

METHOD (complete one survey form per site)

Aims: To find out if Petalwort is i) present, ii) get an approximate idea of its location and abundance, iii) collect physical data that can be used to assess the reasons for any change recorded on future visits, and iv) look in any adjacent habitat patches to see if Petalwort is present or absent.

This methodology has been developed primarily to monitor Petalwort on Flagship Pond sites where it occurs

<https://freshwaterhabitats.org.uk/projects/flagship>.

- **Equipment:** You will need cocktail sticks to mark the location of individual thalli. It's helpful to take a camera to take confirmatory photos of Petalwort, to take photos of your survey site for the record, and to take a photograph of your sketch maps if you don't have access to a scanner – alternatively you can post your survey forms to Freshwater Habitats Trust.
- **Survey timing:** Petalwort grows on bare sand in calcareous sand dunes. Thalli are present during damp conditions, i.e. winter months, and surveys are best conducted from November to January.
- **Where to look:** Petalwort will only germinate on stable but bare sand in the absence of competition from other plants. Winter wet habitats in sand dunes kept clear of vegetation by grazing animals, or dune blow outs create ideal conditions.

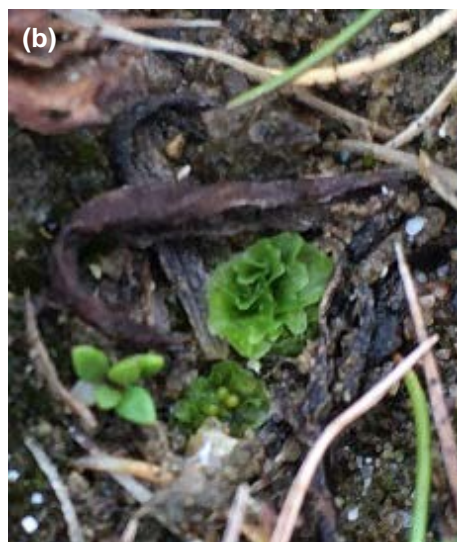
Petalwort and their habitats can be easily damaged by trampling by people, including surveyors. Therefore, only experienced surveyors who have discussed the survey with site managers and Natural England officers should undertake surveys for Petalwort.

- **Survey the area indicated on your map:** The site will have a previous record for Petalwort although it may not have been recorded for some time, or this may be a new site. Search the area indicated in your site pack for Petalwort, and if found, record the number (see below), draw a sketch map to show the location and extent of Petalwort, comment on the condition of the site for Petalwort and take lots of photos!
- **How to estimate abundance:** It can be hard to count the number of Petalwort, especially if they are closely growing or very numerous. The best approach is to mark the location of individual thalli with a cocktail stick and then count the total number of sticks collected at the end of the survey. If Petalwort occurs in different densities within the area searched, make separate calculations for each area, and sum them to give a total (see table over page). **Note: we only need the overall total for the area surveyed.**
- **Recording absence:** If Petalwort is **not found**, please record this and submit the record.
- **Check other likely habitats in the surrounds:** Finding out if Petalwort occurs in other likely habitats within the same site helps us to understand if the species is part of a larger population, which may be important for its survival. Visit other likely habitat patches within the site to see if Petalwort is present. **Complete a new form for each site searched.**

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: info@freshwaterhabitats.org.uk.

What it looks like: Petalwort is a distinctive liverwort - the ridges of each thallus look like a miniature lettuce, but individual thalli are small 0.5 up to 1.5cm. Small brown capsules are found on stalks emerging above these folds.

Liverworts are a difficult group to identify with confidence. To take part in PondNet or to survey Petalwort at a Flagship Pond Site <https://freshwaterhabitats.org.uk/projects/flagship> you will need to attend one of our training sessions or be accompanied by an expert.



Petalwort: (a) Photograph of Petalwort to indicate size of an individual thallus; (b) Petalwort thallus with characteristic lettuce-like folds, and (c) Petalwort habitat.



Your name	<input style="width:95%;" type="text"/>	Date	<input style="width:95%;" type="text"/>
Square: 4 figure grid ref e.g. SP1243 (see your map)	<input style="width:95%;" type="text"/>	Site: 8 figure grid ref e.g. SP 1235 4325 (see your map)	<input style="width:95%;" type="text"/>
Site 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"/>

If you find Petalwort please take a confirmatory photo. You can also take a photo of your site or your maps (or scan them if you have a scanner) and upload them with the record www.freshwaterhabitats.org.uk/projects/waternet.

Number of Petalwort

If there are many individual Petalwort, count the number in a small area (i.e. 1m²) and add up your total. We've put a table below to help you keep track and make notes, but for the analysis **we only need a total**.

Areas where Petalwort was found (list): use this table to help with your number calculations, and so you/others can re-find Petalwort on future visits.	Number of individuals
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"/>

Total number of Petalwort (total count)

Provide a single total for the whole area.

Total number of Petalwort (abundance category)

Then record the number of Petalwort using the following abundance categories:

1, 2-5, 6-10, 11-20, 21-50, 51-100, 101-200, 201-500, 501-1000, 1001-5000, 5001-10000, 10001-20000, 20001+

Petalwort looked for, but not found

Note: if you *don't* find evidence of Petalwort at the site, this is an important result so please still enter these findings online (tick box if none found)

Area of bare ground (%)

% of the whole area where bare ground has been created by disturbance from people/livestock or dune slack blow outs - should include both wet and dry areas.

Sketch map: Make a sketch map of the site and draw on the location of Petalwort: use shading if they cover a broad area, or 'x' marks the spot if there are just a few individuals. Add comments on site condition to the map.