Oenanthe fistulosa L.

Tubular Water Dropwort

Oenanthe fistulosa is an erect, glabrous umbellifer with pinnate leaves, narrow ±linear segments and umbels of tiny white or pinkish-white flowers. It is often associated with damp, seasonally inundated weakly acid to basic soils. Plants persist in lightly shaded conditions but are weak competitors. Ideal conditions comprise grazing or cutting regimes that create open areas of damp soil for germination and restrict the growth of more vigorous species. *O. fistulosa* is still widespread but declining across much of southern England, Ireland and coastal regions of Wales. It is a rare species in Scotland and is assessed as Vulnerable in Great Britain as a whole.

©John Crellin

IDENTIFICATION

Oenanthe fistulosa has faintly striated stems 30-80 cm tall that are hollow but constricted at the nodes (fistular), thin-walled, and easily compressed (Jonsell & Karlsson 2010), giving the stem a slightly pinched appearance at the leaf junctions.

The basal and lower leaves are 1-2(-3)× pinnate, with linear- to narrowly ovate-lanceolate and mucronate leaflet lobes (Poland & Clements 2009). The upper stem (cauline) leaves are mostly 1-pinnate and have entire lobes 0.5-2 cm long, linear-lanceolate or subulate, and distant (Tutin 1980).

The umbels (1-3 cm) are few-rayed (2-4), with the stout peduncle longer than each ray. Bracts (not to be confused with the linear bracteoles, of which there are 7-16) are absent. The tiny white or pink flowers have acute and persistent sepals and outer bifid petals that are ± radiating. Each fruit is sessile, obconical to cylindrical, 3-3.5 mm, with styles as long as the fruit (Stace 2010). When in fruit, umbels form a dense globe.

Bainton Ponds, Northamptonshire, where *Oenanthe fistulosa* grows with *Baldellia ranunculoides*. ©Pete Stroh.

The word *Oenanthe* is derived from the Greek *oinos* (wine) and *anthos* (flower), referring to the aroma given off when the stems are crushed. Poland & Clement (2009) describe the smell as "sweetly celery-scented".

SIMILAR SPECIES

Of the four *Oenanthe* species found in Britain and Ireland that have pinnate leaves with narrow segments, *O. pimpinelloides* and *O. lachenalii* both have bracts. *O. silaifolia* is similar to *O. fistulosa*, but has a relatively stout, strongly ridged hollow stem (Rich & Jermy 1998), smaller fruits (2.5 – 3.5 mm) and styles that are nearly as long the fruit (Stace 2010).

HABITATS

A perennial herb of damp or wet places, growing in weakly acid to weakly basic conditions (Rich & Jermy 1998; Hill et al. 2004) and usually in areas prone to winter flooding (Southam & Wigginton 2002). It has been recorded from water meadows and pastures in river flood plains, in marshes and fens, in dune slacks (Smith 2010), and in emergent and fringing vegetation by rivers, lodes, streams, canals, ditches, lakes and ponds (Southam & Wigginton 2002).

It is an associate of several different NVC types, including NVC MG13 *Agrostis stolonifera–Alopecurus geniculatus* grassland, S24 *Phragmites australis–Peucedanum palustris* tall-herb fen, and S4 *Phragmites australis* swamp and reed-beds (Rodwell 1992; 1995).

Oenanthe fistulosa L.

BIOGEOGRAPHY

O. fistulosa is native to south-western Asia, Europe and North Africa, reaching its northern range limit in southern Sweden and western Russia, and its southern range limit in Tanzania (Haslam et al. 1975).

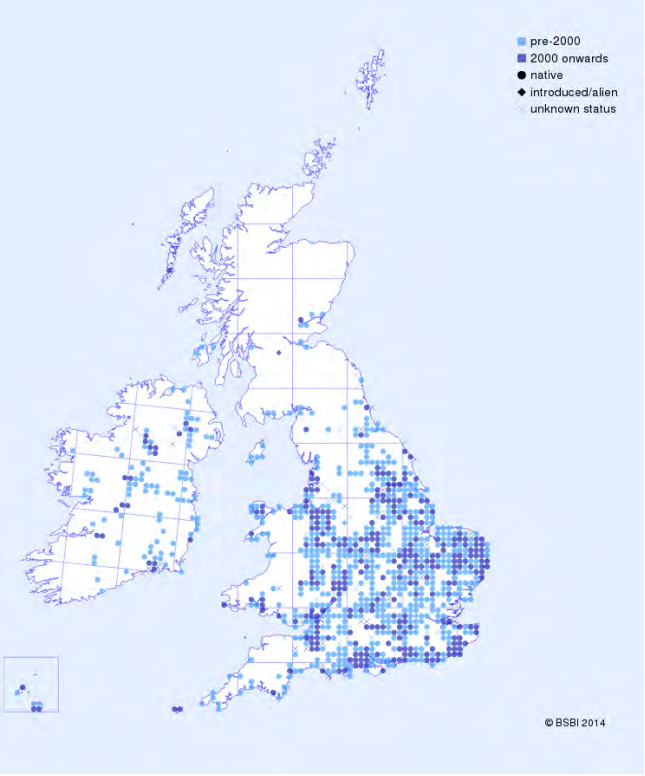
Populations are widely scattered throughout southern (but not south-western) England and Ireland, becoming progressively more localised and thinly scattered in northern England. In Wales, the bulk of populations are found in Anglesey, and scattered along the southern coast from Monmouthshire to Pembrokeshire. There are also a number of post-1987 records from Cardiganshire, Merionethshire, Herefordshire, Montgomeryshire, Radnorshire, Denbighshire, Breconshire and Flintshire, although there are substantially fewer post-2000 records for these vice-counties.

It is rare in Scotland, recorded in single locations in two vice-counties in recent years (Caerlaverock, Dumfriesshire and Seggieden, East Perthshire) and from two locations in South Uist, one of which supports a large and extensive population.

ECOLOGY

A glabrous perennial hemicryptophyte (Grime et al. 2007), flowering from June to September and found in of damp, often seasonally inundated wetland habitats.

The umbels comprises a mixture of central, ± sessile bisexual flowers and peripheral male pedicellate flowers that are enlarged and act as means for pollinator attraction (Jonsell & Karlsson 2010). In late summer, the umbels support spherical clusters of ripe fruits which bear a passing resemblance to miniature naval mines. Individual fruits have mericarps with nine inflated corky ridges and enlarged cell cavities (Jonsell & Karlsson 2010). This morphology makes the seeds ideally adapted for dispersal by water (hydrochory). *O. fistulosa* is also capable of vegetative spread via perennial ramets, stolons and short-lived connections.



Distribution of *Oenanthe fistulosa* in Great Britain and Ireland.

De Cauwer & Reheul (2009) and Braithwaite et al. (2006) suggest that *O. fistulosa* prefers nutrient-poor conditions, although Ratcliffe (1977) and others state that *O. fistulosa* is more often associated with grazed mesotrophic or eutrophic mires as well as temporary pools that are relatively rich in nutrients.

O. fistulosa can persist in heavily grazed swards, sometimes producing seed from secondary growth (Southam & Wigginton 2002), but a long-term reduction or cessation of grazing (or cutting) combined with moderate to high nutrient levels will eventually lead to the colonisation of tall wetland perennials. This in turn will shade out extant *O. fistulosa* plants, and also lead to the absence of bare, damp soil necessary for seed germination (Thompson et al. 1997). Vécrin et al. (2007) found that *O. fistulosa* appears to have a short-lived soil seed bank, and so prolonged absence of suitable conditions for germination could lead to local extirpation.

The roots of emergent and submerged specimens of *O. fistulosa* were found by Šraj-Kržič et al. (2006) to be colonised by arbuscular mycorrhizal (AM) fungi, with the level of colonisation declining with water depth or flood duration due to anaerobic conditions. This mycorrhizal association helps with nutrient uptake, and appears to be one of several adaptations used to overcome short-term changes in the hydrological regime.

THREATS

Populations have declined markedly since 1950, with losses attributed to a lack of grazing, drainage, herbicide application, elevated nutrient levels and the re-seeding of old grassland or its conversion to arable (Southam & Wigginton 2002). Subtle alterations to hydrology or changes to water channel management may also lead to unsuitable conditions and a gradual decline in populations.

MANAGEMENT

For extant sites, reducing the competition of tall herbaceous vegetation via low intensity grazing or by mechanical means (e.g. the cutting of ditch edge vegetation) appears to be essential (de Cauwer & Reheul 2009). If new populations are to establish via dispersal, thought must also be given to the hydrological connectivity of extant sites and suitable receptor sites nearby that are able to be managed post-colonisation.

REFERENCES

Benot, M.L., Mony, C., Merlin, A., Marion, B., Bouzillé, J-B., & Bonis, A. 2011. Clonal Growth Strategies along Flooding and

Grazing Gradients in Atlantic Coastal Meadows. *Folia Geobotanica* 46: 219–235.

Braithwaite, M.E., Ellis, R.W. & Preston, C.D. 2006. *Change in the British Flora, 1987-2004*. Botanical Society of the British Isles (BSBI), London.

De Cauwer, B. & Reheul, D. 2009. Impact of land use on vegetation composition, diversity, and potentially invasive, nitrophilous clonal species in a wetland region of Flanders. *Agronomy for Sustainable Development* 29: 277-285.

Grime, J.P., Hodgson, J.G. & Hunt, R. 2007. *Comparative Plant Ecology: A comparative approach to common British Species*. Castlepoint Press, Kirkcudbrightshire.

Haslam, S.M., Sinker, C.A. & Wolsey, P.A. 1975. *British Water Plants*. *Field Studies* 4: 243-351.

Hill, M.O., Preston C.D. & Roy D.B. 2004. *PLANTATT. Attributes of British and Irish Plants: Status, Size, Life history, Geography and Habitats*. NERC Centre for Ecology and Hydrology, Huntingdon.

Jonsell, B. & Karlsson, T. 2010. *Flora Nordica Volume 6*: Thymelaeaceae – Apiaceae. Swedish Museum of Natural History, Stockholm.

Poland, J. & Clement, E. 2009. *The Vegetative Key to the British Flora*. Botanical Society of the British Isles (BSBI), London.

Ratcliffe, D.A. 1977. *A Nature Conservation Review: Volume 1*. Cambridge University Press, Cambridge.

Rich, T.C.G. & Jermy, A.C. (eds). 1998. *Plant Crib 1998*. Botanical Society of the British Isles (BSBI), London.

Rodwell, J S (ed.). 1992. *British Plant Communities, Vol. 3: grasslands and montane communities*. Cambridge University Press, Cambridge.

Rodwell, J S (ed.). 1995. *British Plant Communities, Vol. 4: aquatic communities, swamps and tall-herb fens*. Cambridge University Press, Cambridge.

Southam, M. & Wigginton, M.J. 2002. *Oenanthe fistulosa*. In: Preston, C.D., Pearman, D.A. & Dines, T.D. (eds & comps). *New Atlas of the British and Irish Flora*. pp. Oxford University Press, Oxford.

Šraj-Kržič, N., Pongrac, P., Klemenc, M., Kladnik, A., Regvar, M. & Gaberščik, A. 2006. Mycorrhizal colonisation in plants from intermittent aquatic habitats. *Aquatic Botany* 85:331–336.

Smith, P. 2010. Tubular Water-dropwort on the Sefton Coast sand-dunes. Merseyside. *BSBI News* 113: 13-17.

Stace, C. A. 2010. *New Flora of the British Isles*, third edition. Cambridge University Press, Cambridge

Thompson, K., Bakker, J. P. & Bekker, R. M. 1997. *The Soil Seed Banks of North West Europe: Methodology, Density and Longevity*. Cambridge University Press, Cambridge.

AUTHOR VERSION

Peter Stroh. Version 1: 31 January 2015.

SUGGESTED CITATION

Stroh, P.A. 2015. *Oenanthe fistulosa* L. Tubular Water Dropwort. Species Account. Botanical Society of Britain and Ireland.

Botanical Society of Britain & Ireland

The Botanical Society of Britain and Ireland (known as the BSBI) is a company limited by guarantee registered in England and Wales (8553976) and a charity registered in England and Wales (1152954) and in Scotland (SC038675)

NATURAL ENGLAND

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

Cyfoeth Naturiol Cymru
Natural Resources Wales