Pillwort - *Pilularia globulifera*

Current Status

Pillwort is a very distinctive little grass-like plant. It is in fact it an aquatic fern with thin, thread like leaves which unfurl from tight coils as it grows and hard spore cases 'the pills'. In the right conditions it forms a creeping mat over bare mud at the margins of ponds and lakes which can look like a miniature bright green lawn. Pillwort is a Priority Species for conservation in both England and Wales. It is declining rapidly throughout its north-west European range and the UK now holds a substantial proportion of the global population. Historically it occurred in about 300, ten km grid squares in the UK, but is now restricted to just a handful of scattered locations (Figure 1).

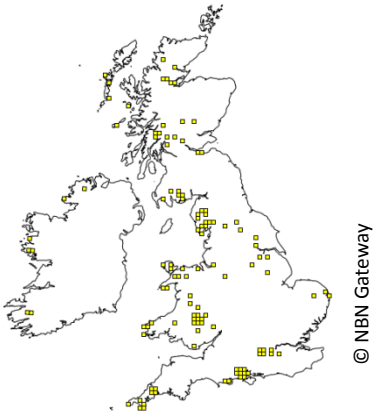

Figure 1. Current distribution of Pillwort in the UK.

Habitat Requirements

Pillwort is a specialist of bare pond edge habitats. It is not a good competitor and only thrives where there are few other plants. Like many specialists, it has some key habitat requirements:

- Seasonally fluctuating water levels, doing especially well in temporary ponds.
- Poaching and grazing by livestock. This is the best form of sustainable management because it creates bare ground which the plant needs.
- Slightly acidic ponds on clays, sands and peaty substrates.
- Open habitats including heathland and acid grassland. It is intolerant of shading from scrub.

Pillwort can also be found growing on the edge of larger ponds and lakes, particularly sand and gravel pits, but only where there are fluctuating water levels and clean unpolluted water.

Figure 2. Pillwort ponds in open heathland habitat, free from nutrient run-off. The pond margins are poached by the hooves of grazing cattle and horses, and they have a broad, gentle drawdown zone.

Threats

- **Loss of grazing** – in the UK there has been a significant post war reduction in land used for extensive low level grazing (i.e. common land). Understanding and support for traditional, small farming economies is essential for species like Pillwort.
- **Land use changes** - particularly urban encroachment and intensification of agriculture, has resulted in the loss of semi-natural habitat, habitat fragmentation and isolation and deterioration of habitat quality.
- **Pollution** – agricultural and urban run-off has led to declines in freshwater quality, resulting in nutrient enrichment, and the loss of species adapted to low nutrient environments.
- **Changes to hydrology and a 'tidying-up' of the countryside** – both manmade and through climate change which has resulted in the loss of seasonally fluctuating ponds and pools.
- **Invasive species** – such as New Zealand Pigmyweed (*Crassula helmsii*), which occupies and outcompetes sensitive plants like Pillwort.

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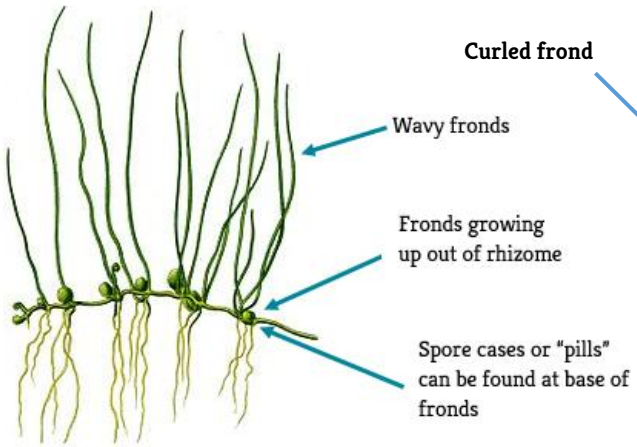
Identification



Key Features:

- Lime green round stem-like leaves or 'fronds' approximately 1-1.5mm diameter.
- Fronds unfurl from tight coils, and you can often see one or two fronds which have yet to unfurl even late into the season.
- Fronds can grow up to 8cm tall, often standing upright from the ground or above the surface of the water, but they can be submerged.
- The fronds are rarely straight and have a kinky or wavy appearance, especially when young.
- The fronds arise singly, or at most 3 shoots, from a rhizome (horizontal underground stem), not in clumps or tussocks (as seen in grasses and rushes).
- As Pillwort is a fern it does not produce seeds or flowers, instead it reproduces via spores. These spores are held in pill-like swellings which can be found on the rhizome when the plant is fertile (August).



Similar looking species:

Pillwort is a creeping plant and can look superficially similar to some grasses, sedges and rushes.
Bulbous Rush (*Juncus bulbosus*) – This rush has a solid stem like Pillwort, but it grows from a tussock like basal rosette. In its submerged state the stems of Bulbous Rush also often have a reddish hue.
Needle Spike-rush (*Eleocharis acicularis*) – This spike rush has fine leaves, which grow from a runner, but the stems are 4-angled and even when growing in a lawn, like Pillwort, the leaves will be growing in tufts. The flower head of spike-rushes are found at the end of the stems. Pillwort does not produce any flowers.
Floating Club-rush (*Eleogeton fluitans*) – Often found growing with Pillwort, this club-rush has flattened leaves unlike the round frond of Pillwort. As above, the flower head of club-rushes are found at the end of the stems. Pillwort does not produce any flowers.
Grasses (Gramineae) - Unlike Pillwort, the narrow leaves of grasses grow out from a central point at the base. The fronds of Pillwort can also be distinguished from grasses by their bright green colour, cylindrical shape and wavy appearance. Pillwort has no basal sheaths (the basal part of a grass leaf that encircles the stem); this can also help tell them apart from grasses.