
A14

Myriophyllum alterniflorum community *Myriophylletum alterniflori* Lemée 1937

Synonymy

Myriophyllum alterniflorum consociés Pearsall 1918;
Chara-Myriophyllum alterniflorum sociation Spence
1964.

Constant species

Myriophyllum alterniflorum.

Rare species

Potamogeton filiformis.

Physiognomy

The *Myriophylletum alterniflori* comprises species-poor vegetation in which *Myriophyllum alterniflorum* is the obvious dominant, growing thickly in congenial situations, though often sparse and battered in more turbulent waters. No other species occurs frequently, but occasionals include *Juncus bulbosus*, *Littorella uniflora*, *Lobelia dortmanna*, *Callitriche hamulata*, *C. stagnalis*, *Potamogeton natans*, *P. gramineus*, *Chara* and *Nitella* spp. and the moss *Fontinalis antipyretica*. The rare *P. filiformis* is found among this vegetation at a few sites around the Scottish seaboard.

Habitat

The *Myriophylletum* is characteristic of lime-poor and less fertile waters, standing to quite swiftly flowing or spatey, in lakes, pools and streams, predominantly in the north and west of Britain.

M. alterniflorum grows best in base-poor waters of low conductivity, draining catchments of acidic rocks, like harder arenaceous sedimentaries or lime-free igneous and metamorphic rocks (Haslam 1978). Stands of this vegetation can be found in the lowland south and east of the country, but the community is very local there, being strongly confined to streams and pools on deposits like the Tertiary sands of the New Forest, and it becomes widespread and common only in the upland fringes of the north and west, where suitable rocks make up the bulk of the landscape. The plant will tolerate

quite impoverished conditions, so it can thrive even where the substrates of the catchment are very resistant to erosion, though it tends to occur in peaty waters, such as those draining the extensive tracts of upland blanket mire, only where their dystrophic character is ameliorated a little by the deposition of some mineral material.

M. alterniflorum has a fairly shallow rooting system but, in the sandy to stony beds favoured here, it can gain quite extensive and firm anchorage and its thin, finely-cut foliage offers but slight resistance to faster flow or wave-wash (Pearsall 1918, Haslam 1978). The shoots will break with moderate force, but remaining fragments readily regrow, so plants can persist in spatey waters (Haslam 1978). Thus, although the most luxuriant growth is possible in still or only sluggish conditions, this kind of vegetation can persist as a more open and less vigorous cover along quite exposed lake shores and extend into the upper, swifter reaches of streams, such as are very common in the more rugged terrain of the uplands, and where most likely competitors are excluded.

Zonation and succession

In both standing and moving waters, the *Myriophylletum* tends to occupy some of the more turbulent situations, giving way to other kinds of aquatic vegetation where conditions are stiller and substrates more fertile. It is replaced in dystrophic peaty waters by different submerged communities and is sometimes found with more basiphilous aquatic assemblages where there is local influence of lime-rich substrates and waters.

In lakes with more acidic waters, the *Myriophylletum* can be found down to about 3 m depth where conditions are clear, and on moderately exposed shores it often passes in the gravelly or stony shallows to the *Littorella-Lobelia* community. *M. alterniflorum* usually remains very frequent in this vegetation, but *Littorella uniflora* and *Lobelia dortmanna* become constant and are generally of high cover. Then, in deeper water where there is a little less turbulence and more deposition of fine mineral

material, the *Myriophylletum* gives way to the *Potamogeton-M. alterniflorum* community. The two vegetation types intergrade, but there *M. alterniflorum* is typically accompanied by, not only *L. uniflora*, but also a variety of pondweeds, of which the commonest are *Potamogeton perfoliatus*, *P. gramineus*, *P. pusillus*, *P. berchtoldii* and *P. obtusifolius*, all of these more prone to battering than the milfoil. Dense stands of *Chara* or *Nitella* spp. also often occur. A clear zonation involving all these communities is shown in Pearsall's (1918) sketch of aquatics in Fold Yeat Bay in Esthwaite.

The *Potamogeton-M. alterniflorum* vegetation can also be seen replacing the *Myriophylletum* in moving waters where the flow becomes a little slacker or less spate-prone in moving downstream, and the deposition of mineral material more extensive. Towards the upper reaches of such streams, the *Myriophylletum* can show extensive overlap with the *Callitriche stagnalis* community, and indeed this vegetation may replace it where vascular plants retain a patchy presence far up into the torrent-like heads of such river systems. In other places, the *Myriophylletum* represents the limit of such vegetation before bryophyte communities of submerged rocks dominate the aquatic environment.

Another fairly frequent transition can be seen where quieter stretches of peaty waters interrupt or replace more fast-flowing rocky reaches with the shift to gentler, boggy terrain. Then, the *Myriophylletum* often gives way to *Potamogeton-Ranunculus* soakways, with *P. polygonifolius*, *Ranunculus flammula*, *R. omiophyllus* and *Agrostis stolonifera*. Pools along such trickling waters may also have *Juncus bulbosus* vegetation, but *M. alterniflorum* only rarely extends into such dystrophic assemblages.

Distribution

The *Myriophylletum* is widespread and fairly common through the upland fringes of the north and west of Britain, with very local occurrences in suitable habitats in the lowland south and east.

Affinities

The community is equivalent to the *M. alterniflorum*-dominated vegetation previously described from British waters (Pearsall 1918, Spence 1964), and from the Continent as the *Myriophylletum alterniflori* Lemée 1937 *emend.* Sissingh 1943. Westhoff & den Held (1969) located this assemblage in the Potamion graminei with other communities of nutrient-poor waters of the order Luronio-Potametalia. A simpler solution would be to place it with most of the other pondweed vegetation in the Parvopotamion.

Floristic table A14

<i>Myriophyllum alterniflorum</i>	V (1–10)
<i>Juncus bulbosus</i>	II (3–5)
<i>Littorella uniflora</i>	II (1–4)
<i>Callitriche hamulata</i>	II (2–5)
<i>Fontinalis antipyretica</i>	II (1–4)
<i>Chara</i> spp.	II (1–7)
<i>Potamogeton natans</i>	II (1–5)
<i>Scirpus fluitans</i>	I (6–8)
<i>Nitella</i> spp.	I (2–4)
<i>Ranunculus peltatus</i>	I (4–8)
<i>Equisetum fluviatile</i>	I (5)
<i>Lobelia dortmanna</i>	I (3)
<i>Lemna minor</i>	I (1)
<i>Callitriche stagnalis</i>	I (4)
<i>Potamogeton filiformis</i>	I (1–3)
<i>Potamogeton gramineus</i>	I (1–3)
Number of samples	16
Number of species/sample	3 (1–6)