



Pond habitat survey method booklet

Freshwater Habitats Trust



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This report should be cited as:

Freshwater Habitats Trust. 2015. Pond Habitat Survey Method Booklet. Freshwater Habitats Trust, Oxford.

Acknowledgements

We would like to thank the following people and organisations for their contribution to developing PondNet: Natural England, British Dragonfly Society, Botanical Society of the British Isles, Amphibian and Reptile Conservation and the Centre for Ecology and Hydrology.

1 Introduction

This booklet provides information about how to fill in the PondNet pond habitat survey sheet. You can find more details about PondNet and download the survey form at: www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats

Why survey pond habitats?

Ponds are exceptionally important for freshwater biodiversity, but many species are under threat. Species are rarely recorded systematically and the ponds themselves are poorly monitored. PondNet aims to change this, by providing key information that can be used to better understand and protect pond wildlife communities in general, but also including many rare species.

The *biological* information collected for PondNet will tell us if pond plant and animal species are declining or increasing in number across England and Wales. However it won't tell us *why* things are changing! The *physical* information collected by the **Pond Habitat Survey** sheet is essential to explain both the reasons for change, and importantly, to identify which actions will be most effective to protect species and stem any declines that we see occurring.

The **Pond Habitat Survey** sheet has been designed to include only relevant information on habitat condition. Each of the measures is there for a reason, either because it is known to be linked to pond type or degradation or it provides information to fill major gaps in understanding, such as the effects of pond management.

Two of the specific uses for the information are highlighted as shaded boxes on the information sheet. This to ensure that recorders who are particularly interested in calculating these indices do record them all! (i) PSYM (Predictive System for Multimetrics)¹ is used for assessing pond quality and the measures needed for this calculation are shown in boxes coloured grey, (ii) variables in hatched boxes are those needed to calculate the Habitat Suitability Index (HSI)² to assess how important the pond is likely to be for great crested newts.

We hope you enjoy collecting information from your survey ponds. **If you have difficulty recording some variables don't worry** – i) look at this relevant section in this manual to find out how to record each variable; ii) look at the “Frequently Asked Questions” section of the website. It may have the answer you are looking for; iii) contact the central office or your regional officer, we're here to help; or, iv) just complete what you can: whatever you do record will be valuable!

Once you've gathered the data, **please enter the results of your survey** – even if you have some blanks - through the WaterNet hub at: www.freshwaterhabitats.org.uk/projects/waternet alternatively post or email your recording form back to us.

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¹ Predictive System for Multimetrics

² Habitat Suitability Index

2. Measurements

2.1 Grid reference

Surveyors, who are monitoring a known PondNet square, will already have an 8-figure grid reference for each pond in their **Site Information Pack** (see the 'Pond level information' sheet for each pond).

If your pond is self-selected, a pond's grid reference can be identified from a range of sources:

- By hand, using an Ordnance Survey map. If you are rusty, there are online guides to finding a grid reference 'along the corridor and up the stairs'.
- On site, using a hand GPS, or a mobile phone app.
- On-line, using a website such as UK Grid Reference Finder at www.gridreferencefinder.com (right click the map).

In addition, we are developing a site map tool for WaterNet (the online data entry hub for the PondNet database). In WaterNet, the site grid reference will be calculated automatically, once you locate the pond on the site map.

Note that in PondNet, we use a standard letter and number grid reference format (e.g. **the eight figure grid reference: SP 1234 5678**).

Please record a grid reference that allows us to re-find the pond(s) within your square; usually the approximate centre (the middle) of your chosen pond. Identifying the pond by this middle marker can help to pinpoint the location of the pond and reduces the chance of confusion with adjacent ponds.

On the adjacent map of Melchett Mere, Pont K represents the approximate centre of the pond. The grid reference for this marker is SJ 7498 8112.



2.2 Altitude

Altitude is measured in meters above sea level, e.g. Lincoln Cathedral is located at 75m OD (ordnance datum). Altitude can be estimated from the contours on an OS map, either online or on a paper map. If a pond lies at an altitude between two contours, simply estimate the altitude between the two contours.

Alternatively, some online sites provide an altitude estimate which is sufficient for PondNet. As above, www.gridreferencefinder.com is a quick and easy option to find the information you need. Type in your pond grid reference, or click the pond's location on the map. Scroll down the page, below the map window, and click the 'elevation chart' option. You will need to change the units from English (ft) to metric (m). Only check one pond, otherwise the programme will give you a gradient and altitude between your sites.

Alternatively, hover over your pond on the globe within the "Google Earth" program, which is free to download from www.google.co.uk/intl/en_uk/earth. Elevation (elev) is shown towards the bottom right hand corner of the page.

If the pond has been selected for you as part of PondNet, we will aim to include information on the altitude in the **Site Information Pack**.

2.3 Pond Name

This box provides a quick way for you to identify your pond; particularly helpful if you are surveying a number of sites. If the pond has been selected for you through PondNet, the pond name will be included in your **Site Information Pack**. If not, you can add a pre-existing name (e.g. a locally used name or the name given on an OS map), or create your own pond name. Try to make this name memorable, avoid only using a number e.g. Pond 1, Pond 2 etc. as there could be hundreds of these in the database. If you do want to use a number, combine it with the name of the site, e.g. Pond 1 Black Park, Pond 2 Black Park, etc.

2.4 Is this a new pond *and* what year was the pond created?

We want to know if the pond is less than 10 years old (a newly created pond) and any information on when the pond was created (the age of new and old ponds). New ponds can often be identified from field evidence, for example: disturbed or bare pond banks, piles of excavated spoil, and the absence of accumulated sediment at the bottom of the pond. Very new ponds will not be marked on OS maps, but beware - long established ponds are also often not marked on OS maps! Landowners are usually the best source of information about pond age. It can be an exact year of pond creation (if known), or an approximate date e.g. the 1920s.

2.5 Pond area and the winter water line

Pond area refers to the area of the pond when it's **full**, i.e. it is the pond's area when water levels are at their highest (excluding flooding events). Normally this will be in late winter or early spring, so if you visit a pond in summer, the water level you see will usually be lower than this maximum.

Finding the winter water line is critical, but can sometimes be a slightly tricky estimate. But, don't worry, because you can use environmental clues to work it out. This is an important step in pond monitoring, because many other measurements depend on it, including the percentages of the pond that is shaded and the surrounding land use. For botanists, the winter water line also marks the standard area within which plant surveys are undertaken.



Clues to finding the maximum water level (the winter water line)

Change in vegetation is usually the most reliable way to determine the winter water line; marked by a distinct change from wetland plants to dry-ground species. Often the line itself is marked by a fringe of soft or hard rush (*Juncus spp.*). This change is *sometimes* also accompanied by a **break in slope**, caused by winter wave wash.

In shaded ponds with few plants, the upper water level can often be judged from **discolouration marks on rocks or trees** – particularly willows or alder that grow in the pond itself. Bundles of **fine roots growing out from willow and alder trunks** are another clue, because these usually only develop below the winter water level.

Note that ponds with **outflows** usually have less variation in water level than other ponds, because the outflow controls the maximum water level. Discolouration marks on an outflow pipe or the stones at the edge of an outflow stream can be good places to find the upper water line. Interestingly the upper water level is usually not the bottom of the pipe but some way up it, because water typically backs-up in the pond in winter.



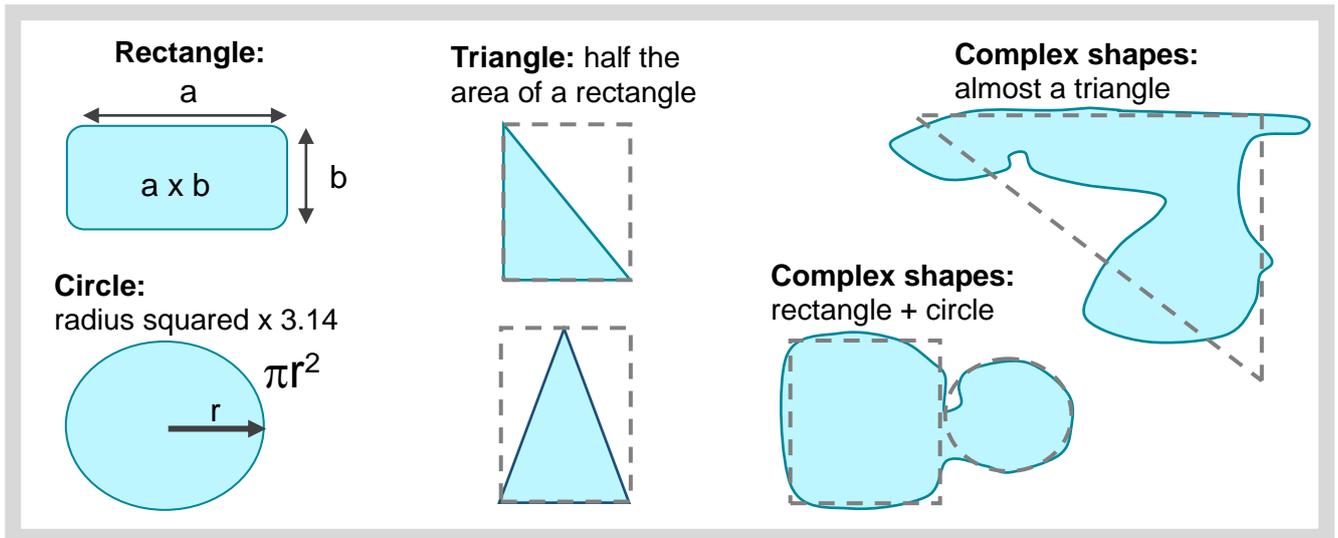
Winter water line shown on a rock face (top left), by the growth line of aquatic mosses on a dry stone wall (above) and in the distinct change from wetland plant to dry ground species (bottom left).

Pond area

Pond area refers to the surface area of the whole pond, including wet and dry areas, i.e. the maximum winter water line (see Section 2.5 above).

The dimensions of small ponds can be measured using a tape, or by pacing. A quick outline sketch (see box below) often helps. With large ponds it can be easier to measure the dimensions from an OS map, or online; for example using the 'measure and drawing tool' at www.gridreferencefinder.com.

There are several ways of calculating area, for example by measuring the dimensions of regularly shaped ponds (see below). Irregularly shaped ponds can be treated as a series of geometric shapes, calculating the area for each and adding them together. But keep it simple! If a pond is an odd shape, look for the shape it *almost* is, and then find this shape's area.



2.6 Pond dries?

Ponds that dry-out occasionally are good habitats for many species, including Great Crested Newts, because drying is a natural way of removing predatory fish. Temporary ponds that dry every year can be particularly important because they support specialist, and sometimes very rare plants and animals.

Landowners, or a local resident, are usually the best sources of information about how often the pond dries out. If this is not possible, make a judgement based on both the water level at the time of the survey, and the characteristics of the pond base. For example, a pond that is already very shallow or nearly dry by late spring is likely to dry out every year. Ponds which dry up every year also have a solid base across the whole pond, because bottom sediments harden when they are exposed to air.



Top: A pond, in the foreground, with no visible water that might easily be overlooked. The hard pond base that is covered by wetland plants shows this pond dries every year. The outer margin of the pond is defined by the break in slope (the pony stands on the edge of the pond margin).

Bottom: This pond dries out every year, and by late spring has just a few centimetres of water left. Grazing animals have access across the whole pond basin, leaving muddy and uneven ground. This light 'poaching' by horse and cattle is essential for the rare species that call this pond home.

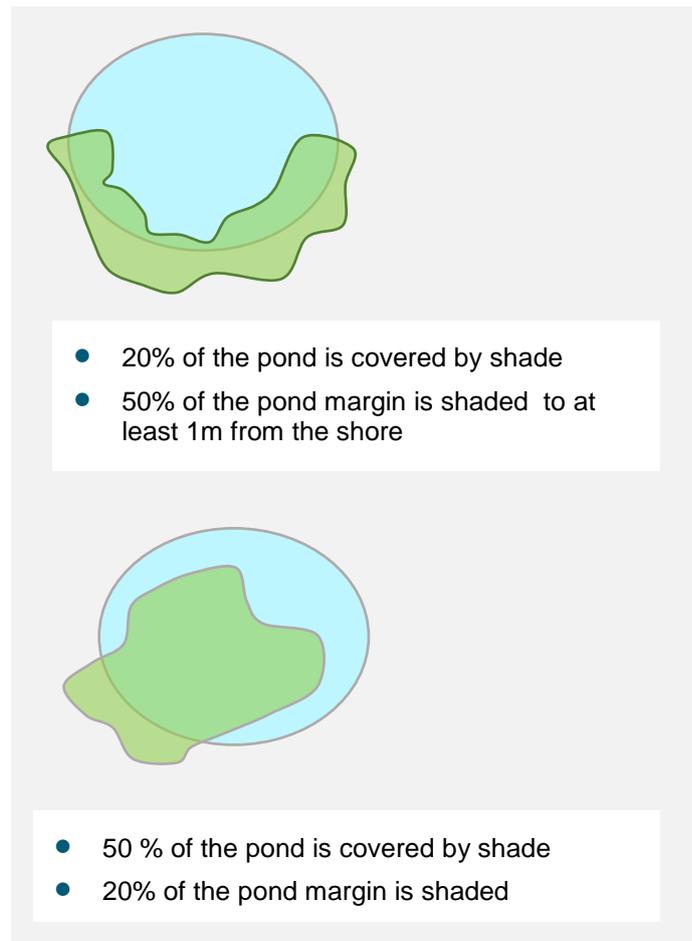


2.7 Overhanging trees and shrubs

The survey includes two estimates of how much of the pond is overhung by tree shade. Both measurements refer to the whole pond area (not the current water area, see Section 2.5 above), and are estimates of how much of the pond is *directly* overhung by trees and shrubs, i.e. the area that would be shaded if the sun was directly overhead. The estimate can include tall shrubs and brambles, but does *not* include shading from emergent pond plants, like Bulrush.

The first estimate is the percentage of the pond surface area which is shaded – in the examples (right) the top pond is shaded by approximately 20% and the bottom pond by 50%.

The second estimate is the percentage of the pond margin shaded to at least 1m from the shore – the top pond is shaded by approximately 50% and the bottom pond by only 20%.



2.8 Fish presence

It is sometimes possible to see fish in ponds, especially if, like goldfish, they are brightly coloured. More usually, the best way to find out whether fish are present is by **asking land owners or local residents**.

If this is not possible, other clues are useful:

Signs that fish may be present:

- Fishing platforms around the pond, or discarded tackle, etc.
- Ripples from fish are seen rising to the surface.
- Very cloudy, brown-grey water: this is often a sign of bottom feeding fish such as carp, which disturb the sediment, however it is not infallible: ducks and in public places dogs, or other factors, can create cloudy water too.

Signs that fish are probably absent:

- Pond dries out regularly (e.g. in most years).
- Pond is *heavily* overhung by trees: most fish cannot tolerate the low oxygen levels in ponds that have a lot of decaying tree leaves in the water.

When filling in the survey sheet:

‘Major’: Fish presence refers to dense populations of any fish: usually this will be a fishing pond, or a pond where fish are stocked. Often the water will be very turbid (cloudy).

‘Minor’: Includes ponds where a small numbers of fish such as crucian carp, goldfish or stickleback are known to be present.

‘Possible’: Includes ponds where no evidence of fish are found, but local conditions suggest that fish might be present (see bullet points above).

‘Absent’: No evidence of fish, and their presence is unlikely (see bullet points above).

If you remain very unsure about whether the pond has fish or not, leave this box blank.

2.9 Waterfowl impact

'Waterfowl' includes both ducks and geese. In many cases their presence will be self-evident, either because you will see them on the pond, or they fly off as you arrive. Other evidence that waterfowl are present includes:

- Nests present.
- Geese faeces on the bank or in the water.
- Flat-trampled muddy edges, often with feathers in the water.
- Vegetation in the pond grazed short (but not attributable to livestock).
- Piles of corn put down as food near the water's edge.

When filling in the survey sheet:

'**Major**' impact: High densities, as created when waterfowl are encouraged to use a pond by the provision of food. The birds usually remove almost all submerged and marginal vegetation, pollute water and persistently stir sediments so that the water is cloudy.

'**Minor**' impact: Waterfowl are present, but at low densities e.g. a single pair of mallard on a smallish pond. There should be little indication of any impact on pond vegetation. Larger deep ponds will still support submerged plants.

'**None**': No waterfowl (except moorhens) are present.

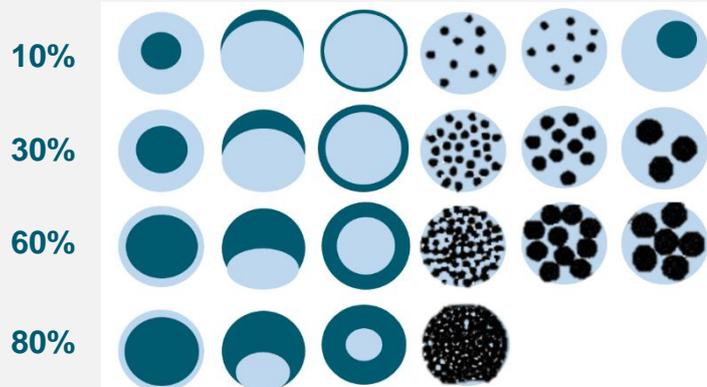
2.10 Aquatic vegetation

The two measures of aquatic vegetation covered in this section differ in a number of ways.

1. **Percentage of the whole pond (wet and dry) occupied by emergent vegetation:** This measure should be made across the whole pond as defined by the winter water level (see Section 2.5). Within this area, the cover of emergent plant species is assessed. This includes low-growing grasses, rushes and broad-leaved herbaceous plants (like fool's-watercress and water mint), as well as tall plants like bulrush, reed, sedges, and wetland willow-herbs. A full list of species that qualify as 'emergent' is given in the wetland plant survey section of PondNet. However, for non-botanists, as a rule of thumb, it is sufficient to estimate the **percentage of all of the plants growing in the area of the pond that is currently dry, plus those that have at least some stems and leaves emerging out of the water.**
2. **Percentage of pond's surface area covered by all vegetation:** This measure only refers to the area of the pond that is **currently wet**, and includes **all plants** that are visible at or above the surface with the exception of duckweed. The reason this measure is restricted to the wet areas of the pond, is because it is used in the assessment of the pond's suitability for newts making use of the pond during the breeding season.

Estimating the percentage cover of plants. This estimate needs some thought, especially if plant stands are scattered around the pond, growing at different densities.

A trick that can help is to **imagine if all the plants were pushed up into one end of the pond: how much of the pond would they then occupy?**

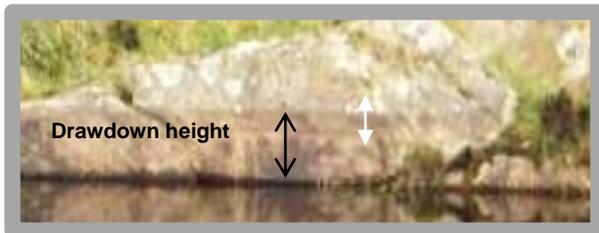


2.11 Water left in the pond

In summer, ponds usually lose water, leaving a dry 'drawdown zone' as the water recedes. The two measures in this section aim to capture how extensive the drawdown zone is.

Percentage of water in the pond, relative to maximum pond area: This is an estimate of how much water area remains in the pond compared to when the pond is at its fullest (Section 2.5). It's easy to over-estimate: the percentage chart (on the previous page) is a useful guide.

Drawdown height: This is the height difference between the current and maximum pond water levels. It is easiest to measure on a vertical surface such as a tree trunk or wall, or choose a steep bank.



2.12 Grazing

Grazing by livestock includes grazing by any domesticated animals (sheep, cows, horses, etc), that have access to the pond. But it *excludes* wild deer, rabbits or grazing by ducks and geese.

If grazing animals are not currently visible, use indirect evidence such as: grazed grassland vegetation at the pond edge, signs of hoof poaching and trampling in pond mud, or the presence of animal dung in the pond or surrounds.

Recording how much access the animals have to the pond is described in two ways. The first considers how much of the whole pond animals could potentially graze. In shallow ponds, especially those which dry out, the animals may be able to access 100% of the pond. Animals will often wade into shallow water to stay cool and will continue to graze as they do so.

The second measure describes how much of the margin of the pond the animals can access. The pond edge will be restricted if there is fencing or dense areas of willow or bramble. But remember, that animals will wade around the inside edge of ponds with shallow water to access otherwise inaccessible margins.

The intensity of grazing is ranked from **1** ('infrequent') to **5** ('heavily poached'). Grazing levels ranked **1** will often be ponds which can be accessed by animals, but the surrounding grassland or other vegetation is tall and shows little signs of grazing. A pond scoring **3** would often have moderately short grazed surrounds, and evidence of hoof poaching at the pond edge, but there would be relatively few bare patches of ground caused by stock. A pond scoring **5** would have margins that had been so heavily poached and grazed that they are almost bare of vegetation. If the pond is fenced off so that only *parts* of the pond banks are accessible to animals, please average out the grazing intensity across/over the whole pond.

2.13 Pond management

Pond management refers to work which has been undertaken in the last 12 months. This will become easier to determine on repeat visits, but on the first visit, look carefully for telling signs of management. Extra information can often come from the landowner and nearby residents. Many of the categories are self-explanatory, but additional information on the remainder is given below:

Dredged: Often dredged material will be piled next to or near to the pond. This is sometimes accompanied by signs on the ground, such as tire tracks and broken vegetation. To identify how much of the pond has been dredged: (i) look around the pond to see areas which now have little or no accumulated sediment on the pond bottom and (ii) look at the edges of the pond to see which have been disturbed by the action of dredging.

Vegetation removed: Look for piles of vegetation near to the pond and, if ponds have been partly cleared, gaps in the remaining vegetation.

Trees clear-felled, cut back or coppiced: Evidence of freshly bare stumps or piled brushings (branches and twigs), and signs of vehicle activity which removed trunks (e.g. tire tracks).

Plants introduced: If plants are decorative (e.g. a lily with a pink flower), non-native e.g. gunnera or parrot's feather, or a variegated variety of a native species.

Structural work: Any new structural features to the pond including platforms, walk ways, bank reinforcement, etc.

Straw added: Barley straw can be added to ponds, sometimes in mesh bags or as a hay bale, in an attempt to decrease the amount of algae.

2.14 Turbidity / water clarity

To estimate water clarity, look down into water at the edge of the pond where the water is around 20cm deep. Choose an area that hasn't been recently disturbed to maximise the chance that you would see the pond base under 'normal' conditions. Assign water clarity to one of the following four categories:

'Clear': the pond base should be completely visible and clear, as if looking through glass.

'Moderately clear': the pond base can be easily seen, but the water is not crystal clear.

'Moderately turbid': the pond base is visible, but the water is cloudy so that the details are not clear.

'Turbid': the pond base isn't visible.

2.15 Inflows and outflows

Inflows: Can include inflow streams, ditches, springs or wet seepage that drains into the pond. It can also include large drainage pipes. Tick this box even if ditches or streams happen to be **dry** at the time of your survey.

Outflows: Outflows include distinct channels or pipes where the water drains out of the pond; usually into a drainage ditch or stream. Outflows which are **dry** at the time of your survey should still be recorded.

2.16 Water chemistry

Not everyone has water chemistry test kits, so this section is optional.

If a PSYM pond quality survey is going to be carried out on the pond, the most important variable is pH. This is because pH is used in the PSYM computer programme to help predict the ponds natural wildlife community. If this is a focal pond for PondNet, we will arrange to loan you a pH and conductivity meter.

If the Freshwater Habitats Trust's PondNet team have provided you with nitrate and phosphate kits, please follow the Water Chemistry Instructions provided with the kit. Alternatively you can use another sampling kit, but please record the **kit type** on the recording form. This means we'll know the *form* of nutrients recorded (which differs between kits) and so can undertake any additional calculations needed to make these data comparable.

2.17 Pond base

Pond base refers to the **geology** that underlies the pond (i.e. beneath any accumulated sediment). The pond base can often be assessed directly in the field, or if necessary using a geological map. This can be a difficult parameter to determine, and unless you are undertaking a PSYM survey (where this information is essential), you may wish to leave this section blank.

Field signs for determining the pond base include: bare clay or sand and gravel on the pond bottom and edge (though *avoid* the area around any inflows), areas of bare ground near the pond, or rocky outcrops near-by.

If you are using a geology map, it is important to use a version that shows 'superficial' deposits (e.g. alluvium, peat), and not a 'solid' map which only includes the rocks beneath this. It also helps to have some geological knowledge to infer the rock type because this is not always self-evident. More modern maps often have notes which can help. As a general principle, superficial deposits and relatively young rocks which easily weather, e.g. Mesozoic sandstones, are recorded in the 'clay' or 'sand', 'gravel', 'cobbles' categories. These predominate in the south and east of Britain. Hard rocks include igneous, metamorphic rocks and limestone.

When recording pond base, **all the boxes should have a score**: don't forget to put a 1 in boxes even where **none** of that rock type present, i.e. it falls into the 0-32% category. Thus:

A pond underlain by clay is recorded as: **3** silt/ clay; **1** sand/ gravel/ cobbles; **1** hard rock; **1** peat; **1** other.

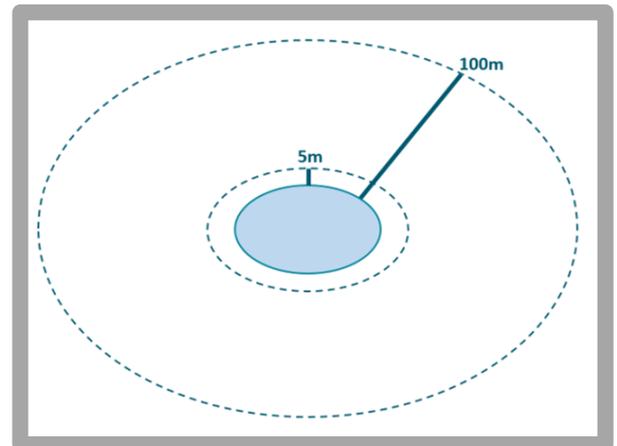
A pond with sandy-clay geology may be: **2** silt/ clay; **2** sand/ gravel/ cobbles; **1** hard rock; **1** peat; **1** other.

2.18 Surrounding land use

The percentage of different land use is recorded in two distance zones from the edge of the pond. In both cases 'edge of the pond' refers to the winter water line (see Section 2.5). Hence the **0-5 meters** zone is usually a record of the **vegetation on the upper pond banks**. Note that the **0-100 m** zone also includes this bank area.

The 0-5 meter zone is easily defined by pacing (a single pace is 0.8-1m). You can also pace the 0-100m zone, especially for your first surveys, to give an idea of this distance.

Alternatively, it is much easier to use the 1km squares on an OS map (see the map in the PondNet 'Site Information Survey Pack') to estimate the distance: 100m is 1/10th of 1km. For most people, a combination of map (or aerial photo) and field evidence works best to calculate both distance and land-use percentage.



Definitions of different habitat types within land use

Trees, woodland and scrub: This includes both deciduous and coniferous woodland, individual trees, scrub and hedgerows.

Heath and moorland: Includes lowland and upland heathland, moorland and mountain vegetation; includes bracken.

Grassland categories: These are some of the trickiest categories, because they merge into one another;

Rank vegetation: is the tall unmanaged grass and herbaceous plants you often get at the edge of ungrazed ponds. It also includes neglected and abandoned land, set-aside, road verges and buffer strips.

Unimproved grassland: The sort of grasslands on nature reserves or national parks or other unenclosed lands. The grass is mixed with a wide variety of broadleaved plants (good quality plant indicators are usually present). There will be a low percentage of agricultural grasses such as rye grass. Not fertilised, little or no drainage. It can include both calcareous and acid grassland.

Semi-improved grassland: A transition category. Grasslands that have been modified by fertilisers, drainage, herbicides or intensive grazing, but retain elements of natural grassland types in the area. This grassland will have a restricted range of common broad-leaved plants e.g. only buttercup, plantain, dandelion etc. and often agricultural grasses such as rye-grass.

Improved grassland: Fertile agricultural grass, often bright green and lush with very few broadleaved plants, this includes many park grasslands and golfing greens – though 'roughs' are often semi-improved and sometimes even unimproved.

Arable: Includes all crop land (wheat, oilseed rape, beans etc. It includes commercially grown flowers and fruit crops (e.g. strawberries and orchards) as well as bare land that is ploughed.

Urban buildings and gardens: Areas in curtilage (associated with buildings), including not only domestic and industrial areas but glass-houses and farm yards.

Roads, tracks & paths: Both paved and unpaved route-ways, including footpaths and also car-parks.

Rock, stone and gravel: Areas of bare ground including cliffs, rock-outcrops, gravel-pits, quarries, areas of sand and gravel or stone.

Bog, fen, marsh and flush: Areas of wet ground and wetland vegetation.

Ponds and lakes: Both permanent and seasonal waterbodies including trackway pools.

Streams and ditches: Any linear waterway (wet or dry), including rivers, stream, ditch, spring and canal.

2.19 Is the pond in a protected area?

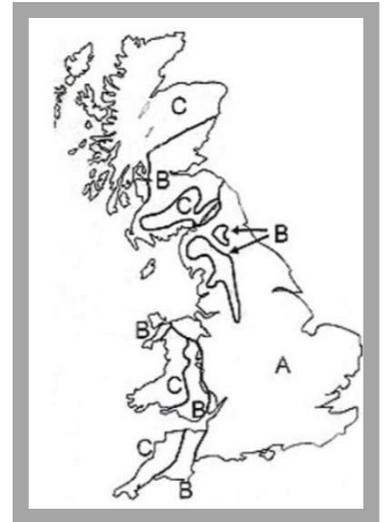
This includes areas protected for the benefit of nature conservation such as Sites of Special Scientific Interest (SSSI), local or national nature reserves. Often signage at the site, or OS maps, will indicate the site's status. You can also check the government's MAGIC website, which gives the status of all designated land: www.magic.gov.uk.

2.20 Great Crested Newt indicators

The survey sheet includes five measures which help to assess how suitable the pond is for amphibians, specifically Great Crested Newts. The measures are used to help calculate the Habitat Suitability Index (HSI).

Location score for Great Crested Newts

Use the map provided (right) to indicate in which of the three geographic zones (A,B,C) the pond lies, to estimate whether Great Crested Newts are likely to be present in the area.



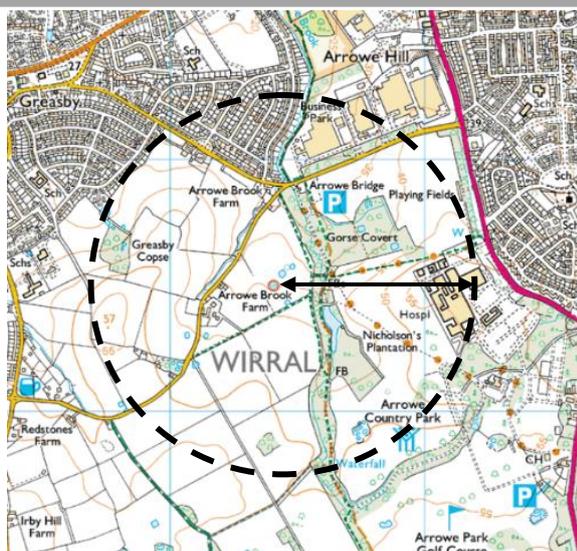
Number of ponds

This is an estimate of the number of ponds that are present in a **circle with a 1km radius, centred on your survey pond**. Note that this is not the number of ponds in *your* 1km grid square. The number of ponds in this surrounding area is important for amphibian dispersal and healthy populations, however if there are **more than 12 ponds** this makes no difference to the HSI score – hence box below, which is useful in areas such as Cheshire where there can be more than 100 ponds within a 1km radius.

The best way of estimating pond numbers is using a good OS map e.g. 1:25,000 scale (e.g. OS Explorer maps), or GIS or web-based mapping sources such as:

- Footpath maps: www.footpathmaps.com
- Magic: www.magic.gov.uk/site_map.html

When counting all the ponds in a 1km radius of this survey pond, do not count the survey pond itself in the total number. Ponds on the far side of major barriers to amphibian/newt dispersal should also not be counted. This includes main roads (pink road on an OS map) and wide rivers (a river with two outer, darker lines, filled in with lighter blue on an OS map).



The dashed circle has a radius of 1km from the centre of the survey pond.

All *ponds accessible to amphibians* should be counted within this area (excluding the survey pond itself).

In this case a major road runs to the NE of the pond – so the area beyond this is excluded.

There are more than 12 ponds in the remaining area, so you would just need to check the lower box on your survey sheet – “If there are more than 12 ponds present in the 1km radius, you can just tick this box”.

Habitat quality for amphibians

This assessment considers the suitability of the terrestrial areas within approximately 250m from the pond for amphibians. As with the question above, it only includes habitats that are accessible to amphibians, so omits land on the far side of major barriers such as major roads.

'Good' terrestrial habitat will offer cover and foraging opportunities for amphibians, and so includes meadow, rough grassland, scrub, woodland or mature gardens. Generally, structures are helpful, such as hedges, ditches, stone walls, old farm buildings, piles of loose stone or rock, rabbit burrows and small mammal holes. All these contribute towards **'good'** terrestrial habitat.

For this survey, an area of 'good' habitat will *surround the pond* and cover more than 75% of the surrounding area (within 250m from the pond) e.g. most semi-natural environments, such as rough grassland, scrub or woodland, also brownfield sites and low intensity farmland.

'Moderate' habitat offers opportunities for amphibians to forage and gain shelter, including hedges and ditches, but may not be extensive, e.g. 25% to 75% of the surrounding area.

'Poor' habitat quality is an area with few structures present, or poor quality structures, so opportunities for foraging and sheltering are limited (less than 25% of the surrounding area), e.g. amenity grassland, improved pasture and arable.

'None' - no suitable habitat within immediate pond locale, e.g. a very controlled, standardised environment, such as the centre of a large field or an expanse of bare habitat. Be aware that it is rare to encounter a pond falling within this terrestrial habitat category.

Water quality for amphibians

If you are doing a pond dip already (for example if you are surveying the pond for invertebrates) then the quality of the invertebrate community can help make this estimate. If not, then it's best to rely on the presence of water plants. Note that water colour is **not** always a good measure of pollution. Sometimes clear water can be polluted, and cloudy ponds can be clean (and thus support a wealth of invertebrates). It is also useful to look at the surrounding landuse and think about the presence of polluted runoff from fields or urban areas which may be running into the pond.

'Bad': The water is clearly polluted. There may be obvious pollutant sources e.g. an adjacent manure pile. The pond will have no submerged plants and often few marginal plants. Only pollution-tolerant invertebrates will be present (such as rat-tailed maggots). Usually the surrounding land-use will be unnatural e.g. urban or arable.

'Poor': The water will have few if any stands of pollution-tolerant submerged plant species (Canadian pondweed type plants may be present), and a low level of invertebrate diversity. There may be evidence of pollution from streams, ditches or runoff from roads and urban areas.

'Moderate': Submerged plants will usually be present (unless the pond dries out regularly or is very shaded). The pond may be buffered from intensive land use areas e.g. arable crops. A moderate invertebrate diversity will be present in these locations.

'Good': Open water areas will usually have an abundant and diverse submerged plant community, and a wide range of invertebrates. Though note this may not be the case for seasonal ponds or ponds that are very shaded. Most ponds in this category will have semi-natural surrounds e.g. grassland, heathland and woodland.

2.21 How much of the pond perimeter could be surveyed?

Note any areas of the pond that could not be assessed safely (e.g. impenetrable scrub and steep banks).

2.22 Comments box

Use this box for any comments you have including: changes of ownership or access to the pond; any wildlife sightings, e.g. evidence of water voles; or comments on the survey sheet itself and how it could be improved.

2.23 Enter your data

Once you've gathered your environmental data, please enter the results, however complete or incomplete. Give the completed form to your regional officer, post them to the office, or better still enter them into the WaterNet hub at:

www.freshwaterhabitats.org.uk/projects/people-ponds-water/



A selection of different ponds from around England and Wales illustrating the great variety of pond habitats that may be encountered.

The pond habitat survey is one of the most important elements of a pond survey, helping to understand and interpret biological survey data and track any changes in pond condition over time.