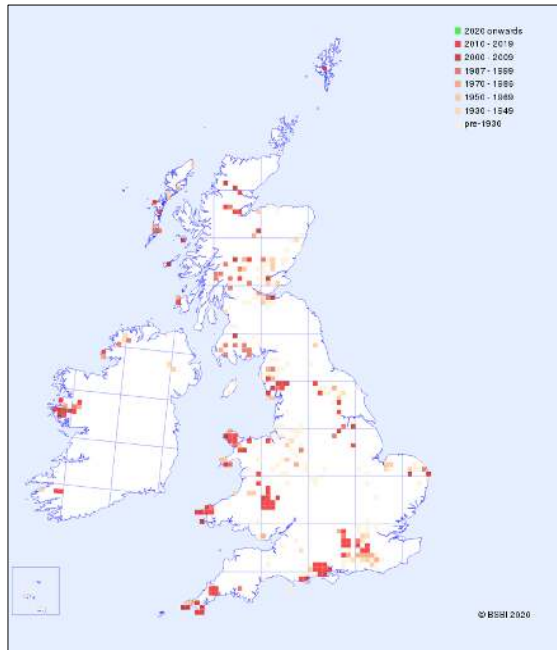


# Pillwort

## *Pilularia globulifera*



### Pillwort distribution across Britain and Ireland.

The data used to create this map has been provided under license from the Botanical Society of Britain and Ireland (BSBI) and accessed from the Society's online database.

### Description

Pillwort is a tiny aquatic fern. Its smooth, fleshy, thread-like fronds are about 8 cm in height with characteristic kinks. When young, it can be mistaken for a seedling rush, but the fronds unfurling from a creeping rhizome are distinctively fern-like. 1- 3 fronds develop from each node on the rhizome, and at the base of each frond, a hard little hairy "pill" can sometimes be observed in late summer. This is the sporocarp, which produces and releases spores.

Where conditions are particularly suitable, Pillwort can be so abundant that it forms bright, lime green "lawns" which are recognizable from a distance; it can also form rings in the drawdown zone of seasonal ponds, or may be underwater. Submerged plants tend to be longer and more flexible

### Lifecycle

Pillwort is a hardy perennial. As with all ferns, it has a two-stage lifecycle. What we view as the plant is the sporophyte, the larger, spore-producing stage. The tough outer covering of the sporocarp means that the species can withstand unfavourable conditions, however it is not clear whether the spores can persist in the substrate or whether it is an opportunistic colonisers of exposed mud when water levels are low. Populations often vanish as conditions deteriorate, reappearing again in years when they are more suitable. It is able to regenerate vegetatively from fragments and by rooting from nodes. It remains winter-green in mild climates.

### Habitat

Pillwort thrives on bare clay, sandy peat and gravelly substrates where water levels fluctuate. It is found in

shallow ephemeral pools and winter-flooded ruts, in muddy poached areas and in the drawdown zone of more permanent ponds or submerged within water bodies. It is also occasionally found in mires and old mineral workings and, in Scotland, it is found around lochs. It can grow in clean, mildly acid water up to 30cm deep, although as water levels recede over the summer it can be found in temporarily dry conditions. It thrives where disturbance, such as animals coming to drink, maintains open conditions and it does not tolerate shading. Species that it is commonly found with include Floating Club-rush *Eleogeton fluitans*, which can look superficially similar before flowering, but has flattened leaves, and Bulbous Rush *Juncus bulbosus*, which arises from a central tussock.

### Distribution

Once found in about 250 10km squares in Britain, Pillwort is now restricted in distribution. Key areas include the Lizard in west Cornwall, the New Forest in south Hampshire and the commons in Radnorshire, mid Wales, while it is probably under-recorded in the lowlands of Scotland. It is endemic to Europe and the UK holds a substantial proportion of the global population.

### GB status and rarity

This species is classified as National Scarce (i.e. occurring in 100 or fewer hectads in Great Britain) and Near Threatened.

### Protection under the law

Pillwort is included as a species "of principal importance for the purpose of conserving biodiversity" under Section 41 (England) of the Natural Environment and Rural Communities Act 2006.

### Survey method

As it is not possible to count individual plants, the best approach is to estimate the total area occupied by the species. This should take account of different densities, making an estimate of the actual area covered by the plant (rather than the overall area within which it grows). This is best carried out in August - September, when water levels are lowest. In larger water bodies, surveyors have used snorkels to survey areas for Pillwort.

### Reasons for decline

The loss of pools on heathlands, village greens and commons in the south of Britain through neglect, infilling, and loss of livestock grazing has been particularly significant for Pillwort. Pollution from agricultural run-off, fencing out livestock and re-landscaping (removing shallow margins) has impacted on many remaining pools. The stabilization of fluctuating water levels (e.g. in water bodies used as reservoirs) and competition from invasive non-native aquatic plants such as parrot's feather *Hydrocotyle aquaticum* and New Zealand Pigmyweed *Crassula helmsii* are further reasons for declines.

### Habitat management

Cattle or pony grazing is ideal to create open, bare margins. If water quality is an issue, polluted inflows should be re-routed, or a buffer of taller vegetation be allowed to establish, to absorb nutrients. Prompt action should be taken to remove invasive species. For isolated populations, additional habitat should be created as this will increase resilience should conditions become unsuitable in the original locations. Creating pools can be effective – such pools should have shallow muddy, margins and varying depths and profiles.



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The bright colour of Pillwort is particularly noticeable in late winter, when many other plants are dull (Tadnoll and Winfrith Heath, Dorset).

### Sources and further information

[Pillwort](#) – a collection of resources from the Freshwater Habitats Trust

[Pillwort, a management guide](#). Plantlife, 2012

[BSBI species account](#)