

A good place to see freshwater plants: The Leeds & Liverpool Canal in central Leeds

Water plants in central Leeds

Leave Leeds station by its Granary Wharf exit, and stairs lead down to the River Aire and the Leeds & Liverpool Canal. Here, at River Lock, the canal begins its 204km route across the Pennines to Liverpool. Much of the canal is rural, but in central Leeds it is part of an intensely urban, post-industrial, landscape, and is intertwined with railways, roads, and the river. There are repurposed eighteenth and nineteenth century industrial buildings and modern commercial, leisure, and high-rise residential developments. The surrounds of the canal immediately west of River Lock (from observations made on weekday visits in summer) are a locus of relaxation and café culture—some of it *al fresco*. Beyond, at about 200m west of River Lock is Office Lock, and about 750m further is St Ann’s Ing Lock. The towing path here, along the north side of the waterway, is much used as a within city walking route, and by runners and cyclists. Few boats use the canal; Spring Garden Lock, c.1750m west of River Lock and the nearest with monitoring equipment, was used only 610 times in 2022,¹ and during my most recent visit, on 16 August 2023, only one boat passed in three hours spent by the canal. Consequently, there was little or no silt stirred up by boats, the water was transparent, and underwater plants were visible from the towing path.



Figure 1: The canal immediately west of River Lock with recent buildings and café culture; the entrances of two disused graving docks are in the foreground, June 2016. All images by R. Goulder.

This is a good place to see water plants. Although there is potentially hazardous deep water, plants can be seen without approaching the water’s edge too closely. Binoculars can help. Illustrated guides² are useful with identification and understanding of water plants.

Aquatic plants³ seen between River Lock and St Ann’s Ing Lock in August 2023 are shown in **Table 1**. Nineteen species were found; 14 that principally had submerged and/or floating leaves and five that had emergent leaves. The most abundant submerged plant was Arrowhead *Sagittaria sagittifolia*; its strap-shaped underwater leaves covered much of the canal bed, often with a complete cover. It is named for the arrow-shaped emergent or floating leaves that it often produces, but few of these were seen here. Abundant on the canal bed were the dense-green leafy shoots of Nuttall’s Waterweed *Elodea nuttallii*. This North American plant has colonized UK canals since the 1960s and has replaced the closely related Canadian Waterweed *Elodea canadensis*, that famously invaded canals in the nineteenth century. Perfoliate Pondweed *Potamogeton perfoliatus*, with its trailing stem and broad leaves, was frequently seen underwater and sometimes floating at the surface.

	September 2011	June 2016	July 2019	August 2023
Submerged and floating-leaved plants				
<i>Ceratophyllum demersum</i> Rigid Hornwort	0	0	+	+
<i>Elodea nuttallii</i> Nuttall's Waterweed	+	+	+	+
<i>Fontinalis antipyretica</i> Greater Water-moss	+	+	+	+
<i>Lemna minor</i> Common Duckweed	+	+	+	+
<i>Lemna trisulca</i> Ivy-leaved Duckweed	+	+	+	+
<i>Nuphar lutea</i> Yellow Water-lily	+	0	+	+
<i>Nymphaea x marliacea</i> White Water-lily cultivar	+	+	+	+
<i>Nymphoides peltata</i> Fringed Water-lily	+	+	+	+
<i>Potamogeton crispus</i> Curled Pondweed	0	+	0	0
<i>Potamogeton natans</i> Broad-leaved Pondweed	0	+	+	+
<i>Potamogeton perfoliatus</i> Perfoliate Pondweed	+	+	+	+
<i>Potamogeton pusillus</i> Lesser Pondeed	+	0	+	0
<i>Potamogeton trichoides</i> Hairlike Pondweed	0	+	+	0
<i>Sagittaria sagittifolia</i> Arrowhead	+	+	+	+
<i>Sparganium emersum</i> Unbranched Bur-reed	+	+	+	+
<i>Spirodela polyrhiza</i> Greater Duckweed	0	0	+	+
<i>Stuckenia pectinata</i> Fennel Pondweed	+	+	+	+
Emergent plants				
<i>Acorus calamus</i> Sweet-flag	0	0	+	0
<i>Agrostis stolonifera</i> Creeping Bent	+	+	0	+
<i>Butomus umbellatus</i> Flowering-rush	+	+	+	+
<i>Caltha palustris</i> Marsh-marigold	0	+	0	0
<i>Glyceria maxima</i> Reed Sweet-grass	+	+	0	0
<i>Mentha aquatica</i> Water Mint	0	0	0	+
<i>Oenanthe crocata</i> Hemlock Water-dropwort	+	+	+	+
<i>Phalaris arundinacea</i> Reed Canary-grass	+	+	0	+

Table 1: Aquatic plants in the canal in central Leeds (along c.950m of the Leeds & Liverpool Canal between River Lock and St Ann's Ing Lock).

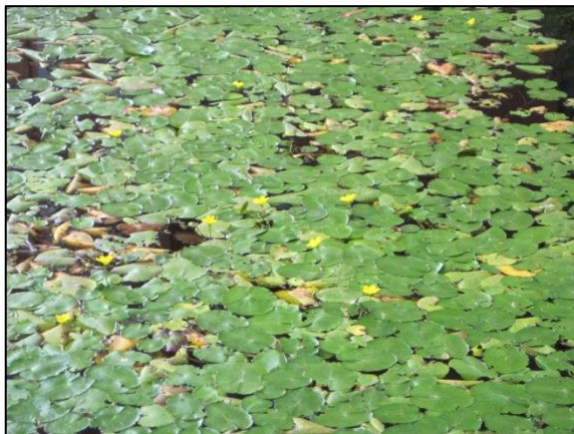


Figure 2: Floating leaves and yellow flowers of Fringed Water-lily in the most easterly disused graving dock, September 2023. All images by R. Goulder.

Water lilies were conspicuous. Between Office Lock and St Ann's Ing Lock the floating leaves and white flowers of a White Water-lily cultivar or hybrid *Nymphaea x marliacea* were abundant along the edges of the navigated central channel. It was presumably an escape from cultivation, or had been introduced, and its flowers appeared to be somewhat larger than those of the native White Water-lily *Nymphaea alba*. The translucent submerged leaves and leathery floating leaves of Yellow Water-lily *Nuphar lutea* were also present, although no flowers were observed. However, the yellow flowers of a "Water-lily" were seen. These belonged to Fringed Water-lily *Nymphoides peltata*

which is a member of the Bogbean family (Menyanthaceae) rather than the Water-lily family (Nymphaeaceae). This plant is probably native in East Anglia and the Thames Valley but not elsewhere in the UK. It has lately spread along northern canals, and may be seen in the Sheffield & Tinsley Canal, the Stainforth & Keadby Canal, the Huddersfield Narrow Canal, the Chesterfield Canal, and the Lancaster Canal. At Leeds, in August 2023, it was abundant and flowering in the most easterly of the disused graving docks immediately in front of the Leeds station, Granary Wharf, entrance.



Figure 3: The canal beyond Office Lock with a sheer wash wall in front of the towing path and floating leaves of a White Water-lily cultivar along the far side, September 2023. All images by R. Goulder.

Emergent plants tend not to be abundant in the canal in central Leeds. This is because of hard, vertical wash walls and deep water below them. Soft margins and shallow water are more favourable. An emergent plant that was, however, doing well, is Flowering-rush *Butomus umbellatus*. This plant has linear leaves, triangular in cross section. Some were submerged or trailing at the water surface, while others, alongside the wash wall, were upright and emergent. Such emergent plants can have showy pink flowers; none were seen in 2023 although I have seen them in previous years.

Several typical, non-aquatic, canal-side plants were also found in August 2023, mostly clinging to gaps in the masonry wash wall. These included False Fox-sedge *Carex otrubae*, Remote Sedge *Carex remota*, Great Willowherb *Epilobium hirsutum*, Meadowsweet *Filipendula ulmaria*, Gypsywort *Lycopus europaeus*, and Skullcap *Scutellaria galericulata*. Also here were the aliens Red Valerian *Centranthus ruber*, a garden escape, and Narrow-leaved Ragwort *Senecio inaequidens*, possibly introduced in wool imports.⁴



Figure 4: Linear emergent leaves of Flowering-rush and submerged leafy stems of Perfoliate Pondweed against the wash wall, June 2016. All images by R. Goulder.

Change over twelve years

Earlier visits to the canal had been made in the summers of 2011, 2016, and 2019, and it is apparent from Table 1 that the water plants found in the canal in 2023 had not changed much since 2011. Fifteen of the 17 plants recorded in 2011 were still there in 2023, while twelve were recorded in all the four years when the site was visited. Nevertheless, there have been real changes that are hidden by this relative stability. For example, Greater Duckweed *Spirodela polyrhiza* is a free-floating plant, with larger fronds than Common Duckweed *Lemna minor*, up to c.15mm across, and with several roots beneath. This was described in 1994 as a very rare plant in West Yorkshire.⁵ I found a single frond in the canal near to Kirkstall in 2015, but since

then it has spread throughout the canal, including in central Leeds. Over the past ten years It has also colonized other Yorkshire canals, including the Calder & Hebble Navigation, the Sheffield & Tinsley Canal, the Stainforth & Keadby Canal, the Selby Canal, and Beverley Beck.

Less straightforward is the fluctuation shown by the narrow-leaved pondweeds, Lesser Pondweed *Potamogeton pusillus* and Hair-like Pondweed *Potamogeton trichoides*. These are inconspicuous plants which have for years been irregularly recorded in the Leeds & Liverpool Canal and have been considered as scarce in West Yorkshire.⁶ I searched diligently for them on each visit, and while in some years they were easy to find, in others they were apparently absent. These plants may fluctuate naturally and irregularly, hence my failure to find them in 2023 does not necessarily imply that they are permanently lost.



Figure 5: Floating leaves and flower of a cultivar of White Water-lily, September 2023. All images by R. Goulder.

The wider context

Venturing beyond central Leeds, the towing path can be profitably followed westwards into the Kirkstall Valley Park, where 8.4 km of canal have been designated as SSSI, principally for the rich flora of aquatic plants, more typical of a slow flowing calcareous lowland river.⁷ Most of the plants in the SSSI can also, however, be seen in central Leeds. Indeed, it is perhaps counter intuitive that aquatic plants in Leeds are more diverse and abundant than they are further west along the canal in rural Airedale, from Skipton, through Gargrave and beyond. This is probably because the canal in the countryside is a greater outdoor leisure attraction; there are more boats, the water is more turbid, which limits underwater photosynthesis, furthermore plants are liable to be damaged by the hulls and propellers of passing boats.

You can read more about plants in Yorkshire canals in my book *Canals, Plants and People: a Yorkshire Perspective*, (PLACE, York, 2019)

Ray Goulder, November 2023

Notes & References

1. Canal & River Trust (2023), Annual Lockage Report 2022. <https://canalrivertrust.org.uk/refresh/media/original/47514-annual-lockage-report-2022.pdf>.
2. Appropriate field guides with coloured illustrations are: (1) Rose, F. (2006), *The Wild Flower Key*, Warne, London; and (2) Blamey, M., Fitter, R. and Fitter, A. (2013), *Wild Flowers of Britain and Ireland*, Bloomsbury, London.
3. Aquatic plants are herein considered to be plants that that feature on checklists of native and non-native aquatic plants liable to be found in UK canals, published by the Joint Nature Conservation Committee. <https://data.jncc.gov.uk/data/1b15dd18-48e3-4479-a168-79789216bc3d/CSM-Canals-2005.pdf>;

nomenclature of plants follows Stace, C.A. (2019), *New Flora of the British Isles*, fourth edition. C & M Floristics, Middlewood Green, Suffolk.

4. Wilmore, G.T.D. (2000), *Alien Plants of Yorkshire*. Yorkshire Naturalists Union.
5. Lavin, J.C. & Wilmore, G.T.D. (1994), *The West Yorkshire Plant Atlas*. City of Bradford Metropolitan Council, Bradford.
6. Lavin & Wilmore (1994).
7. Natural England, Designated Sites, Leeds-Liverpool Canal SSSI.
<https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1004146.pdf>; Goulder, R,(2016), Freshwater plants and SSSI canals in the East Midlands and North of England: Leeds & Liverpool Canal and Huddersfield Narrow Canal, *The Naturalist* 141, 169-185.