

# Pooling our Ponds Survey Initiative

## Introduction

Ponds are home to a huge array of organisms, and even small garden ponds can provide an important refuge for wildlife. Sadly, due to urbanisation, habitat fragmentation and land use intensification there are fewer ponds left in the countryside, and many are polluted or poorly managed.

We know little about the quality of ponds across much of Scotland and the “Pooling our Ponds” survey initiative is designed to gather more information about ponds in our region. With your help, we will be able to gather useful information, which will assist with future habitat management recommendations, and will also help to provide data on under-recorded species in the area.

This pack is designed to help you identify and record some of the species you may find in your local pond.

- Animals and plants living in the pond, particularly invertebrates, are great indicators for the health status of a pond. We have chosen a selection of key invertebrate species for you to look out for that can give an indication of the pond's condition. We have also chosen some easily identified species which we have few records of and would like to find out if they occur more widely in the area.
- Amphibians are under-recorded in the area and we would like you to record if you see any frogs, toads or newts during your survey.
- Non-native species are becoming more of a problem in the environment and ponds in particular can be badly damaged by the introduction of invasive non-native plants. These often get out of hand because there are no natural herbivores to keep the growth in check. In order to obtain more information on non-natives in the area, we are asking you to record four key non-native plant species that you may encounter in local ponds.

## Equipment list

- Appropriate clothing: pond dipping can be messy, so it's important to make sure everyone is dressed appropriately. Wellies and waterproofs are advisable for children, and remember sun hats and sun cream in hot sunny weather.
- Pond nets: for collecting your samples. There is a wide variety available online.
- Containers: large white trays can be purchased, or you can use Tupperware or plastic pots. White, or pale colours, are best for spotting your specimens.
- Specimen pots: can be purchased online or you can use clean jars, Tupperware or food containers. Transfer specimens into these pots for closer examination.
- Spoons: to transfer specimens between containers.

- Magnifying glasses/magnifying pots: Very useful for looking at your specimens in more detail. Many pond creatures are very small and can only be truly appreciated when seen close up.
- ID guide.
- Camera/phone for taking pictures.

## Safety around ponds

1. **Adequate supervision:** The adult to child ration should be such that each adult can easily supervise those they are responsible for (as per Royal Society for the Prevention of Accidents guidelines). This will vary with each situation (and age of children) and should form part of any risk assessment.
2. **Be aware at the water's edge:** Ideally, a pond dipping platform should be used if your pond has one. Older children can kneel but younger children should lie on their front.
3. **Checking the catch:** Move your catch away from the pond edge (5 m should be enough) to inspect it.
4. **Hygiene:** Pond water can carry diseases such as Weil's disease. Avoid hand to mouth contact and always wash hands thoroughly afterwards. Any cuts and grazes should be covered with waterproof plasters.

## Pond dipping method

1. Take your containers and fill them with water from the pond and then set them away from the water's edge. Don't use tap water or bottled water.
2. Use your net to make slow, figure of 8 patterns in the water for up to 10 seconds. Sheltered places at the edge of the pond amongst emerging vegetation are usually the most productive. Aim to sample the middle layer of water; avoid sweeping too deep and collecting sediment, or dipping on the surface and collecting lots of floating pond weed.
3. Turn the net inside out to pour the contents into your container. Swish the net under the water to remove any stubborn bits of vegetation and debris.
4. Use spoons to carefully move creatures of interest into smaller, separate containers for closer inspection.
5. Be aware that if you leave predatory animals in the containers for too long (**great diving beetles and their larvae, dragonfly and damselfly nymphs**), they may eat the rest of your catch! It's often helpful to separate carnivores first from the rest of your catch, before looking at them more closely, to avoid things being eaten.
6. Remember to return your catch (plants and debris included) carefully back to the pond you took them from when you've finished identifying.
7. Thoroughly rinse your dipping kit after each pond-dipping session, particularly if you are moving to another pond for dipping.

## How to use this guide

We have chosen a few key species and groups to record at your pond and have produced an ID card for each one. Use the ID card guides to help you identify your catch and also keep an eye out for the four non-native plant species. You will likely find animals and plants that don't match those in this guide; while this recording pack covers the main species that we would like you to record, we would also be happy to receive records of additional species you find. There are some links to useful guides listed at the end of this pack to help you identify them.

Ideally, we like you to record what you find in your pond four times over the period of a year (once each season) to get as full a picture as possible of the wildlife that inhabits the pond. Once we have received all the data from the first year of the project, we will look at the results and send a short report to all those who have participated.

## Submitting your records

The North East of Scotland has a team devoted to collecting and managing wildlife records for the region - the North East Scotland Biological Records Centre (NESBReC for short). We would like you to submit your pond wildlife records to them so that they can form part of a database to study pond health in the region. To make things easier for the records centre, they prefer to receive a digital copy of your records. For schools, this could be typed up by the group in the classroom after the pond dip as an additional exercise.

This can be done by either:

- **Excel spreadsheet:** This is the most useful format for NESBReC staff to collate records, but they are also happy to receive records through the other two methods listed below. Type up your findings from the recording sheet in this pack into a purpose made excel spreadsheet, which is available on the NESBReC Website (<http://www.nesbrec.org.uk/modules/recording/index.php>), and email it to NESBReC, along with any notes and photographs;
- **Casual wildlife recording form:** Download a copy of NESBReC's Casual wildlife recording form which is available on their website (<http://www.nesbrec.org.uk/modules/recording/index.php>), fill this in with your records and email it along with any notes and photographs; or
- **Online form:** Submit your records online using the online form on the NESBReC website: <http://nesbrec.org.uk/modules/recording2/index.php>. Submit any additional notes or photographs separately via email.

Email your records and photographs to [nesbrec@aberdeenshire.gov.uk](mailto:nesbrec@aberdeenshire.gov.uk).

## Photographs

Taking photographs can be a very helpful way of recording wildlife at a particular place and time. If you can, take photographs of the things you see and submit these with your records to NESBReC (with a note of the pond the photograph was from). Taking photographs of pond plants and animals can allow experts at NESBReC to identify them to species at a later date and provide more information to the pond project. If possible please submit photos of adult and immature dragonflies, damselflies, stoneflies, mayflies and caddisflies, if you see them, and also photographs of pond plants and amphibians if you are unsure of the species. Sending a photo if you are unsure of something is better than recording it incorrectly.

### Summary:

1. Visit your local pond and take the ID cards and recording sheet from this pack with you.
2. Use the methods described above to pond dip and try to “match-up” any creatures you catch, or see at the pond, with those on the ID cards.
3. Take photographs, if you can, of your catch, particularly adult dragonflies, damselflies, stoneflies, mayflies, caddisflies, plants and amphibians, making a note of the pond you photographed them at.
4. Make a note of what you have found on your recording sheet.
5. Type up your records at home/ back at the classroom ready to submit to NESBReC. Don't forget to send your photos too!

## What your findings mean

The ID cards for the **invertebrates** are colour coded depending on what they indicate in terms of the pond's health status. This is only a simplified guide, but it could give you clues as to how much water pollution there may be and how beneficial your pond is for wildlife.

- **Green species** – lots of green species are a good indicator that the pond water is clean.
- **Orange species** – these species can tolerate some pollution. Lots of these and few/no greens could suggest that the water quality could be improved.
- **Red species** – these can indicate that there is some pollution in the pond. The presence of red species and few or none of the orange or green species suggests the pond needs improvement.

**Phantom midge larvae** may not look very exciting, but they are a valuable food source for other creatures in the pond. If you find a lot of them in your catch this suggests that there may not be any fish in your pond, as fish are the main predator of midge larvae. Not having fish in a pond is not necessarily a bad thing. It means that the pond is more likely to attract amphibians, which are often predated by fish.

**Dragonflies and damselflies** are an indicator that the pond water is relatively clean as their nymphs cannot survive in polluted water. Dragonfly and damselfly nymphs are voracious predators so their presence also indicates that there are plenty of smaller invertebrates in the pond which they can feed on. Finding adult damselflies and dragonflies by the pond suggests that they are either feeding at the pond or breeding there, which is a good sign.

**Stonefly and mayfly nymphs** are dependent on clean water and are a good indicator that there is little pollution (though some species are more tolerant of pollution than others). Stoneflies like running water and are found in rivers and streams as well as ponds.

**Caddisfly nymphs** are also considered good indicators of a healthy aquatic environment, as many species of caddisfly are particularly sensitive to environmental changes such as pollution.

**Diving beetles** are predatory and can feed on amphibian tadpoles and small fish like sticklebacks, as adults and larvae. Like dragonfly and damselfly nymphs, their presence means there is a lot of prey available in the pond which would suggest a healthy food chain.

**Water boatmen, backswimmers, pond skaters and water scorpions (the bugs)** can tolerate some water pollution as they all breathe fresh air. If you see these but none or few of the “green” species then water quality could be improved. Water boatmen are often one of the first creatures to inhabit a new pond as they are good fliers so if you see these and little else living in the pond, more time may be needed to allow other creatures to colonise the pond.

**Water hoglouse** are adapted to live among debris and decaying matter at the bottom of the pond and so they are able to survive with little oxygen in the water. This means they can tolerate moderately polluted ponds or water that is stagnant. If you find these in your pond but few or none of the orange or green species then your pond may need some enhancement.

**Rat-tailed maggots** generally mean poor water quality as they thrive in polluted and stagnant water. If you find these in your pond but few or none of the orange or green species then your pond may need some management to improve it for wildlife.

**No wildlife** in the pond is not good news; your pond may be polluted and could need some management in order to attract wildlife. Newly created ponds take some time to establish, so if your pond is new then wildlife may not have discovered it yet. In time wildlife will find your pond if there are other ponds nearby.

**Many thanks for taking part in our survey – this is a fun and valuable way to help us find out more about the Biodiversity in our region. Happy dipping!**

## Useful links

### Equipment

- Nets: <http://www.wildcareshop.com/subject/education/pond-dipping.html>
- Nets and trays: [http://www.bioquip.net/acatalog/Pond\\_Nets\\_and\\_Trays.html](http://www.bioquip.net/acatalog/Pond_Nets_and_Trays.html)
- Nets and magnifying pots: [http://www.angleps.com/pond\\_nets\\_aquatic.php](http://www.angleps.com/pond_nets_aquatic.php)
- A range of magnifying glasses and pots: <http://www.wildforms.co.uk/insects/bug-collecting/>

### Species guides

- Field Studies Council fold-out freshwater identification key: <http://www.field-studies-council.org/publications/pubs/freshwater-name-trail.aspx>
- Identifying aquatic invertebrates: [http://www.riverwatch.ab.ca/how\\_to\\_monitor/invert\\_identifying.cfm](http://www.riverwatch.ab.ca/how_to_monitor/invert_identifying.cfm)
- British Dragonfly Society identification guide to dragonflies and damselflies: <http://www.british-dragonflies.org.uk/content/dragonfly-and-damselfly-identification-help>

### Pond safety

- <http://www.rosipa.com/leisuresafety/Info/WaterSafety/pond-dipping.pdf>

### Pond management

- Lots of great information on pond creation and management [www.pondconservation.org.uk](http://www.pondconservation.org.uk)
- RSPB guide to creating and managing ponds for wildlife <http://www.rspb.org.uk/advice/gardening/pondsforwildlife/index.aspx>
- Information on non-native plants in ponds [http://www.plantlife.org.uk/uploads/documents/Problem\\_plants.pdf](http://www.plantlife.org.uk/uploads/documents/Problem_plants.pdf)
- More information on non-natives and advice on what species to plant in your pond <https://secure.fera.defra.gov.uk/nonnativespecies/beplantwise/pondowner/index.cfm>