

Please complete a separate sheet for **each pond** surveyed, on **each visit** you make :

Aim: To record **adult dragonflies** at each pond in the network.

Here's how: Visit your pond **once** in warm weather between **May and Sept** i.e. during the flight season. Data from more visits is appreciated, ideally once a month throughout the season, but this will depend on how much time you can spare.

The methods used will be the same as those outlined in the Dragonfly Monitoring Scheme (manual available at www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/). The only difference is that, instead of walking a linear transect, **walk a transect around the pond** (5m over the water from the outside margin of the pond (usually the winter water level), and 2m inland from the margin. If the pond is less than 5m in width assess the pond from different vantage points and take care not to double count.

Record your details and make a note of the survey conditions below. Then record your observations overleaf, including the option to record if you haven't seen any dragonflies on your visit.

Record the **number of adults** of each species you see, and any **evidence of breeding** (copulating pair, female ovipositing (egg laying) or exuvia (skin left after the adult has emerged). When large numbers of damselflies are present, an exact count is not necessary, just try to make a sensible estimate (see codes overleaf).

If you are new to dragonfly recording you may want to record your **level of certainty** as well – all records are useful and this is a good way to build your confidence (C=certain, U=uncertain).

When to survey: counts should only be carried out when most dragonflies are active, using the following guidelines:

- Counts should be carried out between 10:00 and 16:00 BST. On hot days (above 22°C), counts between 09:30 and 16:30 are permissible.
- Count during sunny weather, with cloud cover less than 60%.
- Do not count if the wind is stronger than force 4 on the Beaufort scale (i.e. >18 mph, when small trees in leaf begin to sway).
- The temperature should be at least 17°C in the shade. On sunny, calm days, counts may be made at a slightly lower temperature, but never lower than 15°C.
- Do not count during rain, or when the temperature exceeds 30°C.

Please enter your results online at: www.freshwaterhabitats.org.uk/projects/waternet.

You can also **take and upload photos** of any dragonflies found for reference and confirmation purposes, or just for fun.

ADULT DRAGONFLIES RECORDING FORM



YOUR DETAILS:

Your Name	<input type="text"/>	Pond name	<input type="text"/>	Date	<input type="text"/>
Square: 4 figure grid ref e.g. SP1243 (see your map)	<input type="text"/>	Pond: 8 figure grid ref e.g. SP 1235 4325 (see your map)	<input type="text"/>		
Determiner name (<i>optional</i> - someone confirms the identity of the species)	<input type="text"/>	Voucher material (<i>optional</i> – i.e. if you've taken a photo to confirm identification)	<input type="text"/>		

SURVEY CONDITIONS:

Visit number:
(which visit is this?)

Visit your pond **once** in warm weather between **May - Sept** i.e. during the flight season. Data from more visits is appreciated, ideally once a month throughout the season, but this will depend on how much time you can spare.

Start time (24hr clock)	:	Finish time (24hr clock)	:	% Shoreline surveyed	%
Temperature over 15°C	(tick)	Temperature over 17°C	(tick)	Temperature over 22°C	(tick)
Wind disturbing water	(tick)	Cloud cover less than 60%	(tick)	Rain (score 0, 1, 2, 3)	(tick)

Rainfall: 0=none, 1=yesterday, 2=earlier today, 3=during survey.

COMMENTS ON SURVEY CONDITIONS:

RESULTS:

Please record the dragonflies and damselflies seen on this visit (overleaf) including a record if no species were observed.

Please record the dragonflies and damselflies seen on this visit, including a record if no species were observed. You can record **abundance or presence**, of adults or exuviae. You may optionally wish to make a note of the behaviour (copulating pairs and ovipositing pairs or individuals).

If you are new to dragonfly recording you may want to record your **level of certainty** as well – all records are useful and this is a good way to build your confidence (C=Certain, U=uncertain).

No dragonflies or damselflies recoded on this visit (please tick the box)

(tick)

Estimated number codes: A=1, B=2-5, C=6-20, D=21-100, E=101-500, F=500+, ✓ = present.		Adults	Copulating pairs	Ovipositing	Exuviae	Certainty level
Zygoptera (Damselflies)	<i>Calopteryx splendens</i>	Banded Demoiselle				
	<i>Calopteryx virgo</i>	Beautiful Demoiselle				
	<i>Lestes dryas</i>	Scarce Emerald Damselfly				
	<i>Lestes sponsa</i>	Emerald Damselfly				
	<i>Lestes viridis</i>	Willow Emerald Damselfly				
	<i>Ceriagrion tenellum</i>	Small Red Damselfly				
	<i>Coenagrion hastulatum</i>	Northern Damselfly				
	<i>Coenagrion lunulatum</i>	Irish Damselfly				
	<i>Coenagrion mercuriale</i>	Southern Damselfly				
	<i>Coenagrion puella</i>	Azure Damselfly				
	<i>Coenagrion pulchellum</i>	Variable Damselfly				
	<i>Enallagma cyathigerum</i>	Common Blue Damselfly				
	<i>Erythromma najas</i>	Red-eyed Damselfly				
	<i>Erythromma viridulum</i>	Small Red-eyed Damselfly				
	<i>Ischnura elegans</i>	Blue-tailed Damselfly				
	<i>Ischnura pumilio</i>	Scarce Blue-tailed Damselfly				
	<i>Platycnemis pennipes</i>	White-legged Damselfly				
	<i>Pyrrhosoma nymphula</i>	Large Red Damselfly				
Anisoptera (Dragonflies)	<i>Aeshna caerulea</i>	Azure Hawker				
	<i>Aeshna cyanea</i>	Southern Hawker				
	<i>Aeshna grandis</i>	Brown Hawker				
	<i>Aeshna isosceles</i>	Norfolk Hawker				
	<i>Aeshna juncea</i>	Common Hawker				
	<i>Aeshna mixta</i>	Migrant Hawker				
	<i>Anax imperator</i>	Emperor Dragonfly				
	<i>Anax parthenope</i>	Lesser Emperor				
	<i>Brachytron pratense</i>	Hairy Dragonfly				
	<i>Gomphus vulgatissimus</i>	Common Club-tail				
	<i>Cordulegaster boltonii</i>	Golden-ringed Dragonfly				
	<i>Cordulia aenea</i>	Downy Emerald				
	<i>Somatochlora arctica</i>	Northern Emerald				
	<i>Somatochlora metallica</i>	Brilliant Emerald				
	<i>Leucorrhinia dubia</i>	White-faced Darter				
	<i>Libellula depressa</i>	Broad-bodied Chaser				
	<i>Libellula fulva</i>	Scarce Chaser				
	<i>Libellula quadrimaculata</i>	Four-spotted Chaser				
	<i>Orthetrum cancellatum</i>	Black-tailed Skimmer				
	<i>Orthetrum coerulescens</i>	Keeled Skimmer				
	<i>Sympetrum danae</i>	Black Darter				
	<i>Sympetrum flaveolum</i>	Yellow-winged Darter				
<i>Sympetrum fonscolombii</i>	Red-veined Darter					
<i>Sympetrum sanguineum</i>	Ruddy Darter					
<i>Sympetrum striolatum</i>	Common Darter					

Please complete a **POND HABITAT SURVEY** sheet at each pond surveyed.

This is a really important part of the survey at your pond. Please complete this form whether dragonflies are present or absent. Each variable provides information known to be linked to pond quality and community type, and can be used to investigate reasons for change in dragonfly occurrence.

Go to: www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats for survey guides and more information.

Is the pond new? (less than 10 yrs old) yes, no, unknown	Year of creation? date, decade, unknown	Pond Altitude (m)
<input style="width: 80px; height: 30px;" type="text"/>	<input style="width: 80px; height: 30px;" type="text"/>	<input style="width: 80px; height: 30px;" type="text"/>

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:** no more than two years in any ten 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.

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

Overhanging trees & shrubs

% of pond overhung by trees and shrubs

% pond margin overhung to at least 1m 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 **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).

1 = major
 2 = minor
 3 = none

Fish presence **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.

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

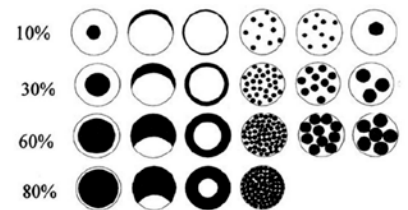
Disturbance by dogs **Major** = dogs repeatedly use the pond, compacted edges with little vegetation, water very turbid; **Minor** = dogs use the pond, but little impact on pond vegetation, pond still supports submerged plants and banks are not denuded of vegetation; **None** = no evidence that dogs are using the pond.

1 = major
 2 = minor
 3 = none

Aquatic vegetation: includes emergent, floating and submerged plants

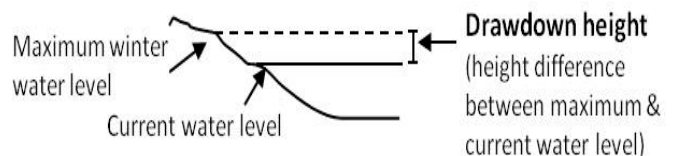
% of the whole pond (wet and dry) occupied by emergent vegetation – incl. plants like grasses, water mint and rushes, but not floating (e.g. pondweed) or submerged (e.g. water-crowfoot) species.

% 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.

cm Drawdown. The height drop from the maximum winter water level to current level (see diagram).



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 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 quality:

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

Water chemistry: 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)

<0.2 0.2-0.5 0.5-1 1-2 2-5 5-10 10 +

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Phosphate (PO_4^{3-} -P ppm): PPW kits provided by FHT

(tick one from the following range categories)

<0.02 0.02-0.05 0.05-0.1 0.1-0.2 0.2-0.5 0.5-1 1 +

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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)

Invasive non-native species: Record any non-native invasive species you know to be present in the pond, or leave blank if you are unsure. Visit <https://freshwaterhabitats.org.uk/projects/pondnet/survey-options> for tips on identification (please tick all that apply).

New Zealand Pigmyweed
Crassula helmsii

Floating Pennywort
Hydrocotyle ranunculoides

Non-native Pondweed, e.g.:
Canadian Pondweed *Elodea canadensis*,
Nuttall's Pondweed *Elodea nutallii*,
Curly Waterweed *Lagarosiphon major*

Parrot's Feather
Myriophyllum aquaticum

Water Fern
Azolla filiculoides

Location score for Great Crested Newts (select pond location based on map to right)

A (optimal), B (marginal) or C (unsuitable)

Number of ponds: Note: ponds are <2ha in size - to help you calculate the total use the PondNet map, an OS map, Google maps, or other mapping tool):

Number of *other* ponds (exclude the survey pond) in a *1km radius circle* centred on the pond centre. Omit ponds separated by amphibian barriers e.g. large rivers or roads.

If there are more than 12 ponds present in the 1km radius, you can just tick this box.


Habitat quality for amphibians: (choose one option - 1 = none, 2 = poor, 3 = moderate, 4 = good)

None = clearly no suitable habitat within immediate pond locale; **Poor** = habitat with poor structure that offers limited opportunities for foraging and shelter (e.g. amenity grassland); **Moderate** = offers opportunities for foraging and shelter, but may not be extensive; **Good** = extensive habitat that offers good opportunities for foraging and shelter completely surrounds pond e.g. rough grassland, scrub or woodland.

Water quality for amphibians: (choose one option - 1 = bad, 2 = poor, 3 = moderate, 4 = good)

Bad = clearly polluted, only pollution-tolerant invertebrates, no submerged plants; **Poor** = low invertebrate diversity, few submerged plants; **Moderate** = moderate invertebrate diversity; **Good** = abundant and diverse invertebrate community, often surrounded by semi-natural land e.g. grassland, heath, woodland.

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

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

Pond sketch map: Make a sketch map of your pond, marking on variables such as amount of shade and patches of emergent vegetation. These will help you to calculate percentage cover and provide a record of the pond which you or others can use on future visits.

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 www.freshwaterhabitats.org.uk/projects/waternet.