds, than large ponds.

### 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.
- However, some of the most sensitive creatures – caddisflies and alderflies – were seen only in about 10% of ponds.

Depending on which estimate of garden pond numbers you use, that might mean that garden ponds represent somewhere between 1½ million and 2½ million breeding sites for dragonflies and damselflies; and one to two hundred thousand garden ponds support caddisflies and alderflies<sup>1</sup>.

Extrapolating the data also reveals that there are around 1½ million and 2½ million breeding sites for amphibians in gardens. Most interestingly, the survey suggests that amphibians are more likely to be found breeding in higher quality ponds, as shown by the invertebrate community, than in poorer quality ponds.



Alderfly © Denis Greenough

Common frogs accounted for most records, but four other species of amphibian were also present: Smooth Newt, Palmate Newt, Great Crested Newt and Common Toad, of which the most commonly seen was the Smooth Newt.

Newts were more likely to breed in large, deep ponds, but frogs, and more surprisingly toads, showed less clear-cut preferences for ponds of different size and depths. Both were as likely to breed in small and medium-sized ponds as larger ponds.

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<sup>1</sup>The Big Pond Dip is not a random sample of ponds – people choose to send in results, so the survey may not be entirely typical of all ponds. This caveat should be borne in mind where we have scaled-up to give national estimates of the proportions of ponds used by particular animals. However, the Big Pond Dip results do closely mirror the results of our more detailed survey of garden ponds near Oxford which is based on a representative samples of ponds, not self-selected by pond owners.

## Management of the ponds

- More than half of the ponds were in part filled by tap-water which, in many places, especially the south of Britain, introduces high levels of polluting nutrients - especially nitrogen and phosphorus.
- 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 different types of plants that were present in the pond, the greater the variety of animals present.



Grasses and mosses trailing in the water provide habitat for aquatic invertebrates © Pond Conservation

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.

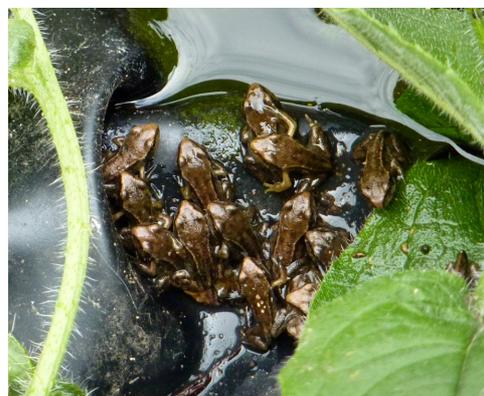
## Fish

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

All the main invertebrate groups (caddisflies, dragonflies, water snails etc) were as likely to be found in ponds with fish as without. This probably reflects the fact that most invertebrate groups contain species which tolerate fish predation. The survey did not provide information about the overall abundance of invertebrates in fish ponds, which is likely to be lower than in fishless sites.

- 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.



Froglets © Lucy Hall

However, given that fish eat tadpoles and newtspoles, avoiding only the unpleasant-tasting tadpoles of toads, it seems very likely that fish ponds would still generally produce fewer young frogs and newts than ponds without fish.

Interestingly, a higher proportion of fish ponds (25%) had breeding Common Toads than fishless ponds (11%), perhaps as a result of the tendency of fish to avoid toad tadpoles, thereby giving them an advantage.

## Conclusions - what can we do to make garden ponds even better wildlife habitats?



Southern Hawker © Alan Foulds

The Big Pond Dip, combined with information from Pond Conservation's more detailed garden pond surveys, gives some clues about simple things we can do to make garden ponds even better habitats for wildlife:

- Plenty of plants: the Big Pond Dip showed that ponds with all three plant groups, marginal, floating-leaved and submerged, had a larger number of animal groups.
- Ponds that are good for invertebrates, are likely to be good for amphibians as well. One of the most interesting results from the survey is the suggestion that better quality ponds, in terms of invertebrates, were better for amphibians. This relationship has not previously been reported in garden or countryside ponds and requires further detailed investigation before we can be completely certain about it – but it would not be surprising if it were true.
- Provide clean water. Although, the Big Pond Dip did not measure water quality in detail because of the cost and difficulty of analyzing samples – other more detailed surveys we have conducted suggest that the richest ponds usually have clean unpolluted water. The Big Pond Dip data *did* indicate – as would be expected - that cloudy ponds had fewer plant groups than clear ponds. In 2010 we will be looking more closely at this relationship.
- Shallow water is good for wildlife: there was no difference in the number of animal groups found in ponds that were 30 cm or 60 cm deep. Deep ponds (more than 60 cm deep) did have more animals on average but this may have been simply because these ponds were also bigger – at present we cannot tell.