A20
Ranunculus peltatus community
Ranunculetum peltati Sauer 1947

Synonymy
Vegetation of nearly stagnant waters Tansley 1911 *p.p.*

Constant species
Ranunculus peltatus.

Physiognomy
The *Ranunculetum peltati* is dominated by clumps or patches of *Ranunculus peltatus*, the most variable of the British crowfoots. It can grow as an annual or perennial, submerged in a spreading or erect form, as a frail, floating plant or occur terrestrially, when it is loosely tufted (Haslam 1978, Rich & Rich 1988). Many stands are small and cover can be very sparse, but luxuriant plants develop in congenial situations with maximum growth in early summer.

The *Ranunculetum peltati* is frequently found in close association with other kinds of aquatic and marginal vegetation, including patches of the *Ranunculetum aquatilis*, and it can be very difficult to distinguish the two dominants from one another (Holmes 1979, Rich & Rich 1988). In denser stands, however, associates are few and usually not very abundant and such plants as do occur are often amphibious or water-margin herbs. *Lemna minor* and *L. gibba* are often found on the surface of the water or moist mud, with *L. trisulca* occasionally caught among the submerged shoots, and there can be patches of *Callitriche* spp., *C. platycarpa* in the stands sampled. *Potamogeton natans* and *Polygonum amphibium* are occasionally seen and sometimes there are plants of other *Ranunculus* spp., such as *R. sceleratus*, *R. trichophyllus* and *R. circinatus*. Later in the season, Glycerio-Sparganion plants often become prominent with patches of *Nasturtium officinale*, *Glyceria fluitans*, *G. plicata*, *Apium nodiflorum* and *Berula erecta*.

Habitat
The *Ranunculetum peltati* is characteristic of the shallows and margins of mesotrophic to quite nutrient-rich waters, occasionally fairly fast-flowing, though usually sluggish or still. It appears to occur through most of southern Britain outside the highland areas, but is especially frequent in the English lowlands. It withstands seasonal or periodic drying out of the habitat and this enables it to persist in fluctuating or ephemeral water bodies.

R. peltatus can be hard to distinguish from *R. aquatilis* (Holmes 1979, Rich & Rich 1988) and the two taxa are clearly similar in their geographical distribution and ecological preferences, though it has sometimes rather puzzlingly been reported that they do not in fact occur together (Cook 1966). Like the *Ranunculetum aquatilis*, this vegetation is commonly found growing submerged, and it may penetrate a little deeper (Holmes 1979), although most stands seem to occur in less than 1 m of water. It is perhaps also less demanding of fertile conditions, so it is quite frequent around the margins of lakes and pools through the upland fringes of the north and west of the country, where there is but modest amelioration of nutrient impoverishment. Here, it will extend on to coarser mineral substrates, such as sands and gravels, and it can be difficult to erode from such materials where the tough rhizomes and root wefts gain a strong hold, so it can tolerate some gentle surge along shores and is sometimes found in fairly swift-moving streams (Haslam 1978).

In the south-west, too, it is an important community of fairly fast-flowing waters of a calcareous nature, notably in the upper reaches of Chalk streams, and is perhaps more characteristic of base-rich habitats than the *Ranunculetum aquatilis* (Holmes 1979). Here, again fertility is only moderate, but the community also occurs widely in sluggish lowland waters which are more eutrophic, as in canals, dykes and pools, where the substrates are more silty. Its tolerance of periodic drying gives this vegetation an important advantage in Chalk streams which cease to flow in summer and around the margins of fluctuating or temporary water bodies. Disturbance of such ground helps keep the habitat sufficiently open for *R. peltatus* to thrive.

Zonation and succession

The *Ranunculetum peltati* occurs with a variety of other communities of submerged, floating-leaved and floating aquatics, the vegetation patterns reflecting differences in depth and speed of the waters, and the character of the substrate. Around water margins, zonations to Glycerio-Sparganion herbs or some sorts of swamp are very common, and where colonisation by emergents is advancing, the *Ranunculetum peltati* is quickly overwhelmed. In many cases, however, fluctuations of the waters or disturbance of the water's edge helps maintain it more permanently.

In more fertile standing or sluggish waters, the *Ranunculetum peltati* is sometimes found as a fragile, free-floating plant of insignificant cover, but occasionally denser clumps occur among such submerged vegetation as the *Elodea canadensis* or *Ceratophyllum demersum* communities, with stands of *Nuphar*, *Potamogeton natans* or *Polygonum amphibium*, and patches of the *Lemnetum minoris* or richer *Spirodela-Hydrocharis* vegetation. In such situations, patches or strips of Glycerio-Sparganion herbs, such as *Nasturtium officinale*, *Apium nodiflorum*, *Veronica beccabunga* and smaller *Glyceria* spp., or emergents like *Sparganium erectum* and *Typha latifolia*, are found along the water margins and the *Ranunculetum peltati* can persist on moist ground among these where the herbage is kept low and open through trampling by stock, sometimes with *Callitriche stagnalis* stands.

Patterns of this kind can persist in the shallower, slacker reaches of larger lowland rivers, provided these are not too fertile, but the community makes a more important contribution to the vegetation patterns of running waters where moderate fertility, base-richness and summer drying are combined in the upper stretches of Chalk streams. In such situations, the *Ranunculetum peltati*, sometimes with the *Ranunculetum aquatilis*, and often with *Callitriche stagnalis* vegetation, occupies the bulk of the stream bed, generally with small patches of Glycerio-Sparganion herbs included in the central zone, and thickening up marginally to form a bounding strip. These become especially prominent later in the growing season, as the crowfoot cover fades, and towards the very head of the streams they often occlude the crowfoot zone altogether. However, the tolerance of some desiccation by both the *Ranunculetum peltati* and the *Ranunculetum aquatilis* gives them an important competitive edge against the *Ranunculus penicillatus* ssp. *pseudofluitans* community for most of the summer-dry reaches and, it is not until the flow remains permanent downstream, that this vegetation takes over from the *Ranunculetum peltati* as the major cover of the bed.

In the quite fast-flowing waters of streams through the upland fringes, the *Ranunculetum peltati* is sometimes found as a minor element among the *Myriophyllum alterniflorum* and *Callitriche stagnalis* communities, but the *Ranunculetum aquatilis* seems to be more common in such habitats.

Distribution

Diligent sampling is needed to determine the exact range of the community, but it probably occurs through most of the lowlands and upland fringes of Britain.

Affinities

R. peltatus was recorded as part of a compendious aquatic assemblage in early descriptive accounts (Tansley 1911) and has sometimes been included with *R. aquatilis* in a broadly-defined *Ranunculetum peltati* (Segal 1967, Westhoff & den Held 1969). Here, we follow Sauer (1937) in defining a separate community, but further sampling is needed to assess the status of this kind of vegetation. However they are defined, stands of *R. peltatus* belong among the Callitricho-Batrachion communities (otherwise the Ranunculion fluitantis as with Ellenberg 1978).

Floristic table A20

Ranunculus peltatus	V (3–10)
Lemna minor	III (1–9)
Nasturtium officinale	II (2–3)
Potamogeton natans	II (3–8)
Glyceria fluitans	II (2–6)
Lemna trisulca	II (5–6)
Callitriche platycarpa	II (1–5)
Lemna gibba	I (2)
Ranunculus sceleratus	I (2)
Alisma plantago-aquatica	I (2)
Glyceria plicata	I (3)
Ranunculus trichophyllus	I (3)
Elodea canadensis	I (2)
Polygonum amphibium	I (5)
Sparganium erectum	I (4)
Ranunculus circinatus	I (4)
Number of samples	11
Number of species/sample	4 (2–6)

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