Persicaria mitis (Shrank.) Assenov.

Tasteless Water-pepper

Persicaria mitis is an erect annual with elliptical leaves, broadest in the middle and with a mild peppery-taste. It has a slightly lax and extended inflorescence, distinctive pink-purplish flowers, and blackish-brown seeds with a lustrous shine. It is found in wet places in open vegetation, often with *P. hydropiper* and *P. minor*, and typically on nutrient-rich mud and peat that is exposed by a rapid 'drawdown' of water in the summer months. *Persicaria mitis* has a scattered distribution across England, Wales and Ireland, although it is probably over-looked or misidentified at times, leading to a masking of its true range. It is assessed as Vulnerable in Great Britain.

IDENTIFICATION

Persicaria mitis has a slightly lax, interrupted and extended inflorescence and elliptical dull green leaves broadest in the middle, often petiolate (Akeroyd, 2014), at least 10 mm wide and less than five times as long as wide (Crawley, 2005) and with raised lateral veins on the underside. Leaves have hairs on the mid-veins of the upper and lower sides and the lateral veins on the lower side (Akeroyd, 2014). They have a very mild peppery taste, and leaves and stems usually have a reddish coloration.

The perianth and peduncle have either none or very few glands (Rich & Jermy, 1998), and flowers are usually pale pink-purplish, but can vary to greenish-white. The ochreal tube, a membranous sheath that envelops the stem in the leaf axil, has a fringe of long adpressed hairs usually >3 mm

The lower slope of the Bedford Barrier Bank near Earith, Cambridgeshire, where *Persicaria mitis* is found with *P. minor*, *P. hydropiper* and *P. maculata*. © Pete Stroh.

(Poland & Clement, 2009; Stace, 2010). The nuts of *P. mitis* are 2.5 – 3.5 mm, brown to blackish-brown, with a lustrous shine (Bojňanský & Fargašová, 2007).

SIMILAR SPECIES

Persicaria mitis often grows and is frequently confused with *P. minor* and *P. hydropiper*. Parnell & Simpson (1988), Rich & Jermy (1998) and Akeroyd (2014) are all useful references for the separation of these three species.

Persicaria hydropiper differs from *P. mitis* by having many (mean of c. 80) raised glands on the perianth, much shorter (c. 3 mm) ochreal hairs, fruits that exhibit a dull (not lustrous) shine, bright green leaves that have a strong and persisting peppery taste and a very lax inflorescence. *Persicaria minor* differs from *P. mitis* in having much narrower leaves that are more than five times as long as wide and parallel sided for much of their length, a shorter, less upright inflorescence, and smaller nuts. Hybridisation is rare, although hybrids do occur between all three closely related species discussed above (see Stace *et al.*, 2015).

Persicaria mitis may also be confused with variants of *P. maculata* that do not have black marks on the upper leaf surface, especially when the latter species is just coming into flower. However, *P. maculata* lacks hairs on the mid-veins, and when in full flower, is readily differentiated by its compact bright pink inflorescence.

HABITATS

A lowland species of wet places in open vegetation, recorded from the edges of ponds, lakes, rivers, shallow ditches, ruts,

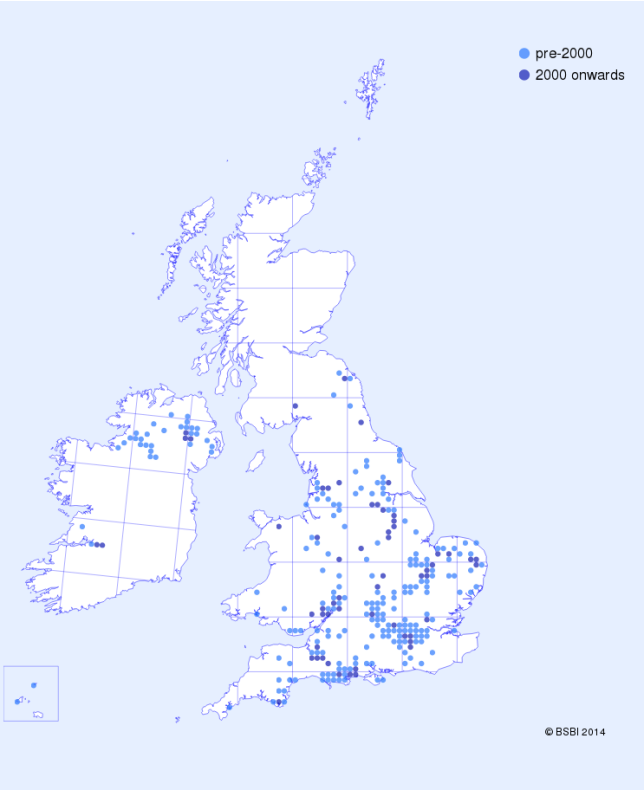
poached pastures and abandoned peat cuttings (Akeroyd, 2002). Typical habitat is on wet, nutrient-rich mud and peat that is exposed in the summer months as water levels fall. Cadbury (2011) noted that in Cambridgeshire it tends to grow in slightly drier situations than *P. hydropiper*, with the latter species frequenting permanently wet or damp sites, although conversely Hill *et al.* (2004) attribute a slightly lower Ellenberg moisture score for *P. hydropiper* compared to *P. mitis*. Jones *et al.* (2012) describes the best Welsh sites as very damp and dynamic, with disturbance generated by trampling livestock at drinking holes.

Associate species include *Bidens tripartita* and *Rorippa palustris* as well as other *Persicaria* species, and *P. mitis* has affinities to the NVC type OV30 *Bidens tripartita-Polygonum amphibium* community (Rodwell, 2000), although *P. amphibium* is often absent (Cadbury, 2011).

BIOGEOGRAPHY

Persicaria mitis has a European Temperate distribution (Preston & Hill, 1997) and is widespread across lowland regions of Europe and the Caucasus between 40°N and 55°N, becoming rarer in the north and the Mediterranean region (Mountford, 1994; Bojňanský & Fargašová, 2007). There are also reports of *P. mitis* from India, Afghanistan, Nepal and Pakistan, although the extent of the western Asia range is uncertain due to the potential for confusion with other species (Mountford, 1994).

Persicaria mitis has a scattered distribution across England, east Wales and the north of Ireland, although it is probably sometimes over-looked or misidentified, leading to a masking of its true range. Webb (1984) has suggested that the species is a recent introduction to Ireland, with all records pre-1969 erroneously attributed to *P. mitis*, and Forbes & Northridge (2012) also consider the species to be 'native or a quite recent neophyte' in County Fermanagh, although recent evidence from County Limerick and County Clare may point to a wider native distribution (Akeroyd, 2014). *P. mitis* was thought to be absent from Scotland, but in 2004 it was recorded from an old oxbow of Kinnel Water, Dumfriesshire.



Distribution of *Persicaria mitis* in Great Britain and Ireland.

ECOLOGY

An annual herb and a pioneer colonist of nutrient-rich wet mud or peat, flowering from June to September and reproducing entirely by seed (Mountford, 1994), *P. mitis* is a poor competitor and cannot tolerate shading by tall emergent species such as *Glyceria maxima* (Cadbury, 2011). Plants are rarely visited by insects, but produce very sticky pollen and are usually self-pollinated before the flower opens (Parnell & Simpson, 1988).

The dry achenes of *P. mitis* are ± roundish, laterally flattish, and with the apex narrowed into a beak and the bottom ± truncate. The surface of achenes are finely puncticulate (minutely dotted with very small depressions), lustrous and are a brown to blackish-brown colour (Bojňanský & Fargašová, 2007).

Seed bank studies on wetland *Persicaria* species have concluded that seeds require a short period of moist chilling to break dormancy, are long-term persistent, and are particularly sensitive to temperature fluctuation (Araki & Washitani, 2000). The small seeds have hard and smooth casings, and are therefore ideal candidates for surviving endozoochorous dispersal. For example, Jaroszewicz (2013) found that European Bison (*Bison bonasus* L.) are capable of the internal dispersal of viable *P. mitis* seeds over distances of c. 1 mile.

THREATS

'Drawdown' habitats have become increasingly scarce as fields are either permanently drained or water levels become ever more precisely regulated. The erection of stock fencing along ditch margins has led to the exclusion of livestock and a loss of open areas and poached ground, resulting in the dominance of coarse tall herbs and grasses. The loss of ponds from the rural landscape has also contributed to a decline of suitable habitat.

MANAGEMENT

Germination of viable seed requires bare, warm, wet soils and open conditions created by inundation and standing water in the winter and spring months, followed by a rapid summer drawdown. Extensive livestock grazing can also create suitable conditions for germination, establishment and dispersal, and cattle should therefore be allowed some access to the edges of

field ditches and streams.

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