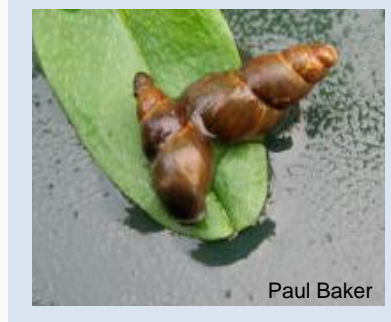


METHOD

Aims: To find out if Pond Mud Snails are i) present in the focal pond, ii) get an approximate idea of numbers in the focal pond, iii) collect physical data about the focal pond that can be used to assess the reasons for any change recorded on future visits, and iv) look in any adjacent ponds to see if Pond Mud Snails are present or absent.

- **Survey the Focal Pond.** This pond will have previous Pond Mud Snail records, although they may not have been recorded since the 1980s. Estimate the number (if present) and fill out the environmental sheet.
- **Check other ponds and pools in the surrounds.** Visit as many nearby ponds or pools as you can within your time availability to see if Pond Mud Snails are present or absent. You don't need to record numbers, or environmental data at these ponds



Equipment: You need (a) a deep tray or a bucket, and (b) a net - a robust plastic kitchen sieve is OK (clip off the bowl supports), or a standard biologist's long-handled net with a 0.5mm mesh, (hardier and useful for slightly deeper areas). It's also helpful to take a camera (e.g. mobile phone camera) for confirmatory photos of Pond Mud Snail or your survey ponds and to take a photograph of your sketch maps if you don't have access to a scanner – alternatively you can give your survey forms to your regional officer.

When and where to look: You can search for Pond Mud Snail at almost any time of year. Early autumn can be particularly productive, when temporary ponds refill with water. Pond Mud Snails are typically found in shallow water near to the pond edge. They usually live amongst submerged plants close to the pond bottom, but also amongst submerged fallen tree leaves under shaded margins.

Sampling approach: Spend **1 minute** (net-in-the-water time) sampling the pond. Divide the one minute equally between the different edge and shallow water habitat types you see in the pond (e.g. grassy pond margins, rushes, shaded areas). Thus for 3 habitats you'd sample each for 20 seconds. It's best to further divide the time up into approximately 5 second bursts of netting collected in different places within each habitat.

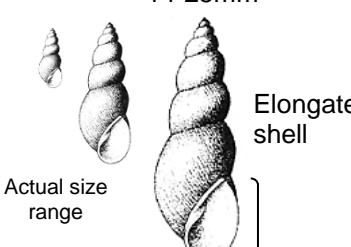



Sampling method:

1. Fill your tray or bucket with water and place at the pond edge. Do this before you disturb the water and make it muddy.
2. Collect a c.5 second net sample. Ensure that you sweep down to the pond bottom where the snails often sit, but not into the sediment which will make the sample muddy.
3. Empty the contents of your net into the tray/bucket of water. Swirl it around a little to help any snails (which are heavy) settle to the bottom. Agitate any vegetation using your hand, to loosen any snails clinging there.
4. Gradually pour the water back into the pond, also removing vegetation as needed. Take care near to the bottom of the tray not to pour out the snails too! If the bottom is muddy, swirl out carefully with a little more water.
5. Estimate the number of Pond Mud Snails present, and place in abundance categories (overleaf).
6. Return the snails to where they were found. Repeat from other sampling areas until the 1 minute sample is complete.

Dry ponds When ponds dry-up, Pond Mud Snails bury down into the sediment. However, you can sometimes find them by looking under logs that were formerly submerged. Estimate the abundance and record overleaf.

Checking other ponds: It will be helpful to revisit these ponds in future years. So, to ensure they can be found again by yourself or others, please (a) provide an accurate grid reference and/or mark the locations on your PondNet base map, or (b) make a sketch of the location of ponds around the focal pond and (c) take photos.

Once completed, enter your results online: www.freshwaterhabitats.org.uk/projects/waternet, or give your recording forms and maps to your regional project officer and we can enter data for you.

<p>Pond Mud Snail <i>Omphiscola glabra</i> 14-25mm</p>  <p>Actual size range</p> <p>Elongate shell</p> <p>Small aperture - one third the height of the shell</p>	<p>Marsh Snail <i>Lymnaea palustris</i> 19-24mm</p>  <p>Aperture close to half the height of the shell</p>	<p>Dwarf Pond Snail <i>Galba truncatula</i> 8-12mm</p>  <p>Aperture close to half the height of the shell</p>	<p>Moss Bladder Snail <i>Aplexa hypnorum</i> 9-15mm</p>  <p>Aperture opens on the left side of the shell</p>
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Surveyor Name(s) <i>e.g. John Smith</i>	<input style="width:95%;" type="text"/>	Date	<input style="width:95%;" type="text"/>
Square: 4 figure grid ref <i>e.g. SP1243 (see your map)</i>	<input style="width:95%;" type="text"/>	Pond: 8 figure grid ref <i>e.g. SP 1235 4325 (see your map)</i>	<input style="width:95%;" type="text"/>
Focal Pond name (if known)	<input style="width:95%;" type="text"/>		
Determiner name (<i>optional</i> - if someone confirms the identity of the species you've recorded)	<input style="width:95%;" type="text"/>	Voucher material (<i>optional</i> - comment if you've taken a photo to confirm identification)	<input style="width:95%;" type="text"/>

Number of Pond Mud Snail in your Focal Pond

Record the number of Pond Mud Snails found in the focal pond using the following **categories**: **1, 2-5, 6-10, 11-20, 21-50, 51-100, 101-200, 201-500, 501-1000, 1000+**. We've put a table below to help you keep track and make notes, but for the analysis we only need a total.

If you find Pond Mud Snail please take a confirmatory photo, especially if it's the first time the pond has been surveyed for PondNet. You can also take a photo of your pond or your maps (or scan them if you have a scanner) and upload them with the record.

Pond habitat type or areas where you searched (list): use this table to help with your number calculations, and so you / others can re-find Pond Mud Snails in future years	Number of snails in each habitat type
1.	<input style="width:95%;" type="text"/>
2.	<input style="width:95%;" type="text"/>
3.	<input style="width:95%;" type="text"/>
4.	<input style="width:95%;" type="text"/>
5.	<input style="width:95%;" type="text"/>
6.	<input style="width:95%;" type="text"/>
<u>Total number of Pond Mud Snails (category)</u>	<input style="width:95%;" type="text"/>

Pond Mud Snails looked for, but not found: (tick box if none found)

Note if you don't find evidence of Pond Mud Snails at the pond, this is an important result so please still enter these findings online

Species notes: Please add any views on pond condition for Pond Mud Snails, and thoughts on why it may be abundant / declining / absent.

Sketch map: Use this box to show the location of the habitats you searched within the Focal Pond.



Search other ponds and pools in the surrounds

Please search other ponds or pools in the area to see whether Pond Mud Snails were present or absent. Then complete the following summary questions about the additional pond search.
To help re-find these other pools: (a) mark their locations on your PondNet base map (in your site information pack) and indicate whether Pond Mud Snails were present or absent.

1. Were Pond Mud Snails found in any additional ponds?
 Yes No (tick)

2. How many additional ponds did you search (if no other ponds were searched put a zero in both these boxes)?

<input style="width:95%;" type="text"/>	Number of additional ponds with a <u>positive</u> record for Pond Mud Snails. Excluding the focal pond, how many other ponds had Pond Mud Snails?
<input style="width:95%;" type="text"/>	Number of additional ponds with a <u>negative</u> record for Pond Mud Snails. Excluding the focal pond, how many additional ponds did not have Pond Mud Snails?

FOCAL POND HABITAT SURVEY:

This is a really important part of the survey at your focal pond. Please complete this Pond Habitat Survey for your focal pond, whether or not you find Pond Mud Snail at the site.

Each variable provides information known to be linked to pond quality and community type, and can be used to investigate the reason for change in Pond Mud Snails, if one is detected.

Is the pond new? (less than 10 yrs old)
yes, no, unknown

Year of creation?
date, decade, unknown

Pond Altitude
(m)

Pond area

 m²

Note: This is the *surface area of the pond when the water is at its highest level* (usually in early spring). It will probably *not* be the current water level of the pond. The high water level line should be evident from wetland vegetation like rushes at the pond's outer edge. Measure by pacing (single pace = 0.8-1m) or use online maps.

Pond dries?

1 = never dries
2 = rarely dries
3 = sometimes
4 = annually

1 = Never dries,

2 = Rarely dries: no more than 2 years in any 10 year period, or only in drought,

3 = Sometimes dries: dries between three years in ten to most years,

4 = Dries annually. Deduce pond permanence from local knowledge (e.g. landowner) and personal judgement e.g. water level at the time of the survey. Ponds that dry out annually usually have a hard base.

Overhanging trees & shrubs

% of pond overhung by trees and shrubs

% pond margin overhung to at least 1m out from the pond margin

This is an estimate of how much of the pond is *directly* overhung by trees and shrubs, i.e. that would be shaded if the sun was overhead (use the diagram (below) as a guide).

Waterfowl impact

1 = major
2 = minor
3 = none

Major = severe impact of waterfowl e.g. few or no submerged plants, water turbid, pond banks have patches where vegetation removed, feed put down; **Minor** = waterfowl present, but little impact on pond vegetation, pond still supports submerged plants and banks are not denuded of vegetation; **None** = no evidence of waterfowl impact (moorhens may be present).

Fish presence

1 = major
2 = minor
3 = possible
4 = absent

Major = dense populations of fish known to be present; **Minor** = small numbers of Crucian Carp, goldfish or stickleback known to be present; **Possible** = no evidence of fish, but local conditions suggest that they may be present; **Absent** = no records of fish stocking and no fish revealed during survey.

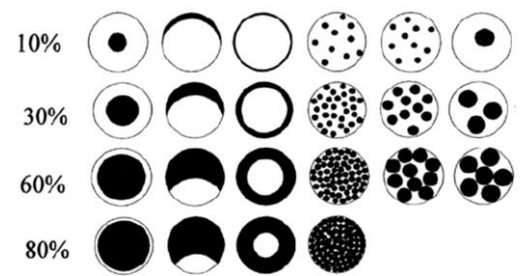
Aquatic vegetation:

includes emergent, floating and submerged plants

% of the whole pond (wet and dry) occupied by emergent vegetation – incl. plants like grasses, water mint and rushes, but not floating (e.g. duckweeds) or submerged (e.g. water-crowfoot) species - to see a list of emergent species look at the survey guide

www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats

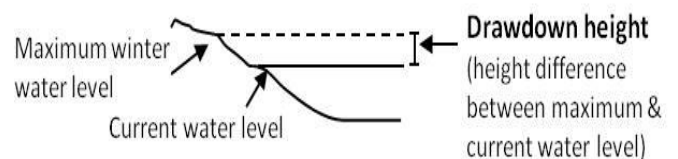
% of pond water surface area covered by all vegetation (emergent, floating (excl. duckweed) and submerged).



Water left in the pond

% of water area in pond relative to maximum water level – This can be 0% if the pond has dried out.

Drawdown (height drop from maximum winter water level to current level).



Grazing

Tick if there is evidence the pond is grazed by livestock. If **yes** complete the following boxes:

% of whole pond grazed (note: stock can wade into shallow ponds to graze).

% of pond perimeter grazed (note: stock can wade into shallow ponds to graze otherwise inaccessible edges).

Grazing intensity: rank 1-5 (1=infrequent or low intensity to 5 = margins heavily poached and almost bare).

Pond management (tick):

Use the tick boxes to list management within the last 12 months. Use 'other' box for any extra info.

<input type="checkbox"/> Fully dredged	<input type="checkbox"/> Partly dredged	<input type="checkbox"/> >5% vegetation removed	<input type="checkbox"/> <5% vegetation removed
<input type="checkbox"/> Trees planted	<input type="checkbox"/> Trees clear-felled	<input type="checkbox"/> Trees cut back / coppiced	<input type="checkbox"/> Pond changed shape / size
<input type="checkbox"/> Plants introduced	<input type="checkbox"/> Bank plants mown	<input type="checkbox"/> Structural work e.g. to dam	<input type="checkbox"/> Straw added

Add other or more detail

Water chemistry: Complete this section if suitable kits and meters are available (or leave blank):

 pH

 Conductivity ($\mu\text{S cm}^{-1}$)

Nitrate (NO_3^- -N ppm): PPW kits provided by FHT
 (tick one from the following range categories)

Phosphate (PO_4^{3-} -P ppm): PPW kits provided by FHT
 (tick one from the following range categories)

<0.2	0.2-0.5	0.5-1	1-2	2-5	5-10	10 +
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<0.02	0.02-0.05	0.05-0.1	0.1-0.2	0.2-0.5	0.5-1	1 +
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Turbidity / water clarity: Estimate turbidity looking down into c.20cm depth of water in the pond.

 1 = clear; 2 = moderately clear; 3 = moderately turbid; 4 = turbid

Inflows and outflows: (tick if inflow or outflow present or leave blank)

 Inflow present Outflow present

Pond base:

 This refers to the *geology* (i.e. rock-type) that immediately underlies the pond. You may know, or be able to see the underlying geology in the base or banks of the pond, especially in new ponds. If not, check a geology map or leave this section blank.

 Choose one of the following to categorise the % composition of **each** of pond base: 1= 0-32%, 2= 33-66%, 3= 67-100%

 Silt/ clay Sand, gravel, cobbles Hard rock Peat Other (please specify)

Surrounding land use:

 Estimate the percentage of surrounding land-use in distance zones from the pond perimeter (i.e. the maximum winter water level) used to assess pond area. In many ponds the 0-5m zone will include surrounding trees/scrub.

Habitat	0-5m	0-100m	Examples
Trees, woodland & scrub	%	%	Deciduous and coniferous woodland, individual trees, scrub and hedgerows.
Heath & moorland			Lowland and upland heathland, moorland and mountain; includes bracken.
Rank vegetation			Unmanaged grass, neglected and abandoned land, set-aside, verges and buffer strips.
Unimproved grassland			Herb-rich, calcareous and acid grassland (good quality plant indicators usually present). Low percentage of agricultural grasses. Not fertilised, little or no drainage.
Semi-improved grassland			A transition category. Grasslands modified by fertilisers, drainage, herbicides or intensive grazing, but retaining elements of natural grassland types in the area.
Improved grassland			Fertile agricultural grass, often bright green and lush; including parks and golf greens.
Arable			All crops. Includes flower and fruit crops (e.g. strawberries) and ploughed land.
Urban buildings & gardens			Areas in curtilage (associated with buildings); including glass-houses and farm yards.
Roads, tracks & paths			Including car-parks and footpaths.
Rock, stone & gravel			Cliffs, rock-outcrops, gravel-pits, quarries, areas of sand and gravel or stone.
Bog, fen, marsh & flush			Wetland vegetation and blanket bog.
Ponds & lakes			Permanent and seasonal waterbodies; including trackway pools.
Streams & ditches			Rivers, streams, ditches, springs and canals.
Other (state)			E.g. maritime vegetation, saltmarsh, sand-dune, orchards and railways.

 Is the pond in a protected area? (e.g. nature reserve, SSSI, etc.)

(choose one option - yes, no, unknown)

How much of pond perimeter could be surveyed? Note areas of pond not accessible.

Comments box: e.g. new ownership, changes since previous visit, any other information.