Irish Vegetation Classification (IVC)

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Community Synopsis

Scientific name	*Schoenus nigricans – Campylium stellatum* fen
Common name	Black Bog-rush – Yellow Starry Feather-moss fen
Community code	FE1A

Vegetation

Schoenus nigricans and *Molinia caerulea* are constant species in this diverse fen community and lend it a tussocky physiognomy. Also constant here are *Menyanthes trifoliata* and *Eriophorum angustifolium* with its distinctive wine-tipped leaves. Frequently one will also find some *Carex viridula*, *Potamogeton polygonifolius*, *Carex panicea*, *Anagallis tenella*, *Drosera rotundifolia*, *Juncus bulbosus* or the pale shoots of *Selaginella selaginoides*. *Myrica gale* may occur where there is some flushing and *Erica tetralix* provides some rather sparse dwarf shrub cover. There is usually a well-developed bryophyte layer composed mainly of the so-called 'brown mosses'. *Campylium stellatum* is very frequent and with it are often seen the red-brown swollen shoots of *Scorpidium scorpioides* or the greasy thalli of *Aneura pinguis*, while *Drepanocladus cossonii/revolvens* is occasional.

Ecology

This community occurs in wet fens and flushes on mildly basic, impoverished peats, often in association with blanket bog.

Sub-communities

No sub-communities are described.

Similar communities

The most closely related community is the FE1B *Schoenus nigricans – Succisa pratensis* fen. Both communities contain *Schoenus*, *Molinia* and a suite of 'brown mosses'. FE1B, however contains many species often found in grassland including *Cirsium dissectum*, *Mentha aquatica*, *Carex flacca*, *Euphrasia officinalis* agg., *Linum catharticum*, *Lotus corniculatus* and *Prunella vulgaris*, which are absent from the more bog-like FE1A. *Succisa pratensis* occurs in both communities but is far more frequent in FE1B. The HE4C *Molinia caerulea – Schoenus nigricans – Calluna vulgaris* peatland and the BG2D *Erica tetralix – Schoenus nigricans* bog both share with the present community the feature of tussocky *Schoenus* and *Molinia vegetation*, but the FE1A community clearly differs from them in the absence of *Calluna vulgaris*, the infrequence of *Sphagnum* spp., and the presence of 'brown mosses'.

Records and distribution

Number of records (all)

Clearly assigned:	218
Transitional:	34
Total:	252

Number of records (mapped)

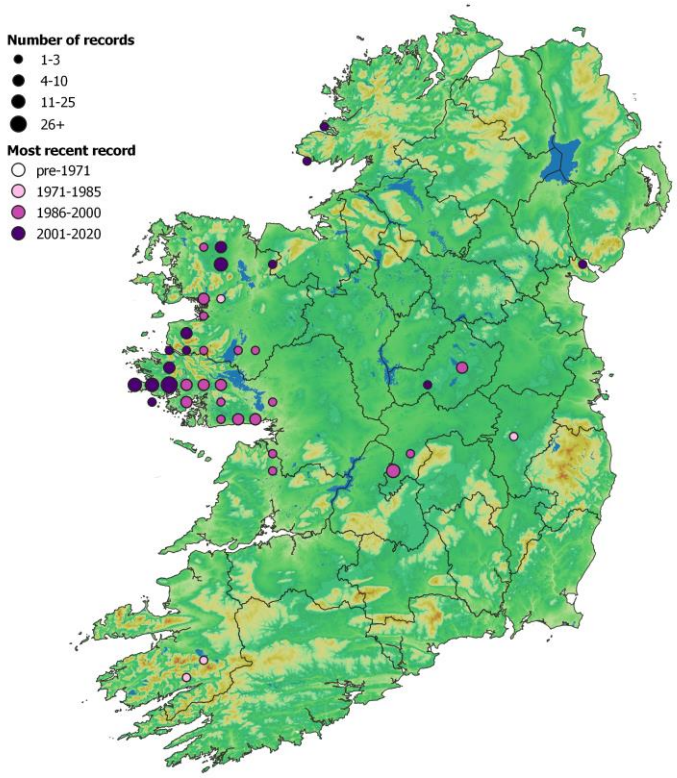
2001-2020:	43
1986-2000:	141
1971-1985:	42
Pre-1971:	3
Total:	229

Number of hectads (by most recent time period)

2001-2020:	15
1986-2000:	20
1971-1985	4
Pre-1971:	0
Total:	39

Number of hectads (records in each time period)

2001-2020:	15
1986-2000:	26
1971-1985	11
Pre-1971:	2



Synoptic table (*n* = 210)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Schoenus nigricans	V	3-(7)-9	*Phragmites australis*	II	2-(3)-7
Molinia caerulea	V	1-(5)-8	*Utricularia intermedia*	II	2-(3)-8
Campylium stellatum	IV	+-(4)-9	*Carex dioica*	II	+-(3)-7
Eriophorum angustifolium	IV	+-(3)-8	*Drepanocladus cossonii/revolvens*	II	+-(3)-7
Scorpidium scorpioides	IV	2-(5)-10	*Carex limosa*	II	2-(3)-7
Menyanthes trifoliata	IV	+-(3)-8	*Rhynchospora alba*	II	1-(3)-5
Myrica gale	III	2-(3)-7	*Carex echinata*	II	1-(2)-7
Potamogeton polygonifolius	III	+-(4)-7	*Juncus subnodulosus*	II	2-(5)-8
Anagallis tenella	III	+-(3)-5	*Carex lasiocarpa*	II	+-(4)-8
Erica tetralix	III	+-(3)-5	*Eriophorum latifolium*	II	2-(3)-7
Carex panicea	III	1-(3)-8	*Succisa pratensis*	II	+-(3)-5
Carex viridula	III	1-(3)-5	*Sphagnum subsecundum* agg.	II	2-(4)-9
Aneura pinguis	III	+-(3)-5	*Pinguicula vulgaris*	I	+-(2)-3
Juncus bulbosus	III	+-(3)-7	*Potentilla erecta*	I	+-(2)-3
Selaginella selaginoides	III	+-(2)-3	*Riccardia multifida*	I	2-(2)-3
Drosera rotundifolia	III	+-(2)-4	*Utricularia minor*	I	2-(3)-5
Eleocharis multicaulis	III	1-(3)-7	*Pinguicula lusitanica*	I	+-(2)-3
Narthecium ossifragum	II	+-(3)-7	*Sphagnum contortum*	I	1-(4)-8
Drosera anglica	II	+-(3)-5	*Cladium mariscus*	I	1-(4)-7
Drosera intermedia	II	2-(3)-7	*Fissidens adianthoides*	I	+-(3)-5

Affinities

GHI: PF1 Rich fen and flush

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (98.1%)

EUNIS: D4.111 Hiberno-Britannic black bogrush fens

NVC: M14 *Schoenus nigricans-Narthecium ossifragum* mire (53.3%)

Annex I: 7230 Alkaline fens

Proxy environmental data

Light: 7.9 Reaction: 5.2 Wetness: 8.7 Fertility: 2.1 Salinity: 0.0

Conservation value

Almost all examples of this community should correspond with the EU HD Annex I habitat 7230 Alkaline fens. Rare examples with *Cladium mariscus* may correspond with priority habitat 7210 *Cladium* fens*. It is of medium species richness (species/4 m^2 = 19.8, *n* = 130).

Management

These stands are typically unmanaged but may be grazed by livestock. The main threats are from peat extraction, infilling, drainage, reclamation and eutrophication.

Key references

Conaghan, J. (1995) Two rare bog cottons, *Eriophorum gracile* Koch ex Roth and *Eriophorum latifolium*. (Ph.D. thesis). National University of Ireland Galway.

Lockhart, N. (1991) Phytosociological and ecological studies of lowland blanket bog flushes in west Galway and north Mayo. (Ph.D. thesis). National University of Ireland Galway.

van Groenendael, J., Hochstenbach, S.M.H., van Mansfeld, M., Roozen, A.J.M., Westhoff, V. (1982) The influence of the sea on the vegetation of lakes in southwest Connemara. *Journal of Life Sciences - Royal Dublin Society* 3, 221–242.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE1A *Schoenus nigricans – Campylium stellatum* fen, Dooaghtry, Mayo (J. Brophy, June 2014)

Photo 2. FE1A *Schoenus nigricans – Campylium stellatum* fen, Sheskinmore, Donegal (J. Brophy, August 2014)

Irish Vegetation Classification (IVC)

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Community Synopsis

Scientific name	*Schoenus nigricans – Succisa pratensis* fen
Common name	Black Bog-rush – Devil's-bit Scabious fen
Community code	FE1B

Vegetation

This a tussocky fen community dominated *Schoenus nigricans* and *Molinia caerulea*. Other constant species in the field layer are *Succisa pratensis*, *Carex panicea* and *Potentilla erecta*, whilst *Cirsium dissectum* and *Carex flacca* are frequently found. There is usually a notable 'brown moss' bryophyte layer in which *Campylium stellatum* is the mainstay and *Ctenidium molluscum* is frequent, while, occasionally, one will find *Fissidens adianthoides* or the sickle-leaved *Drepanocladus cossonii/revolvens*, and less often *Scorpidium scorpioides*. *Calliergonella cuspidata* is also occasional.

Ecology

This community occurs in wet fens and flushes on mildly basic, nutrient-poor peats.

Sub-communities

No sub-communities are described.

Similar communities

The most closely related community is the FE1A *Schoenus nigricans – Campylium stellatum* fen. Both communities contain *Schoenus*, *Molinia* and a suite of 'brown mosses'. FE1A, however, contains many species of ombrotrophic bogs including *Eriophorum angustifolium*, *Menyanthes trifoliata*, *Myrica gale*, *Potamogeton polygonifolius*, *Erica tetralix*, *Drosera* spp. and *Narthecium ossifragum*, which are absent from the more meadow-like FE1B. The HE4C *Molinia caerulea – Schoenus nigricans – Calluna vulgaris* peatland and the BG2D *Erica tetralix – Schoenus nigricans* bog both share with the present community the feature of tussocky *Schoenus* and *Molinia* vegetation, but the FE1B community clearly differs from them in the absence of *Calluna vulgaris* and *Sphagnum* spp. The *Molinia* grasslands of group GL1, in which *Cirsium dissectum* is also found, lack both *Schoenus* and brown mosses.

Records and distribution

Number of records (all)

Clearly assigned:	257
Transitional:	42
Total:	299

Number of records (mapped)

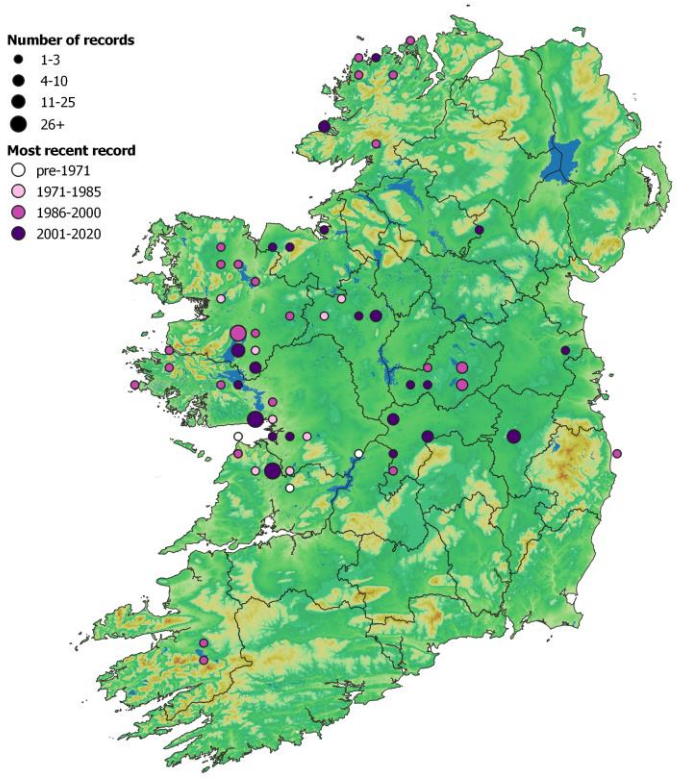
2001-2020:	61
1986-2000:	95
1971-1985:	106
Pre-1971:	35
Total:	297

Number of hectads (by most recent time period)

2001-2020:	22
1986-2000:	25
1971-1985	8
Pre-1971:	3
Total:	58

Number of hectads (records in each time period)

2001-2020:	22
1986-2000:	32
1971-1985	16
Pre-1971:	7



Synoptic table (*n* = 232)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Schoenus nigricans	V	2-(7)-10	*Selaginella selaginoides*	II	+-(2)-3
Molinia caerulea	V	1-(5)-8	*Linum catharticum*	II	+-(2)-3
Succisa pratensis	IV	1-(3)-7	*Lotus corniculatus*	II	+-(2)-5
Campylium stellatum	IV	+-(3)-8	*Prunella vulgaris*	II	+-(2)-5
Carex panicea	IV	1-(3)-8	*Carex hostiana*	II	1-(3)-6
Potentilla erecta	IV	+-(3)-5	*Hydrocotyle vulgaris*	I	+-(2)-7
Cirsium dissectum	III	+-(3)-8	*Angelica sylvestris*	I	+-(2)-5
Carex flacca	III	1-(3)-7	*Filipendula ulmaria*	I	+-(2)-5
Ctenidium molluscum	III	1-(3)-7	*Galium boreale*	I	2-(2)-5
Mentha aquatica	II	+-(2)-5	*Festuca rubra*	I	1-(3)-5
Agrostis stolonifera	II	1-(2)-5	*Ranunculus flammula*	I	+-(2)-5
Calliergonella cuspidata	II	1-(3)-9	*Scorpidium scorpioides*	I	1-(2)-8
Carex viridula	II	1-(3)-6	*Dactylorhiza incarnata*	I	1-(2)-3
Parnassia palustris	II	+-(2)-5	*Sesleria caerulea*	I	1-(2)-5
Pinguicula vulgaris	II	+-(2)-5	*Briza media*	I	+-(3)-5
Euphrasia officinalis agg.	II	1-(2)-5	*Carex pulicaris*	I	+-(3)-5
Fissidens adianthoides	II	+-(2)-5	*Centaurea nigra*	I	1-(2)-5
Phragmites australis	II	2-(2)-5	*Leontodon autumnalis*	I	+-(2)-5
Anagallis tenella	II	+-(2)-5	*Polygala vulgaris*	I	+-(2)-3
Drepanocladus cossonii/revolvens	II	1-(3)-8	*Juncus subnodulosus*	I	1-(4)-8

Affinities

GHI: PF1 Rich fen and flush

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (47.4%) / CM Molinio-Arrhenatheretea Tx. 1937 (47.0%)

EUNIS: D4.111 Hiberno-Britannic black bogrush fens

NVC: M10a *Carex dioica-Pinguicula vulgaris* mire *Carex demissa-Juncus bulbosus/kochii* sub-community (46.7%), but also, M13 *Schoenus nigricans-Juncus subnodulosus* mire (45.1%)

Annex I: 6410 *Molinia* meadows / 7230 Alkaline fens

Proxy environmental data

Light: 7.6 Reaction: 5.8 Wetness: 7.7 Fertility: 2.3 Salinity: 0.1

Conservation value

Examples of this community with high cover of *Schoenus nigricans*, *Carex* spp. and brown mosses should correspond with the EU HD Annex I habitat 7230 Alkaline fens. Examples with *Cirsium dissectum* or *Dactylorhiza incarnata* may correspond with the fen variant of habitat 6410 *Molinia* meadows. Geyer's whorl snail (*Vertigo geyeri*), an EU HD Annex II species, has been recorded from this community at several sites. It is a community of medium species richness (species/4 m^2 = 20.8, *n* = 117).

Management

These stands are typically unmanaged but may be grazed by livestock. The main threats are from peat extraction, infilling, drainage, reclamation and eutrophication.

Key references

Mooney, E. (1991) A phytosociological and palaeoecological study of the wetlands of the Lower Corrib Basin, Co. Galway, Ireland. (Ph.D. thesis). National University of Ireland Galway.

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE1B *Schoenus nigricans* – *Succisa pratensis* fen, Drimmon Lough, Roscommon (J. Brophy, June 2014)

Photo 2. FE1B *Schoenus nigricans* – *Succisa pratensis* fen, Sheskinmore, Donegal (J. Brophy, August 2014)

Irish Vegetation Classification (IVC)

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Community Synopsis

Scientific name	*Carex panicea – Carex viridula* fen
Common name	Carnation Sedge – Yellow Sedge fen
Community code	FE1C

Vegetation

This variable community brings together a range of small-sedge dominated vegetation types. The main sedges are *Carex viridula* and *Carex panicea*, which are constant and the combination of their glaucous and bright green sedge leaves is an indicator of this habitat. These are frequently accompanied by *Carex echinata* and occasionally by *Carex nigra*, *Carex hostiana*, *Carex pulicaris* or *Carex dioica*. Other constants are *Molinia caerulea*, *Anagallis tenella*, *Juncus bulbosus* and *Ranunculus flammula*. Frequent vascular plants are *Eleocharis multicaulis*, *Eriophorum angustifolium*, *Succisa pratensis*, *Potentilla erecta*, *Juncus articulatus* and *Potamogeton polygonifolius*. Occasionally, the conspicuous pale-leaved rosettes of *Pinguicula vulgaris* will be seen. There is often, but not always, a 'brown moss' presence in the bryophyte layer, most often in the shape of *Campylium stellatum*, and somewhat less often in the guise of *Aneura pinguis*, *Drepanocladus cossonii/revolvens*, *Scorpidium scorpioides*, *Fissidens adianthoides* or *Bryum pseudotriquetrum*. *Sphagnum subsecundum* agg. is occasionally present and may be abundant.

Ecology

This community usually occurs in the uplands on grassy or heathy slopes where there is strong flushing over nutrient-poor thin peats or mineral soils, but variants also occur in the lowlands in association with other fen types.

Sub-communities

No sub-communities have been described for this community.

Similar communities

From the other communities in this group, community FE1C differs principally in that *Schoenus nigricans* is scarce here.

Records and distribution

Number of records (all)

Clearly assigned:	195
Transitional:	60
Total:	255

Number of records (mapped)

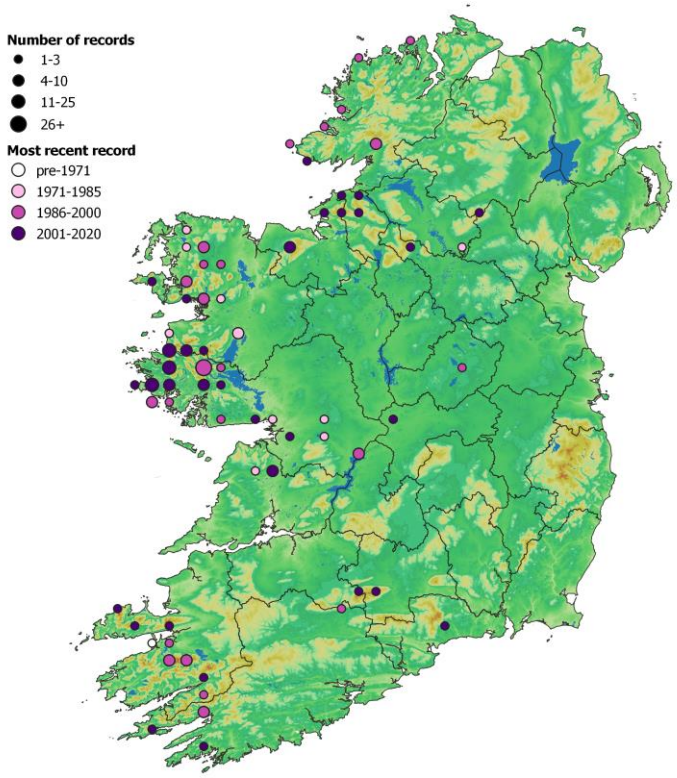
2001-2020:	59
1986-2000:	114
1971-1985:	50
Pre-1971:	13
Total:	236

Number of hectads (by most recent time period)

2001-2020:	33
1986-2000:	24
1971-1985	10
Pre-1971:	1
Total:	68

Number of hectads (records in each time period)

2001-2020:	33
1986-2000:	31
1971-1985	16
Pre-1971:	7



Synoptic table (*n* = 174)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Carex viridula	V	2-(4)-9	*Drosera rotundifolia*	II	+-(2)-3
Carex panicea	V	2-(5)-8	*Hydrocotyle vulgaris*	II	1-(3)-7
Anagallis tenella	V	1-(3)-8	*Sphagnum subsecundum* agg.	II	1-(3)-9
Molinia caerulea	V	2-(4)-8	*Carex pulicaris*	II	+-(3)-5
Juncus bulbosus	IV	+-(3)-8	*Eleocharis quinqueflora*	II	2-(5)-8
Ranunculus flammula	IV	+-(3)-7	*Carex dioica*	II	1-(3)-5
Carex echinata	III	+-(3)-8	*Prunella vulgaris*	II	+-(2)-7
Eleocharis multicaulis	III	1-(5)-8	*Myrica gale*	II	2-(3)-5
Campylium stellatum	III	+-(3)-8	*Scorpidium scorpioides*	II	+-(3)-9
Eriophorum angustifolium	III	+-(3)-7	*Nardus stricta*	II	2-(3)-5
Potentilla erecta	III	+-(2)-5	*Erica tetralix*	II	+-(2)-7
Succisa pratensis	III	+-(3)-6	*Pinguicula vulgaris*	II	1-(2)-3
Potamogeton polygonifolius	III	2-(5)-8	*Anthoxanthum odoratum*	II	1-(2)-7
Juncus articulatus	III	+-(3)-7	*Fissidens adianthoides*	II	+-(2)-6
Calliergonella cuspidata	II	1-(3)-7	*Rhytidiadelphus squarrosus*	II	+-(2)-4
Carex nigra	II	+-(3)-8	*Bryum pseudotriquetrum*	I	+-(2)-5
Aneura pinguis	II	+-(2)-3	*Hypericum elodes*	I	1-(4)-8
Drepanocladus cossonii/revolvens	II	1-(4)-9	*Bellis perennis*	I	1-(3)-5
Carex hostiana	II	2-(3)-7	*Pedicularis palustris*	I	1-(2)-5
Narthecium ossifragum	II	+-(3)-5	*Schoenus nigricans*	I	1-(3)-5

Affinities

GHI: PF1 Rich fen and flush / PF2 Poor fen and flush

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (90.2%)

EUNIS: D4.151 British dioecious-yellow sedge fens

NVC: M10a *Carex dioica-Pinguicula vulgaris* mire *Carex demissa-Juncus bulbosus/kochii* sub-community (60.3%)

Annex I: 7230 Alkaline fens

Proxy environmental data

Light: 7.7 Reaction: 4.6 Wetness: 8.5 Fertility: 2.2 Salinity: 0.0

Conservation value

This is species-rich community (species/4 m^2 = 25.1, *n* = 106). Examples which support 'brown mosses' correspond with EU HD Annex I habitat 7230 Alkaline fens.

Management

Flushes in the uplands are in areas usually managed by extensive sheep grazing, which may impact on this community. Stands in the lowlands are vulnerable to drainage, infilling, reclamation and eutrophication.

Key references

Bleasdale, A. (1995) The vegetation and ecology of the Connemara uplands, with particular reference to sheep grazing. (Ph.D. thesis). National University of Ireland Galway.

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

van Groenendael, J., Hochstenbach, S.M.H., van Mansfeld, M., Roozen, A.J.M., Westhoff, V. (1982) The influence of the sea on the vegetation of lakes in southwest Connemara. *Journal of Life Sciences - Royal Dublin Society* 3, 221–242.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE1C *Carex panicea – Carex viridula* fen, Glenummera, Sheeffry Hills, Mayo (J. Conaghan, September 2010)

Photo 2. FE1C *Carex panicea – Carex viridula* fen, Lisdargan, Croaghskearda, Kerry (P. Perrin, August 2011)

Irish Vegetation Classification (IVC)

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Community Synopsis

Scientific name	*Juncus subnodulosus – Mentha aquatica* fen
Common name	Blunt-flowered Rush – Water mint fen
Community code	FE1D

Vegetation

This community, which lies at the swampy end of the fen vegetation continuum, represents dense stands of the rush *Juncus subnodulosus*. These patches can have a fairly distinctive orange hue. It is a rather variable assemblage with only one other constant species in the form of the aromatic *Mentha aquatica*. Frequently the field layer will also contain *Phragmites australis*, *Molinia caerulea*, *Carex panicea* or *Galium palustre*. There can be a strong tall-herb element in the form of *Filipendula ulmaria*, *Lythrum salicaria*, *Equisetum* spp. or *Angelica sylvestris*. Beneath the taller vegetation, *Hydrocotyle vulgaris* or *Menyanthes trifoliata* can be abundant. The chief bryophyte is *Calliergonella cuspidata*, but sometimes one may find some *Campylium stellatum*, *Scleropodium purum* or *Scorpidium scorpioides*.

Ecology

This community occurs typically in base-rich fens and flood meadows in the lowlands,

Sub-communities

No sub-communities are described.

Similar communities

The dominance of *Juncus subnodulosus* should serve to identify this community. Whilst this species can occur in both FE1A and FE1B, the cover of *Schoenus* and *Carex* species is much higher in those communities compared with FE1D.

Records and distribution

Number of records (all)

Clearly assigned:	77
Transitional:	13
Total:	90

Number of records (mapped)

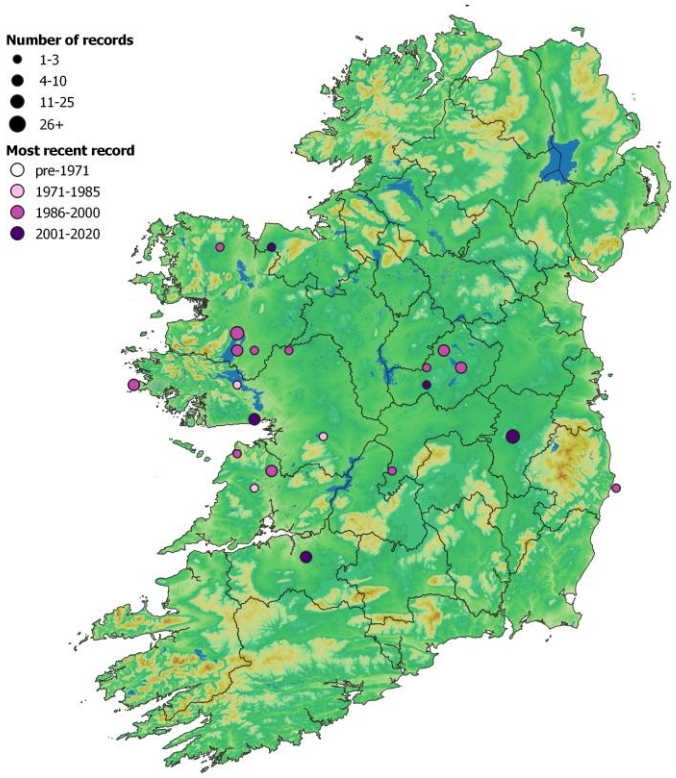
2001-2020:	16
1986-2000:	49
1971-1985:	17
Pre-1971:	6
Total:	88

Number of hectads (by most recent time period)

2001-2020:	5
1986-2000:	13
1971-1985	3
Pre-1971:	0
Total:	21

Number of hectads (records in each time period)

2001-2020:	5
1986-2000:	15
1971-1985	8
Pre-1971:	2



Synoptic table (*n* = 74)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Juncus subnodulosus	V	5-(8)-10	*Carex nigra*	I	1-(3)-5
Mentha aquatica	IV	2-(4)-8	*Carex lasiocarpa*	I	2-(8)-9
Phragmites australis	III	1-(3)-5	*Carex flacca*	I	1-(3)-5
Molinia caerulea	III	2-(5)-8	*Schoenus nigricans*	I	3-(4)-5
Carex panicea	III	1-(5)-8	*Scleropodium purum*	I	3-(5)-8
Calliergonella cuspidata	III	+-(5)-8	*Scorpidium scorpioides*	I	2-(7)-8
Galium palustre	III	1-(3)-5	*Valeriana officinalis*	I	1-(3)-7
Hydrocotyle vulgaris	II	1-(3)-9	*Caltha palustris*	I	2-(2)-5
Agrostis stolonifera	II	2-(3)-7	*Cardamine pratensis*	I	2-(2)-3
Carex viridula	II	1-(3)-7	*Epilobium palustre*	I	1-(1)-3
Menyanthes trifoliata	II	2-(5)-9	*Potentilla palustris*	I	2-(2)-5
Succisa pratensis	II	2-(4)-7	*Calliergon giganteum*	I	2-(4)-5
Filipendula ulmaria	II	2-(3)-8	*Cirsium dissectum*	I	1-(3)-3
Ranunculus flammula	II	1-(3)-5	*Pedicularis palustris*	I	2-(2)-4
Campylium stellatum	II	2-(5)-8	*Potentilla erecta*	I	2-(3)-4
Equisetum fluviatile	II	2-(3)-8	*Anthoxanthum odoratum*	I	3-(3)-5
Lythrum salicaria	II	1-(3)-5	*Brachythecium rutabulum*	I	2-(3)-5
Equisetum palustre	II	1-(3)-7	*Eupatorium cannabinum*	I	2-(5)-5
Angelica sylvestris	I	2-(3)-5	*Drepanocladus cossonii/revolvens*	I	2-(5)-7
Holcus lanatus	I	1-(3)-5	*Juncus acutiflorus*	I	2-(5)-5

Affinities

GHI: FS1 Reed and tall sedge swamp / PF1 Rich fen and flush

ZM: IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (54.1%) / PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (23.0%)

EUNIS: E3.418 Blunt-flowered rush meadows

NVC: S25c *Phragmites australis-Eupatorium cannabinum* tall-herb fen *Cladium mariscus* sub-community (51.3%), but also M22c *Juncus subnodulosus-Cirsium palustre* fen-meadow *Carex elata* sub-community (44.2%)

Annex I: 7230 Alkaline fens

Proxy environmental data

Light: 7.6 Reaction: 6.4 Wetness: 8.5 Fertility: 3.6 Salinity: 0.1

Conservation value

Examples which support 'brown mosses' correspond with EU HD Annex I habitat 7230 Alkaline fens. Species diversity is rather poor on average (species/4 m^2 = 14.8, *n* = 30).

Management

Information on the management of these stands is somewhat lacking but it is likely that some are mowed or grazed by livestock. Similar to other fen communities, they are vulnerable to drainage, infilling, reclamation and eutrophication.

Key references

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

Synopsis version: V1.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE1D *Juncus subnodulosus – Mentha aquatica* fen, Pollardstown Fen, Kildare (R. Hodd, August 2019)

Photo 2. FE1D *Juncus subnodulosus – Mentha aquatica* fen, Pollardstown Fen, Kildare (R. Hodd, August 2019)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Equisetum fluviatile – Menyanthes trifoliata* mire
Common name	Water Horsetail – Bogbean mire
Community code	FE2A

Vegetation

This species-poor mire community is distinguished by the presence of a usually abundant layer of *Menyanthes trifoliata*. Between the broad bogbean leaves typically grow the upright shoots of *Equisetum fluviatile*. *Mentha aquatica* is the only frequent species growing alongside these constants. Occasionally, there are some sedges (*Carex rostrata*, *Carex lasiocarpa*) or some taller swamp species such as *Phragmites australis* or *Typha latifolia*.

Ecology

This is mire or swamp community of mildly acidic and slightly nutrient poor conditions. It is found in the context of lowland fens and margins of mesotrophic lakes and lagoons.

Sub-communities

No sub-communities are currently described.

Similar communities

The community is more aligned with swamps than the others in the FE2 *Menyanthes trifoliata – Potentilla palustris* group, and is much less diverse, with the relative importance of *Equisetum fluviatile* being a key indicator. The FW3G *Equisetum fluviatile – Eleocharis palustris* swamp, differs from the current assemblage in the absence of *Menyanthes* and the frequent presence of *Eleocharis palustris*.

Records and distribution

Number of records (all)

Clearly assigned:	159
Transitional:	32
Total:	191

Number of records (mapped)

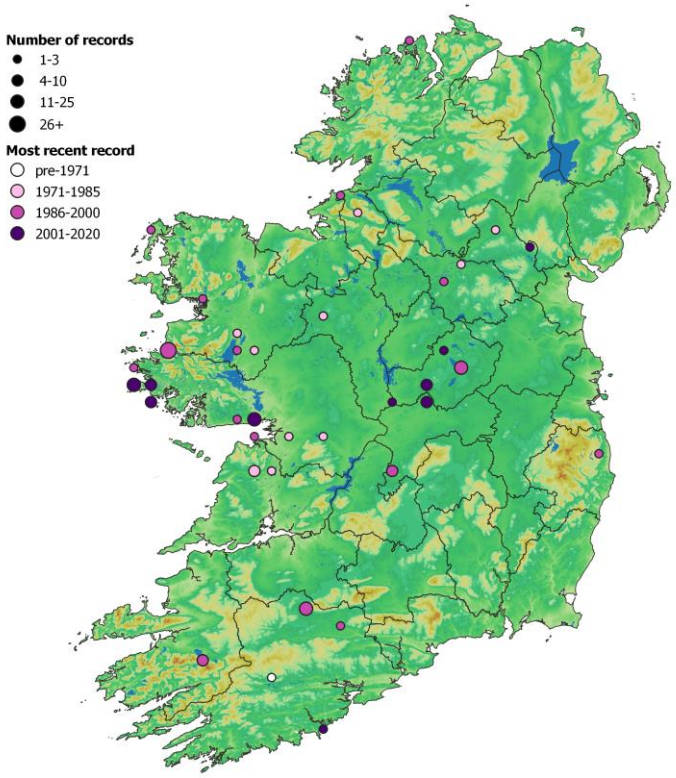
2001-2020:	48
1986-2000:	66
1971-1985:	74
Pre-1971:	2
Total:	190

Number of hectads (by most recent time period)

2001-2020:	10
1986-2000:	16
1971-1985	10
Pre-1971:	1
Total:	37

Number of hectads (records in each time period)

2001-2020:	10
1986-2000:	18
1971-1985	14
Pre-1971:	2



Synoptic table (*n* = 128)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Menyanthes trifoliata	V	5-(7)-9	*Potamogeton coloratus*	I	2-(3)-8
Equisetum fluviatile	IV	2-(3)-7	*Caltha palustris*	I	2-(2)-4
Mentha aquatica	III	2-(3)-8	*Utricularia australis/vulgaris*	I	2-(4)-7
Carex rostrata	II	1-(3)-7	*Cardamine pratensis*	I	+-(2)-9
Phragmites australis	II	2-(3)-8	*Eriophorum angustifolium*	I	2-(3)-5
Hydrocotyle vulgaris	II	2-(2)-8	*Berula erecta*	I	2-(3)-7
Typha latifolia	II	1-(3)-7	*Hippuris vulgaris*	I	2-(2)-4
Agrostis stolonifera	II	2-(3)-4	*Lemna trisulca*	I	2-(3)-7
Galium palustre	II	+-(3)-5	*Persicaria amphibia*	I	2-(2)-8
Lemna minor	II	+-(3)-8	*Iris pseudacorus*	I	2-(2)-4
Carex lasiocarpa	II	2-(5)-8	*Juncus bulbosus*	I	2-(3)-4
Apium nodiflorum	II	+-(3)-8	*Potamogeton polygonifolius*	I	2-(3)-8
Juncus articulatus	II	2-(3)-8	*Rorippa nast.-aquaticum* agg.	I	2-(2)-4
Eleocharis palustris	I	2-(3)-5	*Scorpidium scorpioides*	I	2-(4)-8
Sparganium erectum	I	1-(3)-9	*Baldellia ranunculoides*	I	2-(2)-3
Epilobium palustre	I	1-(2)-4	*Carex diandra*	I	2-(3)-7
Potentilla palustris	I	2-(3)-5	*Juncus subnodulosus*	I	2-(4)-7
Schoenoplectus lacustris	I	2-(3)-5	*Leptodictyum riparium*	I	2-(3)-5
Calliergon giganteum	I	2-(5)-9	*Potamogeton natans*	I	2-(3)-5
Carex nigra	I	2-(3)-8	*Lythrum salicaria*	I	+-(2)-3

Affinities

GHI: FS1 Reed and tall sedge swamp / PF3 Transition mire and quaking bog

ZM: IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (43.0%) / PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (27.3%) /OD Phragmito-Magnocaricetea Klika in Klika et Novák 1941 (21.9%)

EUNIS: C3.247 Water horsetail beds

NVC: S12 *Typha latifolia* swamp (53.7%), but also S10 *Equisetum fluviatile* swamp (46.6%)

Annex I: 7140 Transition mires

Proxy environmental data

Light: 7.7 Reaction: 4.9 Wetness: 9.9 Fertility: 3.5 Salinity: 0.1

Conservation value

This a species-poor community (species/4 m^2 = 9.3, *n* = 74). Stands with *Carex rostrata* or *Carex lasiocarpa* are likely to correspond with EU HD Annex I habitat 7140 Transition mires.

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation and eutrophication.

Key references

Brock, T., Frigge, P., van der Ster, H. (1978) A vegetation study of the pools and surrounding wetlands in the Dooaghtry area, Co. Mayo, Republic of Ireland. (unpublished). Laboratory of Geobotany, Catholic University of Nijmegen, The Netherlands.

O'Connell, M. (1981) The phytosociology and ecology of Scragh Bog, Co. Westmeath. *New Phytologist* 87, 139–187.

van Groenendael, J., Hochstenbach, S.M.H., van Mansfeld, M., Roozen, A.J.M., Westhoff, V. (1982) The influence of the sea on the vegetation of lakes in southwest Connemara. *Journal of Life Sciences - Royal Dublin Society* 3, 221–242.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE2A *Equisetum fluviatile – Menyanthes trifoliata* mire, River Corrib, Menlough, Galway (F. O'Neill, August 2014)

Photo required

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex limosa – Menyanthes trifoliata* mire
Common name	Bog-sedge – Bogbean mire
Community code	FE2B

Vegetation

This is a rather variable mire community dominated by mixtures of the constant species: *Menyanthes trifoliata*, *Carex limosa*, *Phragmites australis*, *Potamogeton polygonifolius*, *Ranunculus flammula* and *Hydrocotyle vulgaris*. In addition to *Carex limosa*, other carices are usually present, with *Carex lasiocarpa* and *Carex nigra* being frequent and *Carex panicea*, *Carex viridula*, *Carex rostrata* and *Carex echinata* all being occasional. *Juncus bulbosus*, *Potentilla palustris*, *Mentha aquatica*, *Anagallis tenella*, *Molinia caerulea* and *Utricularia intermedia* are also frequent here. *Myrica gale* and *Hypericum elodes* are frequent, both indicating some movement of water in the mire system. The bryophyte layer is also rather variable with *Scorpidium scorpioides* and *Sphagnum subsecundum* agg. only occasional but sometimes abundant.

Ecology

This is a wetland community of nutrient-poor, slightly acidic situations, typically occurring as a flush or soakway within bogland, especially oceanic blanket bog, or at the margins of dystrophic lakes and pools.

Sub-communities

No sub-communities have been described for this community.

Similar communities

Carex limosa is frequent in the FE2C *Carex lasiocarpa – Menyanthes trifoliata* mire, but that community lacks *Phragmites australis*, *Potamogeton polygonifolius*, *Ranunculus flammula* and *Hydrocotyle vulgaris* instead supporting several different constant species in *Vaccinium oxycoccos*, *Filipendula ulmaria* and *Angelica sylvestris*.

Records and distribution

Number of records (all)

Clearly assigned:	206
Transitional:	35
Total:	241

Number of records (mapped)

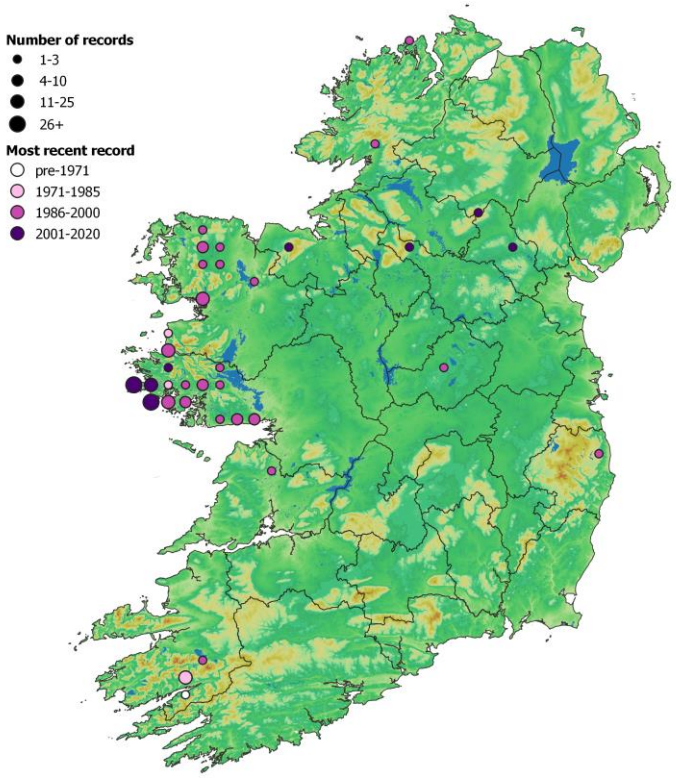
2001-2020:	75
1986-2000:	90
1971-1985:	57
Pre-1971:	2
Total:	224

Number of hectads (by most recent time period)

2001-2020:	8
1986-2000:	23
1971-1985	3
Pre-1971:	1
Total:	35

Number of hectads (records in each time period)

2001-2020:	8
1986-2000:	25
1971-1985	9
Pre-1971:	2



Synoptic table (*n* = 184)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Menyanthes trifoliata	V	2-(5)-9	*Isolepis fluitans*	II	2-(3)-7
Carex limosa	IV	1-(5)-9	*Eriophorum angustifolium*	II	2-(3)-5
Potamogeton polygonifolius	IV	2-(4)-7	*Scorpidium scorpioides*	II	2-(5)-9
Phragmites australis	IV	+-(3)-7	*Juncus articulatus*	II	2-(3)-7
Ranunculus flammula	IV	2-(3)-8	*Sphagnum subsecundum* agg.	II	2-(5)-9
Hydrocotyle vulgaris	IV	2-(3)-8	*Carex echinata*	II	2-(3)-5
Juncus bulbosus	III	2-(3)-7	*Carex rostrata*	II	2-(3)-7
Molinia caerulea	III	+-(3)-8	*Galium palustre*	II	2-(2)-7
Anagallis tenella	III	2-(3)-9	*Eriophorum gracile*	II	2-(3)-8
Potentilla palustris	III	2-(3)-8	*Agrostis stolonifera*	II	2-(3)-7
Mentha aquatica	III	2-(3)-8	*Pedicularis palustris*	II	2-(2)-7
Carex lasiocarpa	III	2-(5)-9	*Cardamine pratensis*	I	2-(2)-5
Hypericum elodes	III	2-(4)-8	*Carex diandra*	I	2-(3)-7
Carex nigra	III	+-(3)-7	*Campylium stellatum*	I	2-(3)-7
Utricularia intermedia	III	2-(3)-7	*Epilobium palustre*	I	1-(2)-3
Myrica gale	III	2-(3)-8	*Eriocaulon aquaticum*	I	2-(4)-8
Equisetum fluviatile	II	2-(3)-8	*Lythrum salicaria*	I	2-(2)-3
Carex panicea	II	2-(3)-7	*Calliergon giganteum*	I	2-(4)-9
Carex viridula	II	2-(3)-7	*Calliergonella cuspidata*	I	2-(3)-5
Eleocharis multicaulis	II	2-(3)-7	*Succisa pratensis*	I	2-(2)-5

Affinities

GHI: PF2 Poor fen and flush / PF3 Transition mire and quaking bog

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (89.1%)

EUNIS: D2.34 *Carex limosa* swards

NVC: M29 *Hypericum elodes-Potamogeton polygonifolius* soakway (56.1%)

Annex I: 7140 Transition mires

Proxy environmental data

Light: 7.7 Reaction: 4.7 Wetness: 9.5 Fertility: 2.6 Salinity: 0.1

Conservation value

Examples of this community may correspond with EU HD Annex I habitat 7140 Transition mires. It is of medium species richness (species/4 m^2 = 19.2, *n* = 105).

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation, ground water pollution and peat extraction.

Key references

Conaghan, J. (1995) Two rare bog cottons, *Eriophorum gracile* Koch ex Roth and *Eriophorum latifolium*. (Ph.D. thesis). National University of Ireland Galway.

Lockhart, N. (1991) Phytosociological and ecological studies of lowland blanket bog flushes in west Galway and north Mayo. (Ph.D. thesis). National University of Ireland Galway.

van Groenendael, J., Hochstenbach, S.M.H., van Mansfeld, M., Roozen, A.J.M., Westhoff, V. (1982) The influence of the sea on the vegetation of lakes in southwest Connemara. *Journal of Life Sciences - Royal Dublin Society* 3, 221–242.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE2B *Carex limosa – Menyanthes trifoliata* mire, Monydoo or Tonycrom, near Swalinbar, Cavan
(R. Hodd, September 2012)

Photo 2. FE2B *Carex limosa – Menyanthes trifoliata* mire, Monydoo or Tonycrom, near Swalinbar, Cavan
(R. Hodd, September 2012)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex lasiocarpa – Menyanthes trifoliata* mire
Common name	Slender Sedge – Bogbean mire
Community code	FE2C

Vegetation

This a very diverse mire community usually dominated by the slender leaves of *Carex lasiocarpa* and the broad green leaves of *Menyanthes trifoliata*. Other constant features are *Equisetum fluviatile*, the forbs *Succisa pratensis*, *Potentilla palustris*, *Filipendula ulmaria* and *Angelica sylvestris*, and the trailing stems of *Vaccinium oxycoccos*. *Carex limosa* and the rather rare, tussock-forming *Carex appropinquata* are frequent here, as is some patchy cover of *Salix repens*. There is usually a well-developed bryophyte layer in which *Calliergonella cuspidata* and *Calliergon giganteum* are the most frequent plants, but the calcicole 'brown mosses' *Campylium stellatum*, *Drepanocladus cossonii/revolvens*, *Bryum pseudotriquetrum* or *Scorpidium scorpioides* are often encountered.

Ecology

This is a wetland community of nutrient-poor, relatively neutral situations. Most records come from the quaking fen scraw of Scragh Bog.

Sub-communities

No sub-communities are currently described.

Similar communities

Carex lasiocarpa is frequent in the FE2B *Carex limosa – Menyanthes trifoliata* mire, but that often-flushed community typically lacks *Vaccinium oxycoccos*, instead supporting several different constant species in *Phragmites australis*, *Potamogeton polygonifolius*, *Ranunculus flammula* and *Hydrocotyle vulgaris*. *Vaccinium oxycoccos* also occurs in the BG2A *Eriophorum vaginatum – Vaccinium oxycoccos* bog but that is a far more acidic community of ombrotrophic raised bogs.

Records and distribution

Number of records (all)

Clearly assigned:	115
Transitional:	13
Total:	128

Number of records (mapped)

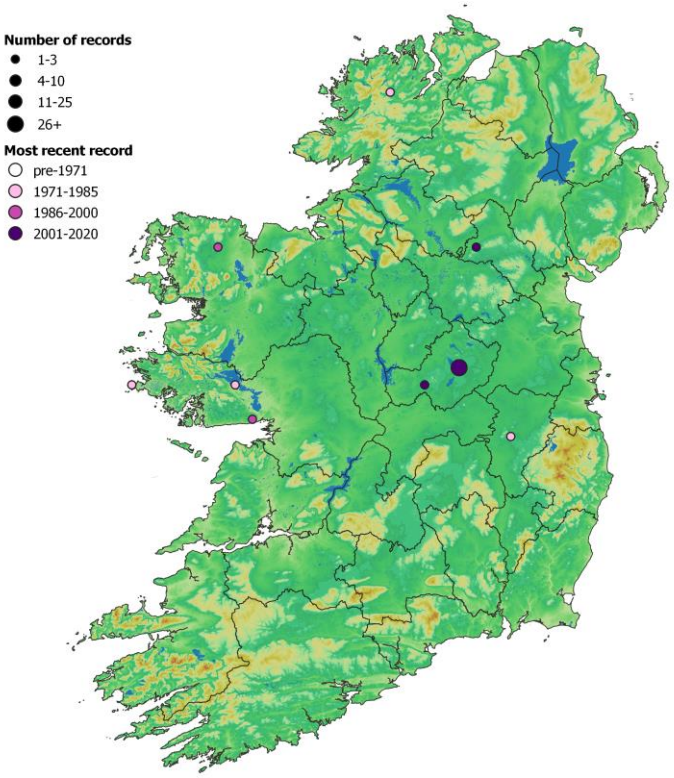
2001-2020:	5
1986-2000:	10
1971-1985:	113
Pre-1971:	0
Total:	128

Number of hectads (by most recent time period)

2001-2020:	3
1986-2000:	2
1971-1985	4
Pre-1971:	0
Total:	9

Number of hectads (records in each time period)

2001-2020:	3
1986-2000:	3
1971-1985	5
Pre-1971:	0



Synoptic table (*n* = 115)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Carex lasiocarpa	V	2-(3)-8	*Galium palustre*	II	1-(2)-3
Menyanthes trifoliata	V	2-(5)-8	*Bryum pseudotriquetrum*	II	2-(2)-5
Equisetum fluviatile	V	2-(3)-7	*Carex viridula*	II	2-(2)-5
Vaccinium oxycoccos	IV	2-(3)-8	*Carex rostrata*	II	2-(2)-5
Succisa pratensis	IV	2-(2)-7	*Hydrocotyle vulgaris*	II	2-(3)-7
Potentilla palustris	IV	1-(2)-5	*Lychnis flos-cuculi*	II	1-(2)-5
Filipendula ulmaria	IV	2-(2)-7	*Cinclidium stygium*	II	2-(3)-8
Angelica sylvestris	IV	1-(2)-7	*Pyrola rotundifolia*	II	2-(5)-8
Calliergonella cuspidata	III	2-(3)-8	*Valeriana officinalis*	II	2-(2)-3
Carex limosa	III	2-(3)-7	*Hylocomium splendens*	II	2-(3)-9
Calliergon giganteum	III	2-(5)-9	*Scorpidium scorpioides*	II	2-(5)-8
Carex appropinquata	III	2-(3)-7	*Aneura pinguis*	II	2-(2)-3
Campylium stellatum	III	2-(5)-8	*Salix aurita*	II	1-(3)-9
Drepanocladus cossonii/revolvens	III	2-(3)-9	*Epilobium palustre*	II	+-(2)-3
Cardamine pratensis	III	1-(2)-3	*Sphagnum subnitens*	II	2-(5)-9
Salix repens	III	2-(3)-5	*Agrostis stolonifera*	II	2-(2)-3
Drosera rotundifolia	II	1-(2)-5	*Dactylorhiza traunsteineri*	II	2-(2)-3
Mentha aquatica	II	2-(2)-5	*Carex panicea*	II	2-(2)-3
Caltha palustris	II	2-(2)-7	*Schoenus nigricans*	II	2-(5)-8
Aulacomnium palustre	II	2-(5)-9	*Sphagnum contortum*	II	2-(3)-9

Affinities

GHI: PF3 Transition mire and quaking bog

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (75.7%)

EUNIS: D2.311 Brown moss slender-sedge swards

NVC: M9 *Carex rostrata-Calliergon cuspidatum/giganteum* mire (58.9%)

Annex I: 7140 Transition mires

Proxy environmental data

Light: 7.4 Reaction: 5.1 Wetness: 8.6 Fertility: 2.6 Salinity: 0.0

Conservation value

This is a species-rich community (species/4 m^2 = 24.0, *n* = 85). Examples may correspond with EU HD Annex I habitat 7140 Transition mires. *Hamatocaulis vernicosus*, an EU HD Annex II moss species is known from this community.

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation, ground water pollution and peat extraction.

Key references

Conaghan, J. (1995) Two rare bog cottons, *Eriophorum gracile* Koch ex Roth and *Eriophorum latifolium*. (Ph.D. thesis). National University of Ireland Galway.

O'Connell, M. (1981) The phytosociology and ecology of Scragh Bog, Co. Westmeath. *New Phytologist* 87, 139–187.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. Plot recording in vegetation ascribable to FE2C *Carex lasiocarpa – Menyanthes trifoliata* mire, Scragh Bog, near Mullingar, Westmeath (C. Campbell, September 2015)

Photo 2. FE2C *Carex lasiocarpa – Menyanthes trifoliata* mire, Fin Lough, Offaly (F. O'Neill, June 2020)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex rostrata – Menyanthes trifoliata* mire
Common name	Bottle Sedge – Bogbean mire
Community code	FE2D

Vegetation

Carex rostrata is the principal species of this mire community with the only other constants being *Equisetum fluviatile*, *Menyanthes trifoliata* and *Galium palustre*. There is frequently some growth of *Agrostis stolonifera* and the forbs *Mentha aquatica*, *Cardamine pratensis*, *Ranunculus flammula* and *Potentilla palustris*. Less often, one may discover some *Hydrocotyle vulgaris* or *Juncus articulatus*. Bryophyte cover is only occasional and rather uninspiring, being chiefly composed of *Calliergonella cuspidata*.

Ecology

This is a wetland community of nutrient-poor, slightly acidic situations, typically occurring as part of lowland fens and bogs, or along lake margins.

Sub-communities

No sub-communities are currently described.

Similar communities

Carex rostrata also dominates in the FW3C *Carex rostrata* swamp, but that is a far less diverse community in which *Menyanthes trifoliata*, *Mentha aquatica* and *Potentilla palustris* are scarce. *Carex rostrata* may also occur in the FE2E *Menyanthes trifoliata – Sphagnum recurvum* agg. mire, but that differs clearly in the abundant cover of *Sphagnum*.

Records and distribution

Number of records (all)

Clearly assigned:	76
Transitional:	33
Total:	109

Number of records (mapped)

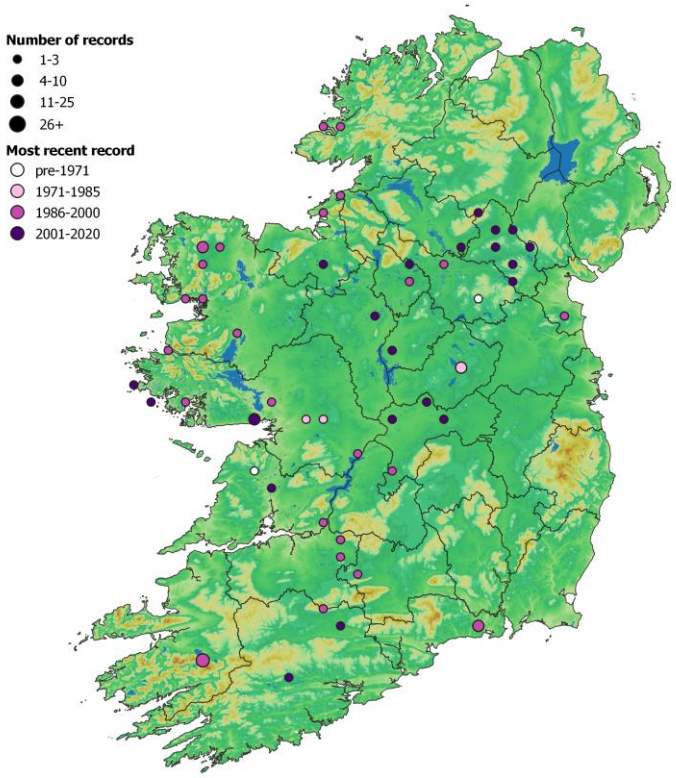
2001-2020:	28
1986-2000:	59
1971-1985:	18
Pre-1971:	2
Total:	107

Number of hectads (by most recent time period)

2001-2020:	21
1986-2000:	25
1971-1985	3
Pre-1971:	2
Total:	51

Number of hectads (records in each time period)

2001-2020:	21
1986-2000:	26
1971-1985	9
Pre-1971:	2



Synoptic table (n = 67)					
Species	**Frequency (from I-V)**	**Cover min (med) max**	**Species**	**Frequency (from I-V)**	**Cover min (med) max**
Carex rostrata	V	4-(7)-9	*Filipendula ulmaria*	I	2-(3)-8
Equisetum fluviatile	V	2-(5)-9	*Calliergon giganteum*	I	2-(3)-8
Menyanthes trifoliata	IV	2-(7)-9	*Juncus acutiflorus*	I	2-(5)-7
Galium palustre	IV	1-(3)-8	*Lotus pedunculatus*	I	2-(5)-8
Mentha aquatica	III	1-(3)-7	*Hypericum elodes*	I	2-(5)-8
Potentilla palustris	III	2-(5)-8	*Juncus effusus*	I	2-(3)-8
Agrostis stolonifera	III	1-(4)-8	*Phragmites australis*	I	2-(3)-8
Cardamine pratensis	III	+-(3)-5	*Anthoxanthum odoratum*	I	2-(3)-5
Ranunculus flammula	III	2-(3)-5	*Typha latifolia*	I	+-(3)-6
Calliergonella cuspidata	II	1-(5)-9	*Veronica scutellata*	I	+-(2)-3
Hydrocotyle vulgaris	II	2-(3)-8	*Eleocharis palustris*	I	+-(4)-5
Epilobium palustre	II	2-(3)-5	*Potamogeton polygonifolius*	I	2-(2)-3
Caltha palustris	II	1-(3)-5	*Salix cinerea*	I	2-(2)-4
Holcus lanatus	II	2-(3)-8	*Sparganium erectum*	I	3-(5)-7
Juncus articulatus	II	1-(3)-8	*Iris pseudacorus*	I	2-(3)-5
Carex nigra	II	2-(5)-7	*Lemna trisulca*	I	2-(3)-6
Eriophorum angustifolium	II	2-(3)-5	*Molinia caerulea*	I	2-(2)-5
Angelica sylvestris	II	2-(3)-7	*Myosotis laxa*	I	1-(2)-5
Lemna minor	I	1-(3)-8	*Ranunculus lingua*	I	2-(4)-5
Succisa pratensis	I	2-(5)-8	*Rhytidiadelphus squarrosus*	I	2-(4)-9

Affinities

GHI: FS1 Reed and large sedge swamp / PF3 Transition mire and quaking bog

ZM: IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (50.7%) / PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (29.9%)

EUNIS: D2.332 Basicline bottle sedge quaking mires / D5.2141 Bottle sedge beds

NVC: S27a *Carex rostrata-Potentilla palustris* tall-herb fen *Carex rostrata-Equisetum fluviatile* sub-community (74.6%)

Annex I: 7140 Transition mires

Proxy environmental data

Light: 7.6 Reaction: 5.1 Wetness: 9.1 Fertility: 3.3 Salinity: 0.1

Conservation value

Examples of this community may correspond with EU HD Annex I habitat 7140 Transition mires. Desmoulin's whorl snail (*Vertigo moulinsiana*), an EU HD Annex II species, has been recorded from this community at several sites. Species diversity is rather poor (species/4 m^2 = 15.8, n = 36).

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation, ground water pollution and peat extraction.

Key references

Foss, P., Crushell, P. (2007) Monaghan Fen Survey 2007. Volume I: Main report. (unpublished). Monaghan County Council/National Parks and Wildlife Service.

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE2D *Carex rostrata – Menyanthes trifoliata* mire, Carha, Ox Mountains, Sligo (P. Perrin, June 2012)

Photo 2. FE2D *Carex rostrata – Menyanthes trifoliata* mire, Fin Lough, Offaly (J. Brophy, November 2014)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Menyanthes trifoliata – Sphagnum recurvum* agg. mire
Common name	Bogbean – Flat-topped Bog-moss mire
Community code	FE2E

Vegetation

The chief feature of this mire assemblage is an abundant carpet of *Sphagnum recurvum* agg. There are no other constant species but often through this layer grow some *Menyanthes trifoliata*, *Carex rostrata*, *Eriophorum angustifolium* and *Anthoxanthum odoratum*. There is a whole suite of occasional graminoids including *Holcus lanatus*, *Juncus effusus*, *Carex echinata*, *Agrostis* spp., *Carex nigra* and *Molinia caerulea*. *Sphagnum palustre* is the most likely other *Sphagnum* to be found and often there is some cover of *Aulacomnium palustre* and *Polytrichum commune*.

Ecology

This is a flush community of nutrient-poor, strongly acidic situations. Most records come from the soak systems of Clara Bog or other bogland.

Sub-communities

Two sub-communities are described. In the *Carex nigra – Polytrichum commune* sub-community (FE2Ei), *Carex nigra*, *Carex echinata*, *Polytrichum commune*, *Juncus effusus*, *Potentilla erecta*, *Anthoxanthum odoratum* and *Agrostis stolonifera* are all much more frequent than in the *Menyanthes trifoliata – Carex rostrata* sub-community (FE2Eii) in which the titular species, *Potentilla palustris* and *Vaccinium oxycoccos* occur.

Similar communities

From the other communities in FE2 *Menyanthes trifoliata – Potentilla palustris* group, the current community is distinct due to its abundant cover of *Sphagnum*. The FW3Cii *Carex rostrata* swamp *Sphagnum subsecundum* agg. – *Potamogeton polygonifolius* sub-community may be similar at first glance, but there is a difference in the dominant *Sphagnum* spp. and *Menyanthes trifoliata* is typically absent in FW3Cii. The FE2Ei sub-community is related to the GL2Di *Juncus effusus – Rumex acetosa* grassland *Polytrichum commune – Sphagnum* spp. sub-community but has greater *Sphagnum* cover.

Records and distribution

Number of records (all)

Clearly assigned:	88
Transitional:	8
Total:	96

Number of records (mapped)

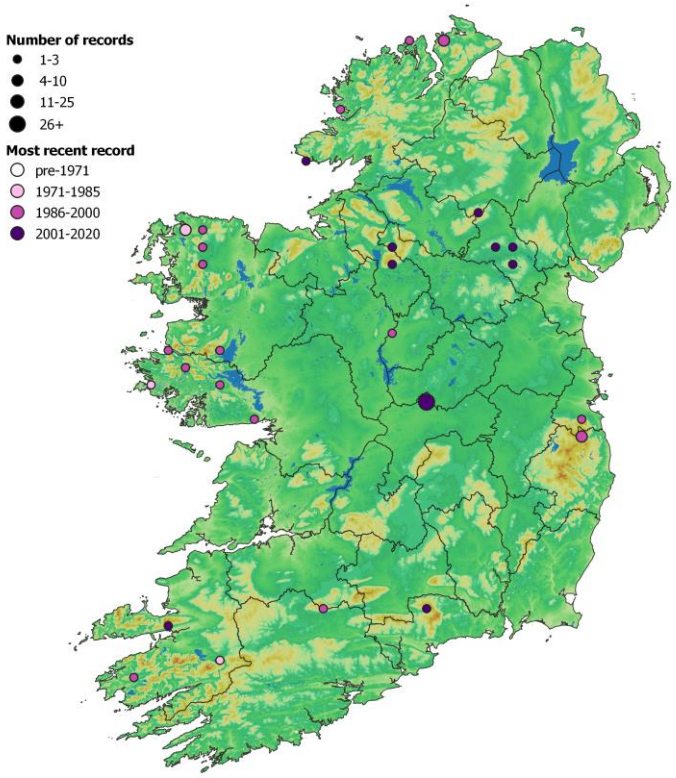
2001-2020:	48
1986-2000:	38
1971-1985:	10
Pre-1971:	0
Total:	96

Number of hectads (by most recent time period)

2001-2020:	10
1986-2000:	16
1971-1985	3
Pre-1971:	0
Total:	29

Number of hectads (records in each time period)

2001-2020:	10
1986-2000:	16
1971-1985	3
Pre-1971:	0



Synoptic table (*n* = 84)					
Species	**Frequency (from I-V)**	**Cover min (med) max**	**Species**	**Frequency (from I-V)**	**Cover min (med) max**
Sphagnum recurvum agg.	V	4-(9)-10	*Vaccinium oxycoccos*	II	3-(3)-5
Menyanthes trifoliata	III	2-(5)-8	*Rhytidiadelphus squarrosus*	I	+-(2)-7
Carex rostrata	III	2-(4)-9	*Rumex acetosa*	I	2-(3)-5
Eriophorum angustifolium	III	1-(3)-8	*Drosera rotundifolia*	I	2-(3)-3
Anthoxanthum odoratum	III	1-(3)-5	*Festuca ovina*	I	2-(3)-7
Polytrichum commune	III	2-(5)-9	*Succisa pratensis*	I	2-(3)-5
Carex nigra	II	1-(3)-7	*Viola palustris*	I	2-(3)-5
Molinia caerulea	II	2-(3)-7	*Carex limosa*	I	+-(3)-5
Sphagnum palustre	II	2-(5)-7	*Juncus acutiflorus*	I	2-(7)-9
Agrostis stolonifera	II	2-(3)-5	*Rhytidiadelphus loreus*	I	+-(2)-5
Carex echinata	II	2-(3)-8	*Sphagnum cuspidatum*	I	3-(5)-7
Juncus effusus	II	2-(5)-9	*Agrostis capillaris*	I	3-(3)-7
Potentilla erecta	II	2-(3)-5	*Calliergon stramineum*	I	+-(3)-5
Potentilla palustris	II	2-(3)-8	*Eleocharis multicaulis*	I	2-(3)-5
Holcus lanatus	II	+-(3)-5	*Carex panicea*	I	+-(3)-5
Aulacomnium palustre	II	1-(3)-7	*Galium palustre*	I	2-(3)-5
Hydrocotyle vulgaris	II	2-(3)-7	*Lophocolea bidentata*	I	2-(3)-3
Juncus bulbosus	II	+-(3)-5	*Ranunculus flammula*	I	+-(3)-5
Agrostis canina/vinealis	II	2-(3)-5	*Sphagnum squarrosum*	I	3-(8)-9
Eriophorum vaginatum	II	1-(3)-4	*Sphagnum subsecundum* agg.	I	2-(3)-7

Affinities

GHI: PF2 Poor fen and flush / PF3 Transition mire and quaking bog

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (71.4%) / IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (23.8%)

EUNIS: D2.331 Acidocline bottle sedge quaking mires

NVC: M4 *Carex rostrata-Sphagnum recurvum* mire (67.5%)

Annex I: 7140 Transition mires

Proxy environmental data

Light: 7.2 Reaction: 2.9 Wetness: 8.6 Fertility: 2.7 Salinity: 0.0

Conservation value

Examples of this community may correspond with EU HD Annex I habitat 7140 Transition mires. Plant species diversity is rather poor (species/4 m^2 = 13.5, *n* = 33).

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation, ground water pollution and peat extraction.

Key references

Crushell, P. (2008) Soak systems of an Irish raised bog: a multidisciplinary study of their origin, ecology, conservation and restoration. (Ph.D. thesis). Wageningen University, Netherlands.

Bleasdale, A. (1995) The vegetation and ecology of the Connemara uplands, with particular reference to sheep grazing. (Ph.D. thesis). National University of Ireland Galway.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE2E *Menyanthes trifoliata – Sphagnum recurvum* agg. mire, Aughrim, Bencroy, Leitrim
(P. Perrin, September 2012)

Photo 2. FE2E *Menyanthes trifoliata – Sphagnum recurvum* agg. mire, Sruhanagh, Slievenakilla, Leitrim
(R. Hodd, September 2012)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Menyanthes trifoliata – Calliergonella cuspidata* mire
Common name	Bogbean – Pointed Spear-moss mire
Community code	FE2F

Vegetation

In this quite diverse mire community, *Menyanthes trifoliata* is usually found growing vigorously through a dense layer of *Calliergonella cuspidata*. The remaining constant species do not provide too much cover on average, these being *Galium palustre*, *Equisetum fluviatile*, *Potentilla palustris*, *Agrostis stolonifera*, *Mentha aquatica* and *Carex diandra*. Frequently, these are accompanied by *Hydrocotyle vulgaris*, *Cardamine pratensis*, *Angelica sylvestris* or *Caltha palustris*. *Phragmites australis* and *Carex rostrata* are also frequent and sometimes dominate. Other bryophytes are infrequently present. Occasionally, there is some cover *Calliergon giganteum* and less often some presence of the 'brown mosses' *Campylium stellatum* and *Bryum pseudotriquetrum*.

Ecology

This is a wetland community of slightly nutrient-poor, mildly acidic situations, often occurring as part of lowland fens.

Sub-communities

No sub-communities are currently described.

Similar communities

The abundance of *Calliergonella cuspidata* will help separate FE2F from other communities in this group. An abundance of *Calliergonella cuspidata* is also encountered in the FE3D *Carex nigra – Calliergonella cuspidata* fen. In that community, however, *Menyanthes trifoliata*, *Equisetum fluviatile* and *Potentilla palustris* are scarce.

Records and distribution

Number of records (all)

Clearly assigned:	198
Transitional:	45
Total:	243

Number of records (mapped)

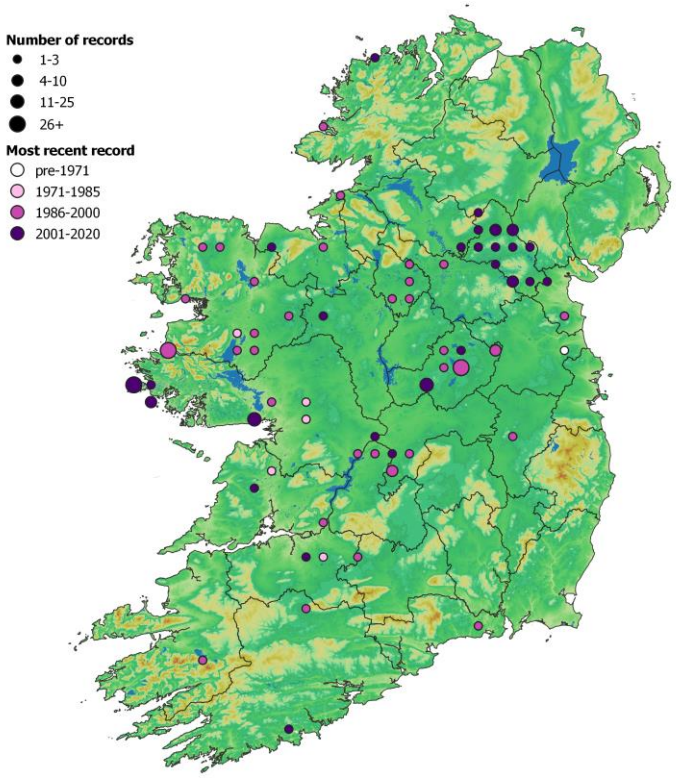
2001-2020:	89
1986-2000:	84
1971-1985:	65
Pre-1971:	1
Total:	239

Number of hectads (by most recent time period)

2001-2020:	27
1986-2000:	33
1971-1985	5
Pre-1971:	1
Total:	66

Number of hectads (records in each time period)

2001-2020:	27
1986-2000:	35
1971-1985	14
Pre-1971:	1



Synoptic table (*n* = 173)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Calliergonella cuspidata	V	3-(8)-10	*Calliergon giganteum*	II	2-(5)-9
Menyanthes trifoliata	V	2-(6)-9	*Succisa pratensis*	II	+-(3)-8
Galium palustre	V	1-(3)-8	*Carex viridula*	II	2-(5)-8
Equisetum fluviatile	IV	1-(3)-7	*Lychnis flos-cuculi*	II	+-(3)-7
Potentilla palustris	IV	+-(3)-8	*Carex panicea*	II	2-(3)-7
Carex diandra	IV	2-(5)-9	*Molinia caerulea*	II	2-(5)-7
Agrostis stolonifera	IV	1-(3)-8	*Equisetum palustre*	I	2-(3)-7
Mentha aquatica	IV	+-(3)-8	*Carex lasiocarpa*	I	1-(5)-9
Hydrocotyle vulgaris	III	2-(3)-9	*Iris pseudacorus*	I	+-(2)-5
Cardamine pratensis	III	+-(2)-5	*Salix cinerea*	I	+-(2)-6
Angelica sylvestris	III	+-(2)-5	*Eriophorum angustifolium*	I	1-(3)-7
Epilobium palustre	III	+-(3)-5	*Campylium stellatum*	I	1-(5)-8
Phragmites australis	III	2-(3)-10	*Pedicularis palustris*	I	1-(2)-7
Caltha palustris	III	+-(2)-5	*Bryum pseudotriquetrum*	I	+-(3)-5
Carex rostrata	III	+-(3)-9	*Lythrum salicaria*	I	+-(2)-4
Holcus lanatus	III	+-(3)-5	*Anthoxanthum odoratum*	I	2-(3)-7
Juncus articulatus	II	2-(3)-7	*Typha latifolia*	I	+-(2)-5
Ranunculus flammula	II	+-(3)-7	*Carex disticha*	I	+-(3)-7
Filipendula ulmaria	II	+-(3)-7	*Juncus subnodulosus*	I	+-(5)-9
Carex nigra	II	+-(3)-9	*Plagiomnium rostratum*	I	2-(4)-8

Affinities

GHI: FS1 Reed and large sedge swamp / PF1 Rich fen and flush / PF3 Transition mires and quaking bogs

ZM: IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (78.0%) / PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (21.4%)

EUNIS: D2.32 Carex diandra quaking mires / D2.391 Boreo-nemoral bog bean and marsh cinquefoil rafts

NVC: S27a *Carex rostrata-Potentilla palustris* tall-herb fen *Carex rostrata-Equisetum fluviatile* sub-community (66.0%), but also M9b *Carex rostrata-Calliergon cuspidatum/giganteum* mire *Carex diandra-Calliergon giganteum* sub-community (63.9%)

Annex I:7140 Transition mires / 7230 Alkaline fens

Proxy environmental data

Light: 7.4 Reaction: 5.7 Wetness: 8.4 Fertility: 3.5 Salinity: 0.1

Conservation value

Examples of this quite diverse community with 'brown mosses' may correspond with EU HD Annex I habitat 7230 Alkaline fens. Where the habitat is quaking habitat 7140 Transition mires should be considered. It is a community of medium species richness (species/4 m^2 = 20.3, *n* = 113).

Management

Typically, this is an unmanaged community. The main threats include drainage, reclamation, ground water pollution and peat extraction.

Key references

Foss, P., Crushell, P. (2007) Monaghan Fen Survey 2007. Volume I: Main report. (unpublished). Monaghan County Council/National Parks and Wildlife Service.

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

van Groenendael, J., Hochstenbach, S.M.H., van Mansfeld, M., Roozen, A.J.M., Westhoff, V. (1982) The influence of the sea on the vegetation of lakes in southwest Connemara. *Journal of Life Sciences - Royal Dublin Society* 3, 221–242.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE2F *Menyanthes trifoliata – Calliergonella cuspidata* mire, River Corrib, Terryland, Galway
(K. McNutt, September 2014)

Photo 2. FE2F *Menyanthes trifoliata – Calliergonella cuspidata* mire, River Corrib, Terryland, Galway
(K. McNutt, September 2014)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex nigra – Ranunculus flammula* fen
Common name	Common Sedge – Lesser Spearwort fen
Community code	FE3A

Vegetation

This is fairly low-growing vegetation type in which small sedges are prominent, but not necessarily dominant. The constant species are *Carex nigra*, *Ranunculus flammula*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Carex panicea*, *Carex viridula* and *Agrostis stolonifera*, but they each have a wide range of potential abundances, making this community quite variable. *Juncus articulatus* is frequent and lends some structural diversity to the assemblage. Also often present are *Galium palustre*, *Potentilla palustris* and *Leontodon autumnalis*. The most frequent moss is *Calliergonella cuspidata*, but in more base-rich situations one may also detect some of the 'brown mosses' indicative of alkaline fens, usually *Campylium stellatum* or *Drepanocladus cossonii/revolvens*.

Ecology

This wetland community occurs in nutrient-poor, fairly neutral situations, often where there is a fluctuating water table. Hence, it is found in dune-slacks in coastal systems and in turlough basins, as well as more typical fens, flushes and wet grasslands.

Sub-communities

No sub-communities are currently described.

Similar communities

The FE3B *Carex nigra – Potentilla anserina* fen shares several constant species with the present community, however in FE3B *Potentilla anserina* is distinctly more abundant. *Eleocharis palustris* is more abundant in the FE3C *Eleocharis palustris – Agrostis stolonifera* fen than in FE3A and *Carex nigra* is less characteristic. In the FE3D *Carex nigra - Calliergonella cuspidata* fen, there is usually a plentiful layer of *Calliergonella* and, other than *Carex nigra*, carices are much scarcer. Two grassland communities are also similar. The GL1B *Agrostis stolonifera – Filipendula ulmaria* marsh-grassland differs in that *Filipendula ulmaria* is a constant there but seldom seen in FE3A, while in the rather species-poor GL2A *Agrostis stolonifera – Ranunculus repens* marsh-grassland, *Carex nigra* is only occasional.

Records and distribution

Number of records (all)

Clearly assigned:	260
Transitional:	70
Total:	330

Number of records (mapped)

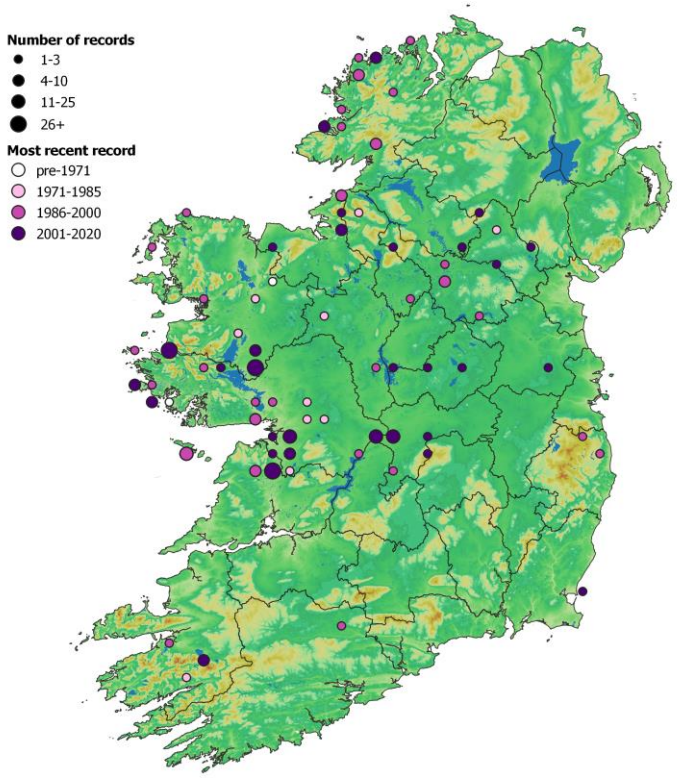
2001-2020:	84
1986-2000:	143
1971-1985:	78
Pre-1971:	25
Total:	330

Number of hectads (by most recent time period)

2001-2020:	31
1986-2000:	30
1971-1985	10
Pre-1971:	2
Total:	73

Number of hectads (records in each time period)

2001-2020:	31
1986-2000:	40
1971-1985	20
Pre-1971:	6



Synoptic table (*n* = 217)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Carex nigra	V	1-(6)-9	*Senecio aquaticus*	II	1-(2)-5
Ranunculus flammula	V	1-(3)-7	*Eleocharis palustris*	II	1-(3)-8
Hydrocotyle vulgaris	V	1-(3)-9	*Carex flacca*	II	1-(3)-6
Mentha aquatica	V	1-(3)-7	*Scorpidium scorpioides*	II	2-(5)-10
Carex panicea	IV	2-(5)-9	*Succisa pratensis*	II	+-(3)-5
Agrostis stolonifera	IV	1-(3)-7	*Caltha palustris*	II	1-(3)-7
Carex viridula	IV	1-(4)-9	*Triglochin palustre*	I	1-(2)-6
Galium palustre	III	+-(3)-7	*Eriophorum angustifolium*	I	1-(3)-8
Juncus articulatus	III	1-(3)-7	*Calliergon giganteum*	I	1-(3)-9
Calliergonella cuspidata	III	1-(3)-8	*Anagallis tenella*	I	2-(3)-5
Leontodon autumnalis	III	1-(3)-5	*Trifolium repens*	I	1-(3)-5
Potentilla anserina	III	1-(3)-7	*Carex hostiana*	I	2-(5)-8
Cardamine pratensis	II	+-(2)-5	*Prunella vulgaris*	I	+-(2)-5
Campylium stellatum	II	1-(3)-8	*Cirsium dissectum*	I	+-(3)-7
Drepanocladus cossonii/revolvens	II	+-(5)-9	*Potentilla palustris*	I	1-(3)-8
Molinia caerulea	II	2-(5)-9	*Equisetum fluviatile*	I	1-(3)-7
Lythrum salicaria	II	+-(3)-8	*Plantago lanceolata*	I	1-(3)-5
Ranunculus repens	II	1-(3)-5	*Pedicularis palustris*	I	+-(2)-3
Menyanthes trifoliata	II	+-(3)-7	*Samolus valerandi*	I	1-(2)-4
Filipendula ulmaria	II	1-(2)-5	*Ranunculus acris*	I	+-(2)-4

Affinities

GHI: CD5 Dune slacks / FL6 Turloughs / PF1 Rich fen and flush

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (63.1%)

EUNIS: B1.83 Dune-slack fens / C1.67 Turlough and lake-bottom meadows / D4.151 British dioecious-yellow sedge fens

NVC: SD17d *Potentilla anserina-Carex nigra* dune-slack community *Hydrocotyle vulgaris – Ranunculus flammula* sub-community (65.3%), but see also account of *Carex nigra-Ranunculus flammula* community in Rodwell et al. (p. 38, 2000)

Annex I: 2190 Dune slacks / 3180 Turloughs* / 7230 Alkaline fens

Proxy environmental data

Light: 7.5 Reaction: 5.3 Wetness: 8.2 Fertility: 2.9 Salinity: 0.2

Conservation value

This is a community of medium species richness (species/4 m^2 = 19.0, *n* = 160). Examples from coastal dune-systems may correspond with the EU HD Annex I habitat 2190 Dune slack. This vegetation is also found in turlough basins in the mid-west of Ireland where it corresponds with the priority habitat 3180 Turloughs*. Stands of the community from further east in the country may represent habitat 7230 Alkaline fens if they support 'brown mosses'.

Management

Many of these stands are subject to livestock grazing. The main threats are groundwater pollution, drainage, inappropriate grazing and reclamation.

Key references

Crawford, I., Bleasdale, A., Conaghan, J. (1998) BIOMAR survey of Irish machair sites 1996. Volume 2: Plant communities. *Irish Wildlife Manuals* No. 4. Dúchas, The Heritage Service, Dublin.

O'Criodain, C. (1988) Parvocaricetea in Ireland (Ph.D. thesis). University College Dublin.

Rodwell, J.S., Dring, J.C., Averis, A.B.G., Proctor, M.C.F., Malloch, A.J.C., Schaminée, J.H.J., Dargie, T.C.D. (2000) Review of coverage of the National Vegetation Classification, JNCC Report 302. JNCC, Peterborough.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. Transect recording in FE3A *Carex nigra – Ranunculus flammula* fen, Sheskinmore, Donegal (J. Brophy, August 2014)

Photo 2. FE3A *Carex nigra – Ranunculus flammula* fen, Dunmakeever, Cuilcagh, Cavan (R. Hodd, September 2012)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex nigra – Potentilla anserina* fen
Common name	Common Sedge – Silverweed fen
Community code	FE3B

Vegetation

This wetland community is usually dominated by a mixture of *Potentilla anserina*, *Carex nigra* and *Agrostis stolonifera*. *Ranunculus repens* and *Galium palustre* are also constant species but tend not to grow abundantly here. Frequently found are *Mentha aquatica*, *Hydrocotyle vulgaris*, *Eleocharis palustris* and *Cardamine pratensis*. The bryophyte layer is scant with some occasional *Calliergonella cuspidata*.

Ecology

This wetland community occurs in mesotrophic, mildly base-rich situations, often where there is a fluctuating water table. It has predominantly been recorded from turlough basins, but is also found in dune-slacks in coastal systems as well as more typical fens and wet grasslands.

Sub-communities

No sub-communities are currently described.

Similar communities

From the other communities in this group, FE3B is distinguished mainly by the frequency of *Potentilla anserina*. In the rather species-poor GL2A *Agrostis stolonifera – Ranunculus repens* marsh-grassland, *Potentilla anserina*, *Agrostis stolonifera* and *Ranunculus repens* are also constants, but there *Carex nigra* and *Mentha aquatica* are only occasional. Confusion is possible with the SM6C *Agrostis stolonifera – Potentilla anserina* saltmarsh, but *Carex nigra* is seldom found there and instead halophytes such as *Juncus gerardii* or *Glaux maritima* occur.

Records and distribution

Number of records (all)

Clearly assigned:	224
Transitional:	46
Total:	270

Number of records (mapped)

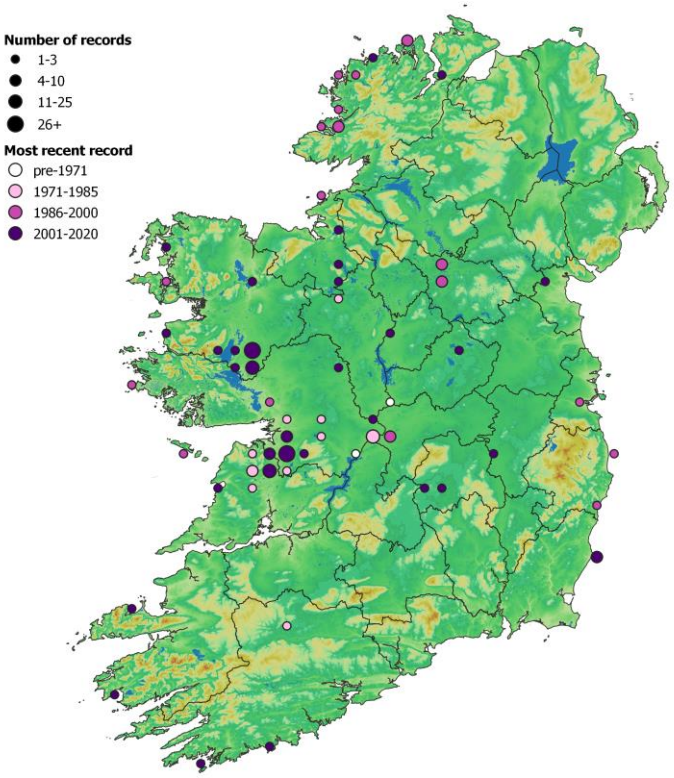
2001-2020:	131
1986-2000:	70
1971-1985:	52
Pre-1971:	17
Total:	270

Number of hectads (by most recent time period)

2001-2020:	32
1986-2000:	17
1971-1985	10
Pre-1971:	2
Total:	61

Number of hectads (records in each time period)

2001-2020:	32
1986-2000:	20
1971-1985	15
Pre-1971:	6



Synoptic table (*n* = 176)					
Species	**Frequency (from I-V)**	**Cover min (med) max**	**Species**	**Frequency (from I-V)**	**Cover min (med) max**
Potentilla anserina	V	2-(5)-9	*Rumex crispus*	I	1-(2)-3
Carex nigra	V	2-(6)-9	*Juncus articulatus*	I	+-(3)-5
Agrostis stolonifera	V	2-(7)-9	*Drepanocladus aduncus*	I	1-(2)-3
Galium palustre	V	+-(3)-7	*Fontinalis antipyretica*	I	1-(2)-3
Ranunculus repens	V	1-(3)-7	*Gnaphalium uliginosum*	I	2-(3)-5
Mentha aquatica	III	1-(3)-5	*Senecio aquaticus*	I	+-(2)-5
Hydrocotyle vulgaris	III	1-(3)-7	*Carex viridula*	I	1-(3)-5
Eleocharis palustris	III	2-(3)-5	*Plantago major*	I	+-(3)-3
Cardamine pratensis	III	+-(3)-3	*Veronica serpyllifolia*	I	2-(3)-3
Phalaris arundinacea	II	2-(3)-7	*Calliergon giganteum*	I	1-(2)-7
Persicaria amphibia	II	1-(3)-7	*Apium inundatum*	I	2-(3)-4
Juncus × surrejanus	II	2-(3)-8	*Lythrum salicaria*	I	2-(2)-5
Carex hirta	II	2-(3)-7	*Myosotis scorpioides*	I	2-(2)-5
Calliergonella cuspidata	II	1-(2)-7	*Equisetum palustre*	I	2-(2)-5
Leontodon autumnalis	II	+-(3)-5	*Lysimachia vulgaris*	I	2-(3)-5
Trifolium repens	II	1-(3)-7	*Mentha arvensis*	I	1-(2)-5
Carex panicea	II	1-(4)-8	*Caltha palustris*	I	2-(2)-7
Ranunculus flammula	II	+-(3)-7	*Lotus corniculatus*	I	2-(2)-4
Potentilla reptans	I	1-(4)-7	*Polygonum aviculare*	I	2-(3)-5
Filipendula ulmaria	I	1-(3)-6	*Rumex acetosa*	I	+-(2)-3

Affinities

GHI: CD5 Dune slacks / FL6 Turloughs / GS4 Wet grassland

ZM: CM Molinio-Arrhenatheretea Tx. 1937 (87.5%)

EUNIS: B1.83 Dune-slack fens / C1.67 Turlough and lake-bottom meadows / E3.4422 Creeping bent flood swards

NVC: SD17d *Potentilla anserina-Carex nigra* dune-slack community *Hydrocotyle vulgaris – Ranunculus flammula* sub-community (64.2%)

Annex I: 2190 Dune slacks / 3180 Turloughs*

Proxy environmental data

Light: 7.2 Reaction: 5.9 Wetness: 7.2 Fertility: 4.6 Salinity: 0.7

Conservation value

This is a rather species-poor fen community (species/4 m^2 = 13.8, *n* = 156). This vegetation is found in turlough basins in the mid-west of Ireland where it corresponds with the priority habitat 3180 Turloughs*. Examples from coastal dune-systems may correspond with the EU HD Annex I habitat 2190 Dune slack.

Management

Many of these stands are subject to livestock grazing. The main threats are groundwater pollution, drainage, inappropriate grazing and reclamation

Key references

Bhriain, B.N., Sheehy Skeffington, M., Gormally, M, (2002) Conservation implications of land use practices on the plant and carabid beetle communities of two turloughs in Co. Galway, Ireland. *Biological Conservation* 105, 81–92.

Crawford, I., Bleasdale, A., Conaghan, J. (1998) BIOMAR survey of Irish machair sites 1996. Volume 2: Plant communities. *Irish Wildlife Manuals* No. 4. Dúchas, The Heritage Service, Dublin.

MacGowran, B. (1985) Phytosociological and ecological studies on turloughs in the west of Ireland. (Ph.D. thesis). National University of Ireland Galway.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE3B *Carex nigra – Potentilla anserina* fen, Churchfield Upper, Mayo (F. Devaney/D. McLoughlin, June 2011)

Photo 2. FE3B *Carex nigra – Potentilla anserina* fen, Killeroran, Galway (M. O'Neill/S. Thomas, September 2012)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Eleocharis palustris – Agrostis stolonifera* fen
Common name	Common Spike-rush – Creeping Bent fen
Community code	FE3C

Vegetation

This marshy vegetation type is characterised by a mixture of several herbaceous species. *Eleocharis palustris* and *Agrostis stolonifera* are the only constants. *Mentha aquatica*, *Apium nodiflorum*, *Juncus articulatus* and *Rorippa nasturtium-aquaticum* agg. are frequent while less often there is some presence of *Hydrocotyle vulgaris*, *Persicaria amphibia*, *Myosotis laxa*, *Galium palustre*, *Potentilla anserina*, *Equisetum fluviatile* or *Apium inundatum*. Where there is some standing water, *Hippuris vulgaris*, *Ranunculus trichophyllus* and *Lemna minor* may be found. *Calliergonella cuspidata* is occasional and is the only bryophyte likely to be seen.

Ecology

This wetland community is found in fairly base-rich, mildly eutrophic situations. Often, there is a fluctuating water table, but these areas are unlikely to totally dry out and may retain standing water. It has predominantly been recorded from bottom of turlough basins and dune-slacks in coastal systems, but also from lakes and lagoon margins.

Sub-communities

No sub-communities are currently described.

Similar communities

Eleocharis palustris can be a significant plant in the FW3G *Equisetum fluviatile – Eleocharis palustris* swamp, but that is much less diverse community in which *Equisetum fluviatile* is the mainstay. There are also some similarities with the FW2E *Apium nodiflorum – Rorippa nasturtium-aquaticum* agg. aquatic community, but *Eleocharis palustris* is seldom found there.

Records and distribution

Number of records (all)

Clearly assigned:	213
Transitional:	52
Total:	265

Number of records (mapped)

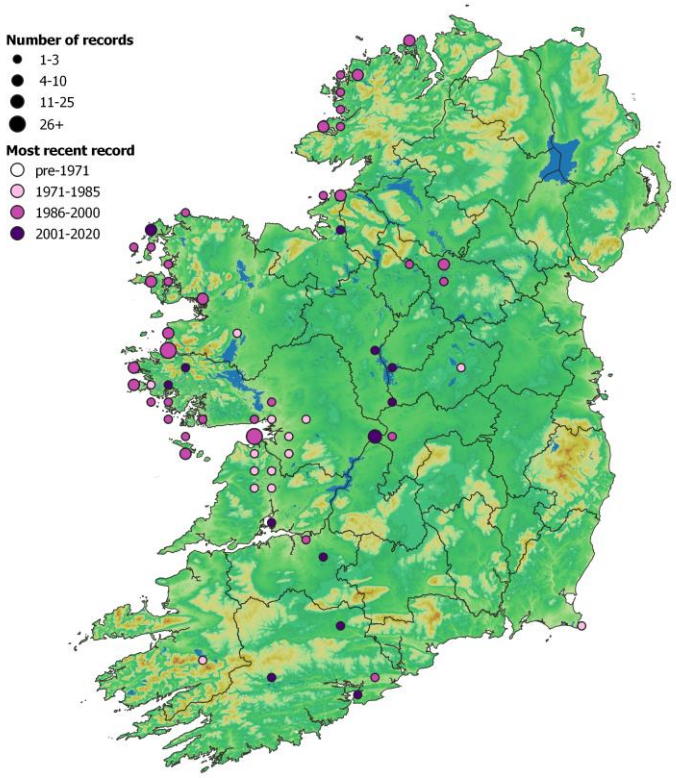
2001-2020:	16
1986-2000:	150
1971-1985:	95
Pre-1971:	2
Total:	263

Number of hectads (by most recent time period)

2001-2020:	13
1986-2000:	35
1971-1985	14
Pre-1971:	0
Total:	62

Number of hectads (records in each time period)

2001-2020:	13
1986-2000:	36
1971-1985	18
Pre-1971:	2



Synoptic table (*n* = 182)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Eleocharis palustris	V	3-(5)-9	*Menyanthes trifoliata*	I	1-(3)-5
Agrostis stolonifera	IV	2-(4)-8	*Epilobium palustre*	I	1-(2)-4
Apium nodiflorum	III	1-(4)-9	*Glyceria fluitans*	I	2-(3)-7
Mentha aquatica	III	2-(5)-8	*Ranunculus repens*	I	2-(3)-5
Rorippa nast.-aquaticum agg.	III	2-(4)-9	*Triglochin palustre*	I	1-(2)-4
Juncus articulatus	III	2-(3)-7	*Iris pseudacorus*	I	1-(2)-7
Persicaria amphibia	II	2-(5)-8	*Ranunculus flammula*	I	2-(2)-5
Hydrocotyle vulgaris	II	2-(3)-7	*Cardamine pratensis*	I	1-(3)-5
Myosotis laxa	II	1-(3)-5	*Senecio aquaticus*	I	2-(3)-5
Galium palustre	II	2-(3)-5	*Utricularia australis/vulgaris*	I	2-(4)-9
Calliergonella cuspidata	II	2-(3)-9	*Potamogeton natans*	I	2-(3)-7
Hippuris vulgaris	II	1-(3)-6	*Epilobium parviflorum*	I	1-(3)-5
Equisetum fluviatile	II	2-(3)-5	*Rorippa palustris*	I	2-(3)-5
Potentilla anserina	II	1-(3)-8	*Rumex crispus*	I	2-(2)-3
Lemna minor	II	2-(3)-5	*Sparganium erectum*	I	2-(3)-8
Apium inundatum	II	2-(3)-7	*Equisetum × litorale*	I	2-(2)-3
Caltha palustris	II	1-(2)-5	*Veronica catenata*	I	2-(2)-5
Ranunculus trichophyllus	I	2-(3)-7	*Carex disticha*	I	2-(3)-5
Carex nigra	I	2-(3)-7	*Potamogeton berchtoldii*	I	2-(3)-4
Veronica anagallis-aquatica	I	1-(3)-4	*Veronica beccabunga*	I	2-(3)-5

Affinities

GHI: CD5 Dune slacks / FL6 Turloughs / GM1 Marsh

ZM: OD Phragmito-Magnocaricetea Klika in Klika et Novák 1941 (90.1%)

EUNIS: B1.83 Dune-slack fens / C1.67 Turlough and lake-bottom meadows / C3.412 Spike-rush shallow-water swards

NVC: S19 *Eleocharis palustris* swamp (54.1%)

Annex I: 2190 Dune slacks / 3180 Turloughs*

Proxy environmental data

Light: 7.4 Reaction: 6.3 Wetness: 9.2 Fertility: 4.9 Salinity: 0.5

Conservation value

This community does not have notable plant diversity (species/4 m^2 = 12.6, *n* = 135). This vegetation is found in turlough basins in the mid-west of Ireland where it corresponds with the priority habitat 3180 Turloughs*. Examples from coastal dune-systems may correspond with the EU HD Annex I habitat 2190 Dune slack. It has also been recorded adjacent to areas corresponding to priority habitat 1150 Lagoon*

Management

Many of these stands are subject to livestock grazing. The main threats are groundwater pollution, drainage, inappropriate grazing and reclamation.

Key references

Beckers, A., Brock, T., Klerkx, J. (1976) A vegetation study of some parts of Dooaghtry, Co. Mayo, Republic of Ireland. (unpublished). Laboratory of Geobotany, Catholic University of Nijmegen, The Netherlands.

Crawford, I., Bleasdale, A., Conaghan, J. (1998) BIOMAR survey of Irish machair sites 1996. Volume 2: Plant communities. *Irish Wildlife Manuals* No. 4., Dúchas, The Heritage Service, Dublin.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE3C *Eleocharis palustris – Agrostis stolonifera* fen, Little Brosna Callows, Offaly (M. Gabbett/J. Martin, May 2007)

Photo 2. FE3C *Eleocharis palustris – Agrostis stolonifera* fen, Ballindangan Marsh, Cork
(M. Gabbett/P. Moran/P. Perrin, June 2008)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Carex nigra – Calliergonella cuspidata* fen
Common name	Common Sedge – Pointed Spear-moss fen
Community code	FE3D

Vegetation

A striking feature of this fen community is the typical presence of a mossy carpet of the pointy shoots of *Calliergonella cuspidata*. Through this grows a modest sward of *Agrostis stolonifera*. Other constant species are *Hydrocotyle vulgaris*, *Carex nigra*, *Juncus articulatus*, *Galium palustre*, *Mentha aquatica* and *Ranunculus flammula*. Frequently found are *Eleocharis palustris*, *Caltha palustris*, *Equisetum fluviatile* and *Cardamine pratensis*. Bryophytes other than *Calliergonella* are seldom seen.

Ecology

This wetland community occurs in mildly base-rich and mildly nutrient-poor situations, often where there is a fluctuating water table. It has predominantly been recorded from dune-slacks in coastal systems as well as more typical fens, lake margins and wet grasslands.

Sub-communities

No sub-communities are currently described.

Similar communities

The abundance of *Calliergonella cuspidata* will help separate FE3D from other communities in this group. Two *Agrostis stolonifera* grassland communities are also similar. The GL1B *Agrostis stolonifera – Filipendula ulmaria* marsh-grassland differs in that *Filipendula ulmaria* is a constant there but seldom seen in FE3D, while in the rather species-poor GL2A *Agrostis stolonifera – Ranunculus repens* marsh-grassland, *Carex nigra* is only occasional and *Ranunculus repens* a constant.

Records and distribution

Number of records (all)

Clearly assigned:	168
Transitional:	69
Total:	237

Number of records (mapped)

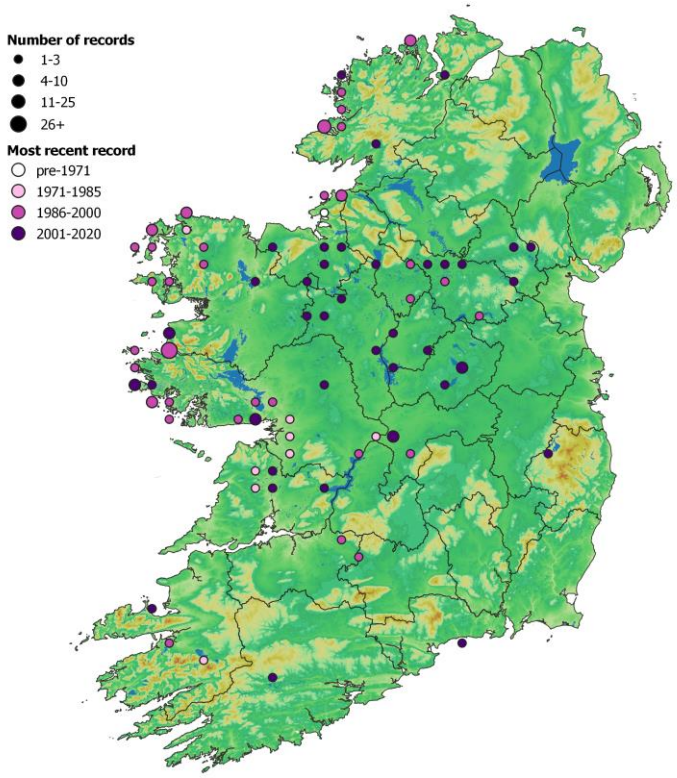
2001-2020:	52
1986-2000:	109
1971-1985:	73
Pre-1971:	2
Total:	236

Number of hectads (by most recent time period)

2001-2020:	38
1986-2000:	33
1971-1985	8
Pre-1971:	1
Total:	80

Number of hectads (records in each time period)

2001-2020:	38
1986-2000:	40
1971-1985	14
Pre-1971:	2



Synoptic table (*n* = 155)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Calliergonella cuspidata	V	2-(6)-10	*Potentilla anserina*	II	+-(3)-7
Agrostis stolonifera	V	2-(5)-8	*Sagina nodosa*	II	+-(3)-5
Galium palustre	V	1-(3)-7	*Leontodon autumnalis*	II	+-(2)-5
Juncus articulatus	V	+-(3)-9	*Rorippa nast.-aquaticum* agg.	II	+-(3)-5
Hydrocotyle vulgaris	IV	+-(4)-9	*Lythrum salicaria*	I	+-(3)-5
Carex nigra	IV	+-(5)-9	*Iris pseudacorus*	I	+-(4)-8
Ranunculus flammula	IV	+-(3)-5	*Menyanthes trifoliata*	I	1-(3)-6
Mentha aquatica	IV	2-(3)-7	*Filipendula ulmaria*	I	1-(2)-5
Eleocharis palustris	III	+-(3)-8	*Samolus valerandi*	I	1-(2)-4
Caltha palustris	III	+-(3)-6	*Epilobium parviflorum*	I	1-(3)-6
Cardamine pratensis	III	+-(2)-5	*Anagallis tenella*	I	2-(3)-4
Equisetum fluviatile	III	1-(3)-7	*Carex panicea*	I	1-(3)-7
Ranunculus repens	II	+-(3)-8	*Sagina procumbens*	I	2-(3)-4
Trifolium repens	II	1-(3)-7	*Juncus effusus*	I	2-(3)-8
Epilobium palustre	II	1-(3)-5	*Potentilla palustris*	I	1-(3)-7
Myosotis laxa	II	1-(2)-8	*Rumex crispus*	I	+-(2)-3
Holcus lanatus	II	1-(3)-5	*Carex rostrata*	I	1-(3)-9
Senecio aquaticus	II	+-(3)-7	*Ranunculus acris*	I	+-(2)-4
Triglochin palustre	II	+-(3)-5	*Phragmites australis*	I	2-(2)-5
Apium nodiflorum	II	+-(4)-9	*Bellis perennis*	I	1-(2)-4

Affinities

GHI: CD5 Dune slacks / GS4 Wet grassland / PF1 Rich fen and flush

ZM: IA Alnetea glutinosae Br.-Bl. et Tx. ex Westhoff et al. 1946 (50.3%)

EUNIS: B1.83 Dune-slack fens / E3.4422 Creeping bent flood swards

NVC: SD17d *Potentilla anserina-Carex nigra* dune-slack community *Hydrocotyle vulgaris – Ranunculus flammula* sub-community (66.4%), but also MG14a *Carex nigra-Agrostis stolonifera-Senecio aquaticus* grassland typical sub-community (57.9%)

Annex I: 2190 Dune slacks

Proxy environmental data

Light: 7.2 Reaction: 6.0 Wetness: 7.8 Fertility: 4.1 Salinity: 0.4

Conservation value

This is a community of medium species richness (species/4 m^2 = 20.4, *n* = 119). Examples from coastal dune-systems may correspond with the EU HD Annex I habitat 2190 Dune slack. It has also been recorded adjacent to areas corresponding to priority habitat 1150 Lagoon*

Management

These stands may be subject to livestock grazing. The main threats are groundwater pollution, drainage, inappropriate grazing and reclamation.

Key references

Crawford, I., Bleasdale, A., Conaghan, J. (1998) BIOMAR survey of Irish machair sites 1996. Volume 2: Plant communities. *Irish Wildlife Manuals* No. 4. Dúchas, The Heritage Service, Dublin.

O'Neill, F.H., Martin, J.R., Devaney, F.M., Perrin, P.M. (2013) The Irish Semi-natural Grasslands Survey 2007-2012. *Irish Wildlife Manuals* No. 78. National Parks and Wildlife Service, Dublin.

Beckers, A., Brock, T., Klerkx, J. (1976) A vegetation study of some parts of Dooaghtry, Co. Mayo, Republic of Ireland. (unpublished). Laboratory of Geobotany, Catholic University of Nijmegen, The Netherlands.

Synopsis version: V2.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE3D *Carex nigra – Calliergonella* cuspidata fen, Tawnamore, Sligo (R. Hodd, June 2012)

Photo 2. FE3D *Carex nigra – Calliergonella cuspidata* fen, near Lough Owell, Westmeath (J. Brophy, October 2014)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Philonotis fontana – Chrysoplenium oppositifolium* spring
Common name	Fountain Apple-moss – Opposite-leaved Golden-saxifrage spring
Community code	FE4A

Vegetation

This a diverse spring community of which some of the main hallmarks are mats of *Chrysosplenium oppositifolium* and the pale, rod-like shoots of *Philonotis fontana*. There is usually some grassy cover provided by *Anthoxanthum odoratum*, *Holcus lanatus* and *Agrostis capillaris*, with some straggling stems of *Galium palustre*. Apart, from *Philonotis*, the main bryophytes are *Calliergonella cuspidata*, *Scapania undulata*, *Brachythecium rivulare*. Frequently, one will spot the conspicuous basal rosettes of *Saxifraga stellaris* in this community. Light green patches of *Dicranella palustris* (= *Dichodontium palustre*), with its squarrose leaves, are also characteristic.

Ecology

This is a community of circumneutral or mildly basic springheads and stony rills mainly found on upland slopes amongst grassland or heath. It may also occur on wet cliff faces.

Sub-communities

No sub-communities are currently described.

Similar communities

There is some overlap in species with the more base-rich springs of the FE4B *Palustriella commutata – Bryum pseudotriqetrum* spring community. However, *Palustriella* is seldom found in FE4A while *Chrysosplenium oppositifolium* is scarce in FE4B. Sedges are more prominent features in FE4B.

Records and distribution

Number of records (all)

Clearly assigned:	13
Transitional:	3
Total:	16

Number of records (mapped)

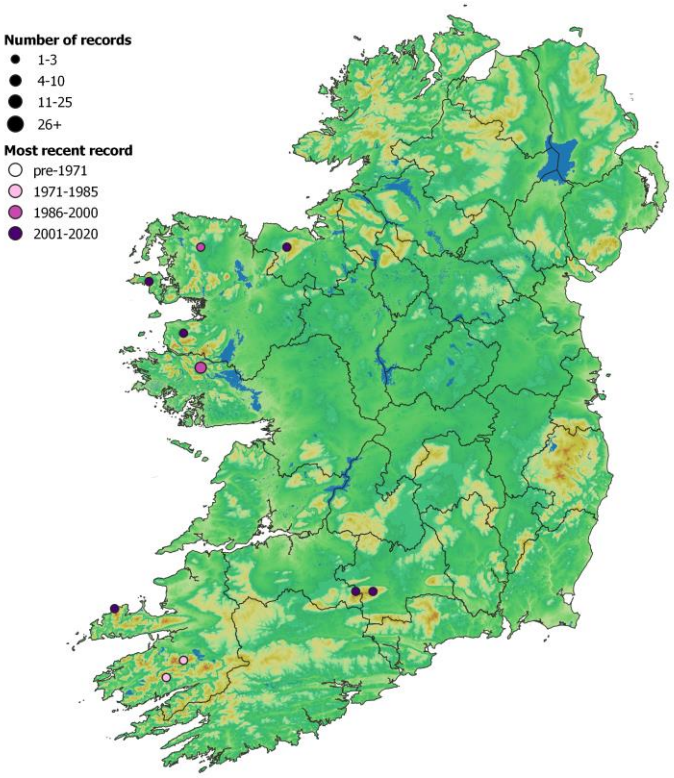
2001-2020:	6
1986-2000:	7
1971-1985:	2
Pre-1971:	1
Total:	16

Number of hectads (by most recent time period)

2001-2020:	6
1986-2000:	2
1971-1985	2
Pre-1971:	0
Total:	10

Number of hectads (records in each time period)

2001-2020:	6
1986-2000:	2
1971-1985	2
Pre-1971:	1



Synoptic table (*n* = 11)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Chrysosplenium oppositifolium	V	3-(5)-9	*Stellaria uliginosa*	III	2-(3)-3
Philonotis fontana	V	3-(4)-7	*Agrostis stolonifera*	II	+-(3)-4
Anthoxanthum odoratum	V	2-(3)-5	*Cerastium fontanum*	II	2-(2)-3
Calliergonella cuspidata	V	1-(3)-7	*Chiloscyphus polyanthos*	II	+-(1)-3
Holcus lanatus	V	2-(3)-5	*Festuca ovina*	II	3-(3)-3
Scapania undulata	V	2-(3)-3	*Festuca vivipara*	II	+-(3)-5
Agrostis capillaris	IV	2-(3)-5	*Hieracium* agg.	II	3-(3)-3
Brachythecium rivulare	IV	1-(4)-7	*Ranunculus ficaria*	II	2-(3)-3
Galium palustre	IV	1-(3)-3	*Rhizomnium punctatum*	II	+-(1)-3
Cardamine pratensis	III	1-(2)-3	*Rhytidiadelphus squarrosus*	II	2-(3)-3
Epilobium brunnescens	III	+-(3)-4	*Sagina procumbens*	II	1-(2)-2
Festuca rubra	III	1-(2)-3	*Trifolium repens*	II	3-(4)-5
Juncus bulbosus	III	+-(3)-5	*Carex echinata*	II	2-(3)-3
Juncus effusus	III	+-(2)-4	*Juncus articulatus*	II	3-(3)-4
Rumex acetosa	III	+-(3)-5	*Luzula sylvatica*	II	+-(2)-3
Bryum pseudotriquetrum	III	+-(3)-5	*Montia fontana*	II	1-(2)-3
Carex viridula	III	2-(3)-5	*Nardus stricta*	II	2-(3)-3
Dicranella palustris	III	1-(4)-8	*Poa pratensis/humilis*	II	1-(3)-4
Lysimachia nemorum	III	2-(3)-3	*Thuidium tamariscinum*	II	2-(2)-2
Saxifraga stellaris	III	2-(4)-6	*Taraxacum officinale* agg.	I	2-(2)-2

Affinities

GHI: FP2 Non-calcareous springs

ZM: OA Montio-Cardaminetea Br.-Bl. et Tx. ex Klika et Hadač 1944 (81.8%)

EUNIS: C2.11 Soft water springs

NVC: M32 *Philonotis fontana-Saxifraga stellaris* spring (52.1%)

Annex I: No significant correspondence

Proxy environmental data

Light: 6.4 Reaction: 5.1 Wetness: 7.9 Fertility: 3.9 Salinity: 0.1

Conservation value

This is a very species-rich assemblage (species/4 m^2 = 28.3, *n* = 8), but it is not protected as an EU HD Annex I habitat nor does it support significantly rare plant species.

Management

The main threat to these springs is probably trampling by livestock as they are easily damaged by disturbance.

Key references

Perrin, P.M., Barron, S.J., Roche, J.R., O'Hanrahan, B. (2014) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. *Irish Wildlife Manuals* No. 79. National Parks and Wildlife Service, Dublin.

Bleasdale, A. (1995) The vegetation and ecology of the Connemara uplands, with particular reference to sheep grazing. (Ph.D. thesis). National University of Ireland Galway.

Synopsis version: V1.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE4A *Philonotis fontana – Chrysoplenium oppositifolium* spring, Laghta Oughter, near Lough Brawn, Mayo (J. Denyer/P. Perrin, September 2010)

Photo 2. FE4A *Philonotis fontana – Chrysoplenium oppositifolium* spring, Laghta Oughter, near Lough Brawn, Mayo (J. Denyer/P. Perrin, September 2010)

Irish Vegetation Classification (IVC)

www.biodiversityireland.ie/ivc

Community Synopsis

Scientific name	*Palustriella commutata – Bryum pseudotriquetrum* spring
Common name	Curled Hook-moss – Marsh Bryum spring
Community code	FE4B

Vegetation

This bryophyte-rich spring assemblage is typically dominated by *Palustriella commutata* often accompanied by the tufted shoots of *Bryum pseudotriquetrum*. Also frequently present are some patches of *Fissidens adianthoides* and *Philonotis fontana*. Thallose liverworts are often found, usually *Aneura pinguis* but also *Pellia endiviifolia*, *Pellia epiphylla* and *Riccardia multifida*. Vascular plants are usually not abundant and their main cover is provided by graminoids, particularly *Carex viridula*, *Carex panicea*, *Agrostis stolonifera* and *Festuca rubra*. Some creeping stems of *Anagallis tenella* may occasionally be seen, however, as may the rosettes of the insectivorous *Pinguicula vulgaris*.

Ecology

This is a community of base-rich springheads, upwellings and seepage points. It can occur on upland hillslopes, within fens and on the coast. Precipitation of calcium carbonate can lead to the deposition of tufa and the creation of petrifying springs.

Sub-communities

No sub-communities are currently described.

Similar communities

The abundance of *Palustriella commutata* differentiates this community from other wetland types, including the otherwise rather similar FE1C *Carex viridula – Carex panicea* fen.

Records and distribution

Number of records (all)

Clearly assigned:	18
Transitional:	1
Total:	19

Number of records (mapped)

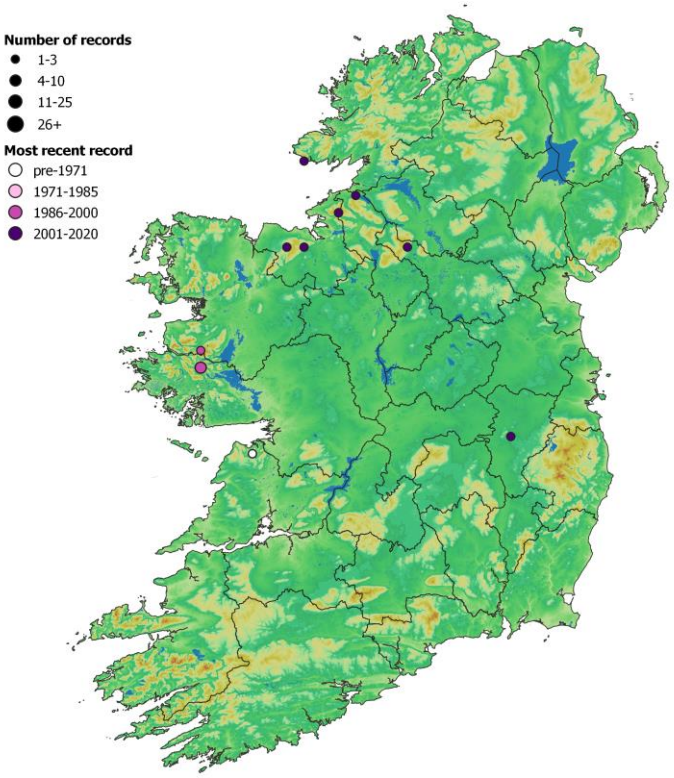
2001-2020:	9
1986-2000:	6
1971-1985:	1
Pre-1971:	3
Total:	19

Number of hectads (by most recent time period)

2001-2020:	7
1986-2000:	2
1971-1985	0
Pre-1971:	1
Total:	10

Number of hectads (records in each time period)

2001-2020:	7
1986-2000:	2
1971-1985	1
Pre-1971:	1



Synoptic table (*n* = 17)

Species	Frequency (from I-V)	Cover min (med) max	Species	Frequency (from I-V)	Cover min (med) max
Palustriella commutata	V	5-(8)-9	*Cirsium dissectum*	II	1-(2)-3
Bryum pseudotriquetrum	V	+-(2)-5	*Drepanocladus cossonii/revolvens*	II	2-(4)-5
Carex viridula	V	1-(3)-5	*Galium palustre*	II	1-(3)-3
Festuca rubra	IV	2-(4)-6	*Juncus acutiflorus*	II	1-(3)-5
Carex panicea	IV	2-(3)-7	*Juncus bulbosus*	II	2-(4)-5
Agrostis stolonifera	III	1-(4)-5	*Pellia epiphylla*	II	2-(3)-3
Aneura pinguis	III	+-(2)-3	*Riccardia multifida*	II	+-(+)-1
Fissidens adianthoides	III	+-(1)-3	*Taraxacum officinale* agg.	II	1-(2)-3
Philonotis fontana	III	+-(2)-5	*Trifolium repens*	II	2-(4)-5
Juncus articulatus	II	2-(3)-5	*Carex flacca*	I	1-(3)-3
Pellia endiviifolia	II	+-(1)-3	*Chrysosplenium oppositifolium*	I	+-(3)-3
Anagallis tenella	II	2-(3)-5	*Cratoneuron filicinum*	I	+-(2)-3
Calliergonella cuspidata	II	+-(+)-2	*Hydrocotyle vulgaris*	I	3-(3)-5
Campylium stellatum	II	+-(1)-4	*Leontodon autumnalis*	I	+-(2)-3
Carex nigra	II	3-(3)-5	*Molinia caerulea*	I	1-(2)-3
Epilobium brunnescens	II	1-(2)-3	*Prunella vulgaris*	I	1-(3)-4
Holcus lanatus	II	2-(2)-3	*Ranunculus flammula*	I	2-(2)-2
Philonotis calcarea	II	+-(2)-4	*Succisa pratensis*	I	+-(1)-2
Pinguicula vulgaris	II	+-(3)-4	*Thuidium tamariscinum*	I	+-(+)-+
Cardamine pratensis	II	3-(3)-3	*Viola riviniana/reichenbachiana*	I	+-(+)-1

Affinities

GHI: FP1 Calcareous springs

ZM: PA Scheuchzerio palustris-Caricetea fuscae Tx. 1937 (35.3%) / OA Montio-Cardaminetea Br.-Bl. et Tx. ex Klika et Hadač 1944 (29.4%) / CM Molinio-Arrhenatheretea Tx. 1937 (29.4%)

EUNIS: C2.121 Petrifying springs with tufa or travertine formations

NVC: M37 *Cratoneuron commutatum-Festuca rubra* spring (49.8%)

Annex I: 7220 Petrifying springs*

Proxy environmental data

Light: 7.2 Reaction: 6.4 Wetness: 8.2 Fertility: 2.7 Salinity: 0.2

Conservation value

Examples with tufa formation constitute the EU HD Annex I priority habitat 7220 Petrifying springs*. It is quite species-rich (species/4 m^2 = 21.8, *n* = 13).

Management

These springs can be impacted by alterations to the natural hydrology, high levels of phosphates and nitrates and trampling by livestock.

Key references

Perrin, P.M., Barron, S.J., Roche, J.R., O'Hanrahan, B. (2014) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. *Irish Wildlife Manuals* No. 79. National Parks and Wildlife Service, Dublin.

Bleasdale, A. (1995) The vegetation and ecology of the Connemara uplands, with particular reference to sheep grazing. (Ph.D. thesis). National University of Ireland Galway.

Ivimey-Cook, R.B., Proctor, M.C.F. (1964) The plant communities of the Burren, Co. Clare. *Proceedings of the Royal Irish Academy. Section B: Biological, Geological, and Chemical Science* 64, 211–302.

Synopsis version: V1.0 **Synopsis date:** April 2021 **Synopsis author(s):** P.M. Perrin

Photo 1. FE4B *Palustriella commutata – Bryum pseudotriquetrum* spring, Coomarkane, near Toberavanaha Lough, Cork (R. Hodd, August 2014)

Photo 2. FE4B *Palustriella commutata – Bryum pseudotriquetrum* spring, Commas, below Cuilcagh, Cavan (J. Fuller, September 2012)