M28
Iris pseudacorus-Filipendula ulmaria mire
Filipendulo-Iridetum pseudacori Adam 1976 *emend.*

Synonymy
Iridetum Gilham 1957*b*; Salt-marsh/swamp transitions Gimingham 1964*a p.p.*; *Iris pseudacorus* Community Birse 1980.

Constant species
Filipendula ulmaria, *Iris pseudacorus*, *Oenanthe crocata*, *Poa trivialis*.

Physiognomy
Iris pseudacorus and *Oenanthe crocata* can be found as occasionals in western stands of the *Filipendula-Angelica* mire, but in the *Filipendulo-Iridetum pseudacori* they are both constant except in the far north of the range of the community: *O. crocata* does not extend much into Sutherland and it is absent from Orkney and Shetland (Perring & Walters 1962), although essentially similar vegetation to this does occur there (Birse 1980). In its characteristic form it is an often luxuriant and species-rich community in which *I. pseudacorus* is typically much more abundant than *F. ulmaria*, often a clear physiognomic dominant and particularly striking when it puts up its yellow flowers in late spring and summer. The flag is often almost a metre or so high and among this the *F. ulmaria* and *O. crocata* occur as scattered plants, though sometimes showing local abundance, a feature which is especially noticeable with the water-dropwort, the leafy shoots of which can thicken up to form almost pure patches with their stout flowering stems sticking up above the general level of the canopy.

There are nearly always some other tall herbs, though only *Lycopus europaeus*, *Rumex crispus* and *Scutellaria galericulata* occur with any frequency throughout the community, other species such as *Rumex acetosa*, *Lychnis flos-cuculi*, *Angelica sylvestris*, *Valeriana officinalis*, *Cirsium palustre*, *C. arvense*, and *Urtica dioica* often becoming common and conspicuous, though preferentially in particular kinds of *Filipendulo-Iridetum*. Other tall herbs, such as *Lythrum salicaria* and *Stachys palustris*, are never more than occasional, though this community can provide an important locus for them in northern Britain as they become more confined to the coast where suitable habitats are more common than inland. Then, sprawling among this herbage, there is often some *Galium palustre* or *G. aparine*.

Rushes and grasses frequently make an important contribution to lower tiers of the vegetation. *Juncus effusus* and *J. acutiflorus* are both quite common throughout, though especially characteristic of one of the sub-communities, where their bulky tussocks can become quite abundant. Among the grasses, *Poa trivialis* and *Agrostis stolonifera* are the most frequent species overall, and fairly often they form spreading mats or extensive carpets over the ground. Less common, and usually growing as scattered tussocks or clumps, are *Festuca rubra*, *Holcus lanatus*, *Elymus repens*, *Anthoxanthum odoratum*, *Arrhenatherum elatius* and *Dactylis glomerata*. Much more local, though sometimes growing lush and abundant where the ground is flushed with fresh water, is *Catabrosa aquatica*.

Among this cover can be found a variety of dicotyledons of small to moderate stature. Some typically occur as scattered plants, like *Ranunculus acris*, *Caltha palustris*, *Stellaria alsine*, *Mentha aquatica* and *Hydrocotyle vulgaris*, all of which are frequent through the community, while others, such as *Ranunculus repens* and *Potentilla anserina*, can form far-spreading stoloniferous mats with quite high local cover. Then, on patches of wet and more open ground, there can be locally prolific seeding of annuals such as *Polygonum hydropiper*, *Montia fontana*, *Stellaria media* and, particularly on cattle-poached mud, *Ranunculus sceleratus*. On transitions to salt-marsh, *Atriplex prostrata* and *Matricaria maritima* can also become frequent, with *Samolous valerandi*, *Oenanthe lachenalii* and halophytic herbs.

Bryophytes are usually few in number but they can form an extensive mat on occasion. *Eurhynchium praelongum* is the commonest species throughout, but *Calliergon cuspidatum* and *Rhytidiadelphus squarrosus* can also be found.

Sub-communities

***Juncus effusus-J. acutiflorus* sub-community.** This is the richest kind of *Filipendulo-Iridetum* in which other dicotyledons, rushes and grasses form a fairly consistent associated flora among the constants. *I. pseudacorus* is generally a clear dominant, although both *O. crocata* and *F. ulmaria* can be patchily abundant and *J. effusus* and/or *J. acutiflorus*, which are more common here than in the other sub-communities, can occur as prominent tussocks. Among other tall herbs, too, there are some strong preferentials: in addition to community species such as *Lycopus*, *Rumex crispus* and *Scutellaria galericulata*, *Rumex acetosa*, *Cirsium palustre*, *Epilobium palustre*, *Lychnis flos-cuculi*, *Angelica sylvestris* and *Valeriana officinalis* all occur occasionally to frequently and, when present in numbers, they give the vegetation a rich and colourful texture.

Somewhat smaller are frequent plants of *Ranunculus acris*, *Caltha palustris*, *Lotus uliginosus*, *Myosotis laxa* ssp. *caespitosa*, *Cardamine pratensis*, *Stellaria alsine*, *Mentha aquatica* with scattered tussocks of *Festuca rubra*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Poa pratensis*, *Elymus repens* and *Carex otrubae*, and trails of *Galium palustre* spreading through the herbage. Then, beneath, there can be a patchy ground carpet of *Poa trivialis*, *Agrostis stolonifera*, *Ranunculus repens* and *Potentilla anserina* with, in more open, damp patches, annual herbs.

***Urtica dioica-Galium aparine* sub-community.** The vegetation here, though usually as tall and luxuriant as that of the *Juncus* sub-community, is noticeably less species-rich. *I. pseudacorus* is still very much the dominant and both *O. crocata* and *F. ulmaria* remain frequent and locally prominent but, apart from the community plants *Lycopus* and *Scutellaria galericulata*, the only really common taller dicotyledons are *Urtica dioica* and *Cirsium arvense* and, when these are present in abundance, the former as sometimes extensive patches, the latter as often numerous scattered individuals, they can give the herbage a distinctly weedy look. *Rumex crispus*, *R. acetosa* and *Cirsium palustre*, and both *J. effusus* and *J. acutiflorus*, can all be found occasionally, but species like *Angelica*, *Valeriana officinalis* and *Lychnis flos-cuculi* are scarce, and *Galium palustre* is almost always replaced by *G. aparine*. Sometimes, too, there is a little *Stachys palustris* or *Geranium robertianum*.

Grasses are often quite a conspicuous element in the vegetation, both *Poa trivialis* and *Agrostis stolonifera* very common and occurring as patchy carpets. *Elymus repens* is also preferentially frequent here, forming scattered tufts or sometimes extensive mats, and tussocks of *Arrhenatherum* and less commonly, *Dactylis glomerata* can sometimes be found beyond the reach of tidal flooding which occasionally inundates the lower reaches of stands of this vegetation. On tidal litter, mainly decaying brown algae, deposited among the stools, annuals can show a flush of growth, with *Stellaria media* being particularly frequent. *Ranunculus repens* and *Potentilla anserina* can spread over the ground and scattered plants of *Stellaria alsine*, *Mentha aquatica*, and *Hydrocotyle* are sometimes found.

***Atriplex prostrata-Samolus valerandi* sub-community.** Although *I. pseudacorus* and *O. crocata* can both be abundant in this kind of *Filipendulo-Iridetum*, the taller associates prominent elsewhere in the community are noticeably lacking: even *F. ulmaria* is scarce here and occasional scattered plants of *Lycopus* and *Rumex crispus* often represent the limit of the development of this particular element. The cover of the herbage can be a little more open than usual, although among the smaller plants, too, there are some distinctive features. The commonest grasses, for example, are *Agrostis stolonifera* and *Festuca rubra*, the former in particular often showing quite extensive ground cover, with *Poa trivialis*, usually a constant of the community, very scarce. Then, though *Stellaria alsine*, *Mentha aquatica* and *Hydrocotyle* can be found occasionally, more common is a group of preferentials tolerant of saline habitats. *Atriplex prostrata* is the most frequent of these and it can be quite numerous over litter and patches of exposed ground, but *Samolus valerandi*, *Oenanthe lachenalii*, *Matricaria maritima*, *Triglochin maritima* and *Glaux maritima* have also been recorded in some stands. Bryophytes are typically more sparse than elsewhere in the community, with occasional *Eurhynchium praelongum* often being the sole representative.

Habitat

The *Filipendulo-Iridetum* is confined to moist, more nutrient-rich soils along the oceanic seaboard of Britain. It is especially characteristic of the fresh-water seepage zone along the upper edge of salt-marshes in the sheltered sea-lochs of western Scotland, but it can be found in a variety of other habitats which combine congenial edaphic conditions with a mild climate. It thus occurs down the west coast over moist stabilised shingle and in wetter hollows and flushes on raised beach platforms and over gentle cliff slopes, the peculiarities of these situations being reflected in the floristics of the different sub-communities. It does not seem to be heavily grazed as a rule, but looks nonetheless to be a relatively stable vegetation type, perhaps persisting long before any progression to scrub or woodland.

This community can be seen as the oceanic counterpart of the *Filipendula-Angelica* mire. That vegetation type occurs throughout lowland Britain, its range being controlled largely by the distribution of suitably moist

and rich soils. The *Filipendulo-Iridetum* is found over similar profiles but only in the lowlands of the far-west of the country where the climate is at its most equable. There, in a zone running down from Orkney and Shetland, skirting the north and west coasts of Scotland and taking in the extremities of Anglesey and Lleyn, west Dyfed and Cornwall, February minima are above freezing (*Climatological Atlas* 1952) and the annual range of temperatures is the smallest of any part of Britain (Page 1982). Among the more common plants of the community, it is *I. pseudacorus*, a generally Atlantic species in Europe, and *O. crocata*, more strictly Oceanic West European, which provide the clearest floristic response to such climatic conditions and the best single separation from the *Filipendula-Angelica* mire. Less pronounced, there is the frequency through much of the *Filipendulo-Iridetum* of *Juncus effusus* and *J. acutiflorus*, species which, by and large, only become really prominent in meadowsweet vegetation in the more westerly parts of the country.

Apart from the two oceanic constants, the community shares many species with the *Filipendula-Angelica* mire, though the less deep shade cast by the flag canopy here means that the associated flora is rather more consistent and abundant than beneath dense meadowsweet. Much of this common character comes from the nature of the soils that both vegetation types favour, with species of Molinio-Arrhenatheretea damp grasslands and mires predominating. Thus the frequency of plants such as *Festuca rubra*, *Holcus lanatus*, *Poa trivialis*, *Ranunculus acris*, *Rumex acetosa*, *Angelica sylvestris*, *Cirsium palustre*, *Equisetum palustre*, *Filipendula ulmaria*, *Juncus effusus*, *J. acutiflorus*, *Lotus uliginosus* and *Lychnis flos-cuculi*, which provide so much of the general character of this vegetation, and which become particularly important in the most distinctive of the sub-communities, the *Juncus* type, all reflect the moist, and at least moderately nutrient-rich, character of the profiles.

However, though this is a community of soils which are kept damp or wet through much or all of the year, and which are maintained in a mesotrophic or eutrophic state, the particular situations in which these general conditions are met are quite varied. Sometimes, the *Filipendulo-Iridetum* can be found around the kind of waterlogged hollows and flushes that, further inland, would carry the *Filipendula-Angelica* mire and, in sites set a little way back from the coast, the two vegetation types can come very close in their floristics: the *Filipendulo-Iridetum* can be found in this kind of setting, marking out wetter stretches of ground in marginal pastoral land in Anglesey and over the raised beach platforms of western Scotland. With the move northwards, however, the zone that is congenial for the development of the community becomes progressively narrower, as either unsuitably impoverished soils stretch almost to the edge of flatter coasts, or high mountains rising close to the sea bring a quick shift to an inhospitable climate. In this part of Britain, therefore, the *Filipendulo-Iridetum* is effectively squeezed into maritime habitats, forming a fringe to salt-marshes and shingle beaches, though there are no species running through the community as a whole which indicate a maritime influence in the strict sense, that is, a pronounced input of sea-salts from spray or inundating waters.

In such situations as these, the community can be found over a variety of soil types, ranging from virtually pure shingle through thin layers of organic matter resting unconformably on gravel or sand to orthodox gleys. In many cases, however, there is obvious seepage of fresh-water through the upper horizons of the soil and over the surface, either from springs or flushes which can debouch right down to high water mark, or from drainage waters running in a more ill-defined fashion from slopes above. Such wetter conditions, frequently juxtaposed with saline habitats, are what encourage the occurrence here of species such as *Lycopus* and *Scutellaria galericulata*, common enough in swamps and fens further south in Britain, but increasingly confined to the west in Scotland, as suitable habitats become scarce. And the particular kind of gentle surface-water flushing that often characterises these situations encourages a further floristic element in many stands, with Elymo-Rumicion plants such as *Agrostis stolonifera*, *Potentilla anserina* and *Rumex crispus* quite frequent throughout, and Bidentetea species, such as the annuals *Polygonum hydropiper* and *Ranunculus sceleratus*, and *Catabrosa aquatica*, able to capitalise on the occasional exposure of areas of bare wet ground.

Provided such flushing is fairly constant, the *Filipendulo-Iridetum* can extend down into the zone of the upper shore which is subject to rare flooding by exceptional spring tides, and even the *Juncus* sub-community, which is the usual form of the *Filipendulo-Iridetum* in flushes beyond extreme high water mark, can be found in such situations. Towards the lower limit of the occurrence of the community, however, where periods of dry weather may produce locally high salinities (Gillham 1957*b*), the *Atriplex-Samolus* type is particularly characteristic, with the salt-tolerant Bidentetea species *Atriplex prostrata* becoming frequent and Asteretea halophytes like *Glaux* and *Triglochin maritima* able to persist.

In stands with vigorous flushing, the through-put of water can bring some enrichment with dissolved salts or by the deposition of silty material washed down from above. Where the *Filipendulo-Iridetum* occurs on the upper edge of the shore, however, it may receive more obvious additions of nutrients in the form of tidal litter, algal remains and other drift material getting trapped

among the herbage and slowly rotting. The *Urtica-Vicia* sub-community, with its prominent contingent of eutrophic plants like *Urtica* and *Galium aparine*, and weedy species able to spread on the matted detritus, such as *Cirsium arvense* and *Stellaria media*, is especially typical of such situations and it can even be found over raw shingle, provided this is kept moist and frequently enriched with drift. In more saline conditions, such vegetation can overlap a little in its floristics with the *Atriplex-Samolus* sub-community, whereas on the upper fringes of stands, the appearance of tussocks of *Arrhenatherum* and *Dactylis* create the impression of a wet and weedy mesotrophic grassland.

Although the *Filipendulo-Iridetum* is often found on or adjacent to salt-marshes that are open to stock or within coastal pastures, it seems itself to suffer few effects of grazing. *I. pseudacorus* is sometimes eaten when other herbage is in short supply but it is not particularly palatable and *O. crocata*, of course, is deadly; and it may be that an abundance of these plants affords some protection to more vulnerable ones like *F. ulmaria* and some of the other hemicryptophyte dicotyledons. Around the edges of stands, where stock push in to reach drinking water, trampling may create poached patches which afford a chance for the spread of annuals and dunging can result in locally-enriched conditions, but the herbage seems rarely to be grazed hard back. At the same time, woody plants seem to get a hold only with difficulty so that the vegetation remains essentially stable.

Zonation and succession

The *Filipendulo-Iridetum* can be found around springs and flushes close to the coast in zonations which largely reflect variation in soil moisture, acidity and trophic state and differences in treatment on the surrounding ground, but the most striking vegetation patterns are to be seen where the community occurs on the upper part of the sea-shore where it can pass to salt-marsh and shingle communities with an increase in maritime influence. In such habitats particularly, the *Filipendulo-Iridetum* appears to be a fairly natural vegetation type and one which develops but slowly to woodland.

In situations set back a little from the coast, the community can be found in very much the same kind of zonations as the *Filipendula-Angelica* mire, especially its *Juncus-Holcus* sub-community. In the more oceanic parts of the country, the *Juncus* sub-community of the *Filipendulo-Iridetum* replaces that vegetation type, occupying gleyed mesotrophic soils in flushes and hollows over gently-sloping ground near the coast. Usually, the landscape context in this kind of situation is one of marginal pastoral agriculture, with the community surrounded by relatively unimproved, grazed swards of the Nardo-Galion, like the *Festuca-Agrostis-Galium* grassland, or of the Junco-Molinion, like the *Molinia-Potentilla* mire, or, where there is a sharper transition to damp, nutrient-poor peat, by the *Scirpus-Erica* wet heath. Where grazing stock penetrate some way on to the wetter, mesotrophic soils around the flushes, a zone of the *Juncus-Galium* rush-pasture may be interposed between the *Filipendulo-Iridetum* and the drier grasslands around, Molinietalia herbs such as *Filipendula ulmaria*, *Angelica* and *Cirsium palustre* running out far into the rush-dominated vegetation together with ranker grasses like *Holcus* and *Festuca rubra*. Where the land has been improved a little by fertiliser application and re-seeding, then the whole sequence of vegetation types can be shifted somewhat, with the *Filipendulo-Iridetum* passing to the *Holco-Juncetum* and thence to *Lolio-Cynosuretum*. Such patterns can be seen on Anglesey and have been described from Mull and Iona (Gillham 1957*b*) and from Arran (Adam *et al.* 1977). Over the distinctive machair topography that has developed over the raised beaches in the latter sites and elsewhere in western Scotland, a local variation on these kinds of zonations can be seen where the influence of the consolidated shell-sand overlying much of the ground becomes paramount: then the *Festuca-Galium* dune grassland can become prominent in the sequence, partly or wholly replacing the Nardo-Galion swards around the *Filipendulo-Iridetum*.

Only in a few places is the *Filipendulo-Iridetum* contiguous with both these kinds of communities on the drier and/or less nutrient-rich soils to the landward side and also more maritime vegetation types of salt-marsh and shingle below. Very often now, where the community occurs in these latter kinds of habitats, its upper boundary is an artificial one, either a road or an abrupt transition to improved pasture or cultivated ground. Down-shore, however, the zonations are often very distinctive, particularly around the margins of the western Scottish sea-lochs. Here, Adam (1978, 1981) has described a characteristic regional assemblage of salt-marsh vegetation types, not numerous but, taken together, often species-rich, and frequently developed over rather unusual substrates, highly organic and sometimes amounting to just a thin layer of peat resting on shingle. Such sequences can be seen in whole or part in sites like Loch Ranza on Arran, Loch Gruinart and the Sorn estuary on Islay, Loch Creran in Argyll, Loch Ainort and Loch na h'Airde on Skye, Loch Kishorn, Loch Torridon and the Broom lochs in Wester Ross, on the Sutherland coast and in the Outer Hebrides (Adam *et al.* 1977, Adam 1978), as well as on Mull and Iona (Gillham 1957*b*) and Shetland (Hilliam 1977, Roper-Lindsay & Say 1986). In the more sheltered of these situations, the *Filipendulo-Iridetum* usually gives way below to one of the richer forms of the *Juncetum gerardi*, often the *Carex* sub-community, less commonly the

Leontodon type and, although *I. pseudacorus*, *O. crocata* and *F. ulmaria* all stop rather abruptly with the move on to more frequently-inundated ground, there is often a strong continuity between the vegetation types in the lower tier of the herbage, with such species as *Agrostis stolonifera* and *Potentilla anserina* running throughout as a patchy carpet and *Festuca rubra* occurring in both. Both the *Juncus* and *Atriplex-Samolus* sub-communities of the *Filipendulo-Iridetum* can be found in such zonations, though the latter type penetrates further into more saline situations and shows a stronger affinity with the salt-marsh swards through the occurrence of Asteretea herbs. At some sites, the junction between the *Juncetum gerardi* and the *Filipendulo-Iridetum* is made more striking by the scattered presence of small patches of the *Blysmetum rufi* in wet shingly hollows and flushes, and then down-shore there is typically a transition to the *Puccinellia*-turf fucoid sub-community of the *Puccinellietum*. On more exposed coasts, the *Juncetum gerardi* may be the only real salt-marsh vegetation present below the *Filipendulo-Iridetum* and even it may be fragmented into small patches of grasses and *Potentilla anserina* with Bidentetea herbs like *Atriplex prostrata* and *Polygonum hydropiper* scattered on the bare substrate (Gillham 1957*b*).

In these Scottish sea-lochs, the salt-marsh often seems to have developed over a shingle base but where such material directly underlies the vegetation, and particularly where considerable amounts of drift-line detritus are deposited, there is a tendency for the *Filipendulo-Iridetum* to be represented by the *Urtica-Galium* sub-community and for it to grade to eutrophic strandlines where the shingle becomes drier. *Galium aparine*, *Rumex crispus* (often obviously var. *littoreus*), *Atriplex prostrata*, *Stellaria media*, *Agrostis stolonifera*, *Festuca rubra* and *Elymus repens* can all provide continuity with the open assemblages of the *Atriplex-Urtica* strandline, a further community which adds regional distinction to these western Scottish zonations.

The accumulation of marsh deposits to heights capable of supporting the non-halophytic vegetation of the *Filipendulo-Iridetum* can be considered part of the continuous process of sediment accumulation, but it is hard to see the community as an end-point of marsh succession when it depends so obviously on continuous irrigation by fresh-water draining from the land. It is, rather, an oceanic mire type which happens to find its most striking expression on the maritime fringe, at the junction between fresh and saline habitats. Whether it can progress further in seral developments to scrub and woodland is a separate issue, though it is true that, on the salt-marsh fringe, exposure to winds and rare episodes of tidal flooding may make invasion of woody plants particularly unlikely. In some coastal situations, the *Filipendulo-Iridetum* can be found closely juxtaposed with alder-dominated woodland, though there is no direct evidence of the one having developed into the other. Further inland, where the community can be seen among stretches of wet scrub and woodland, such successions are perhaps more likely, though even there the dense canopy of the herbs may cast a shade inimical to seedlings and young saplings.

Distribution

The *Filipendulo-Iridetum* is largely confined to the west coast of Britain and is especially well developed in Scotland. Scattered stands occur in south-west England and west Wales but here the community may have been widely destroyed in its salt-marsh habitat by interference with the transitional upper zones. In Scotland, from Arran round to north Sutherland, and into Orkney and Shetland, it is probably virtually ubiquitous in suitable situations, with scattered localities too down the north-east coast.

Affinities

This colourful community received but brief mention in the literature (Gillham 1957*b*, Gimingham 1964*a*, Slack 1970) before the detailed accounts of Adam (1976, 1978, 1981) and Adam *et al.* (1977). The treatment here relies largely on published and unpublished data from Adam, although it also uses material from Hilliam (1977, see also Roper-Lindsay & Say 1986) and Birse (1980). Adam *et al.* (1977) recognised considerable heterogeneity within the *Filipendulo-Iridetum* as then defined, with the possible characterisation of two noda. With the additional data now available, and with a wider perspective on mire vegetation of this general kind throughout Britain, it is certainly sensible to retain a community of this type, though it can be more precisely defined than in the earlier accounts, with some of the samples included there transferred to the *Filipendula-Angelica* mire. It has also become possible to define the three sub-communities but, although they seem clearly influenced by particular environmental conditions, further sampling is needed to understand these relationships fully.

In general terms, the affinities of the *Filipendulo-Iridetum* are clearly with the Molinio-Arrhenatheretea but beyond that its placement is problematical. Adam *et al.* (1977) argued that its distinctively oceanic character favoured a location in the Anagallido-Juncetalia, a new order which Braun-Blanquet (1967) proposed for a range of mire, flush and wet-meadow vegetation types in northern Spain, but which they suggested could be extended around the western seaboard of Europe. Certainly, similar vegetation to the *Filipendulo-Iridetum* has been reported from other oceanic areas, among coastal rocks in western Norway (Nordhagen 1922, Skogen 1971, 1973) and on shingle there (Nordhagen 1940, Dahl & Hadač 1941) and from western Ireland (Praeger

1934), from northern Spain (Tüxen & Oberdorfer 1958, Bellot 1966) and as far afield as north Africa (Dahlgren & Lassen 1972). But such a solution seems unnecessarily drastic, for the community could be accommodated fairly easily in the Filipendulion alliance of the Molinietalia. Certainly, it is distinctively oceanic in comparison with the *Filipendula-Angelica* mire which includes most British Filipendulion vegetation, but this trend can be seen too in the Juncion acutiflori, the Calthion and the Cynosurion, in each of which *I. pseudacorus* increases with the shift westwards.

Floristic table M28

	a	b	c	28
Iris pseudacorus	V (2–9)	V (7–9)	V (6–8)	V (2–9)
Oenanthe crocata	V (1–7)	IV (2–6)	IV (3–8)	IV (1–8)
Filipendula ulmaria	V (2–7)	IV (3–5)	I (6)	IV (2–7)
Poa trivialis	IV (3–7)	V (2–6)	I (4)	IV (2–7)
Juncus effusus	V (2–4)	II (2–4)		III (2–4)
Ranunculus acris	IV (2–4)	II (2–3)	II (2–3)	III (2–4)
Rumex acetosa	IV (2–5)	II (3–4)	I (1)	III (1–5)
Juncus acutiflorus	IV (1–5)	II (3–4)	I (2)	III (1–5)
Galium palustre	IV (2–4)	II (3)		III (2–4)
Cirsium palustre	IV (1–3)	II (1–2)		III (1–3)
Caltha palustris	III (1–4)	I (2)	II (1–3)	II (1–4)
Calliergon cuspidatum	III (3–6)	I (4)	I (6)	II (3–6)
Anthoxanthum odoratum	III (2–4)	II (3–4)		II (2–4)
Lotus uliginosus	III (2–5)	I (3)	I (3)	II (2–5)
Epilobium palustre	III (2–4)	I (2)		II (2–4)
Lychnis flos-cuculi	III (2–3)		I (2–3)	II (2–3)
Cardamine pratensis	II (2–3)	I (2)	I (3)	II (2–3)
Angelica sylvestris	II (2–3)	I (2–3)		I (2–3)
Valeriana officinalis	II (2–4)	I (3)		I (2–4)
Myosotis laxa caespitosa	II (2–3)		I (2)	I (2–3)
Poa pratensis	II (2–4)			I (2–4)
Vicia cracca	I (2–4)			I (2–4)
Festuca arundinacea	I (2–4)			I (2–4)
Lathyrus pratensis	I (3–4)			I (3–4)
Phragmites australis	I (3–4)			I (3–4)
Galeopsis tetrahit	I (2)			I (2)
Juncus inflexus	I (3–4)			I (3–4)
Polygonum hydropiper	I (1–4)			I (1–4)
Lophocolea bidentata s.l.	I (2)			I (2)
Carex ovalis	I (3)			I (3)
Galium aparine	I (2–3)	IV (2–5)	II (3–4)	II (2–5)
Urtica dioica	I (1–2)	IV (3–8)	I (3)	II (1–8)
Cirsium arvense	I (2–3)	IV (2–4)		II (2–4)
Elymus repens	II (2–3)	III (3–4)	I (2)	II (2–4)
Stellaria media	II (1–4)	III (3–4)		II (1–4)
Arrhenatherum elatius	I (2–3)	II (2–5)		II (2–5)
Dactylis glomerata	I (2)	II (2–3)		I (2–3)
Plantago lanceolata	I (2)	II (2)		I (2)
Stachys palustris	I (3)	II (3)		I (3)

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Floristic table M28 *(cont.)*

	a	b	c	28
Geranium robertianum		II (2–4)		I (2–4)
Atriplex prostrata		I (2)	IV (1–3)	I (1–3)
Samolus valerandi			III (1–3)	I (1–3)
Matricaria maritima	I (1–2)	I (2–3)	II (2–3)	I (1–3)
Oenanthe lachenalii		I (2)	II (3)	I (2–3)
Triglochin maritima			II (2–3)	I (2–3)
Glaux maritima			II (2)	I (2)
Agrostis stolonifera	III (2–6)	IV (3–5)	IV (3–5)	III (2–6)
Eurhynchium praelongum	III (2–5)	III (3–4)	II (1–3)	III (1–5)
Lycopus europaeus	III (2–7)	III (2–4)	II (1–3)	III (1–7)
Stellaria alsine	III (2–3)	III (2–3)	II (1–2)	III (1–3)
Rumex crispus	III (1–3)	II (2–3)	II (3)	II (1–3)
Festuca rubra	III (3–5)	II (3)	II (2–3)	II (2–5)
Ranunculus repens	III (2–5)	III (3–4)	I (3)	III (2–5)
Potentilla anserina	III (2–6)	III (3–4)	I (5)	III (2–6)
Mentha aquatica	III (2–6)	II (3)	II (2–4)	II (2–6)
Scutellaria galericulata	III (2–5)	III (3–7)		III (2–7)
Holcus lanatus	III (3–6)	III (3–4)		III (3–6)
Hydrocotyle vulgaris	II (3–6)	II (3)	II (3–4)	II (3–6)
Carex otrubae	II (2–4)		II (2)	II (2–4)
Rhytidiadelphus squarrosus	II (2–5)	II (2–3)		II (2–5)
Equisetum palustre	I (2–3)	I (3)	I (3)	I (2–3)
Montia fontana	I (2–4)	I (2)		I (2–4)
Deschampsia cespitosa	I (2)	I (2–5)		I (2–5)
Lythrum salicaria	I (2–3)	I (2–3)		I (2–3)
Galium uliginosum	I (3)	I (3)		I (3)
Rumex conglomeratus	I (2–5)	I (4)		I (2–5)
Eleocharis palustris	I (1–2)		I (2)	I (1–2)
Scirpus maritimus	I (3)		I (3)	I (3)
Number of samples	16	9	5	30
Number of species/sample	30 (19–42)	20 (10–26)	18 (15–21)	25 (10–42)
Vegetation height (cm)	75 (30–175)	88 (20–120)	80 (40–120)	80 (20–175)
Vegetation cover (%)	99 (95–100)	100	88 (75–100)	95 (75–100)

a *Juncus* spp. sub-community
b *Urtica dioica-Galium aparine* sub-community
c *Atriplex prostrata-Samolus valerandi* sub-community
28 *Filipendulo-Iridetum pseudacori* (total)

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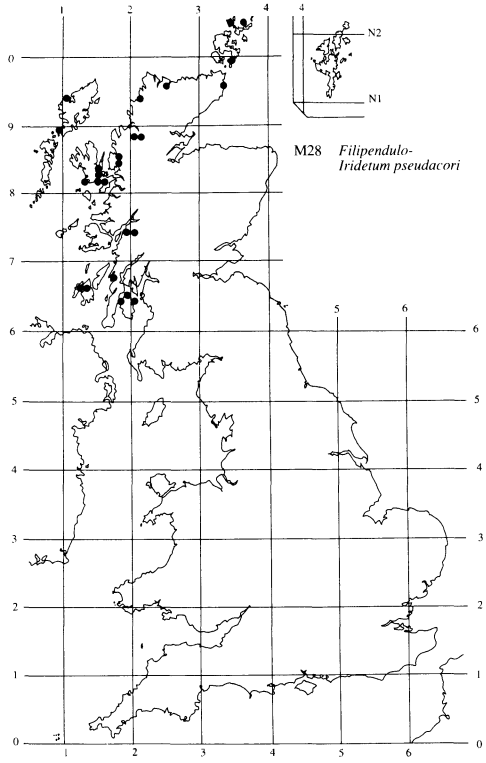

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