

stands were recorded, of which 5 were found on E.-facing walls, 3 on W.-facing ones and one on a S.-facing wall surface.

Table 17 Community of *Crithmum maritimum* and *Linaris cymbalaria*

Date	Nr C	1			P	U	W	MGT	MGP
		29-9	5-8	8-8					
Year		61	64	62					
Nr R		556	454	519					
Ex		4	4	3					
Geo R		111	111	112					
CH		90	40	35					
CM		15	2	3					
d <i>Crithmum maritimum</i>		4a	2a	2b	100	1a-4a	14	14	
<i>Linaris cymbalaria</i>		3a	-	-	78	1a-3a	9	11	
<i>Parietaria judaica</i>		-	1b	-	67	+p-1b	1	2	
<i>Centranthus ruber</i>		1a	-	+r	56	+r-1a	0.1	0.9	
d <i>Tortula muralis</i>		-	2m	-	44	+r-2m	0.5	1	
<i>Sonchus oleraceus</i>		-	+p	+r	44	+r-+p	<0.1	<0.1	
d <i>Matricaria maritima</i> ssp. <i>maritima</i>		+p	2b	-	44	+p-2b	2	6	
d <i>Plantago coronopus</i>		-	2a	+p	33	+p-2a	0.9	3	
d <i>Sagina maritima</i>		-	-	+p	33	+r-+p	<0.1	0.1	
<i>Bryum argenteum</i>		2a	-	-	22	2m-2a	1	5	
<i>Bryum caespiticium</i>		2a	-	+p	22	+p-2a	1	4	
d <i>Festuca rubra</i>		-	2m	-	22	+p-2m	0.3	1	
d <i>Spergularia rupicola</i>		-	+r	-	22	+r-1a	0.2	0.8	
<i>Poa annua</i>		-	+p	-	22	+p-1p	0.1	0.3	
<i>Poa pratensis</i>		-	-	-	22	+p-1p	0.1	0.3	
<i>Streblotrichum convolutum</i>		-	-	1p	22	+p-1p	0.1	0.3	
<i>Catapodium rigidum</i>		-	-	+r	22	+r-1p	<0.1	0.2	
d <i>Senecio jacobaea</i>		-	+p	+p	22	+p	<0.1	0.1	
<i>Sedum acre</i>		-	-	-	22	+p	<0.1	0.1	
d <i>Catapodium maritimum</i>		-	+p	22	22	+p	<0.1	0.1	
<i>Asplenium ruta-muraria</i>		-	-	-	22	+r-+p	<0.1	0.1	
<i>Taraxacum</i> (div.) spec.		-	+p	+r	22	+r-+p	<0.1	0.1	
<i>Plantago lanceolata</i>		-	+p	+r	22	+r-+p	<0.1	0.1	
<i>Rumex crispus</i>		-	-	+p	22	+r-+p	<0.1	0.1	
<i>Erysimum cheiranthoides</i>		-	-	+p	22	+r-+p	<0.1	0.1	
MNS - MCH - MCM		12	-	32	-	3	(5)		

In addition in 2: *Phyllitis scolopendrium*, *Polypodium vulgare* 1a; *Dactylis glomerata* +p; in 3: *Medicago lupulina* 1b; *Rubus* spec. 1a; *Salvia pratensis* 1p; *Sedum acre*, d *Limonium icnidifolium* +p; d *Daucus gummifer*; *Crepis vesicaria* ssp. *taraxacifolia*, *Calendula arvensis*, *Elytrigia repens*, *Senecio vulgaris*, *Erigeron mucronatus* +r, *Bryoerythrophyllum recurvirostre* 2m; *Didymodon trifarius* +p.

LEGEND

1. Brixham (Devon, England), quay side wall.
2. Portheleven (Cornwall, England), quay side wall.
3. Carteret (Manche, France), rampart wall above harbour.

The community can be included in the *Parietarium judaicae* as a special coastal association which, if this is deemed recommendable, can be referred to by the name of *Linario-Crithmetum*.

In the community with *Crithmum maritimum* the contribution of species with a Mediterranean-Atlantic distribution is considerable, viz. 30% (U) and 53% (W).

6.1.10 Vegetation with *Erigeron mucronatus*

Communities with *Erigeron mucronatus* have been encountered in both the Mediterranean and the eu-atlantic parts of Europe. This species, native in N. America, and cultivated as an ornamental in Europe, has run wild and now behaves like a well-established neophyte with a marked preference for walls but occasionally (e.g. in the area of Lake Como) also encountered in rocky sites. The stands in southern Europe and in the Atlantic belt have a number of species in common, but they can clearly be distinguished in:

- a. communities with *Ficus carica* (S. Europe), and
 b. communities with *Asplenium adiantum-nigrum* (W. Europe).

Table 18 Geographical distribution and exposure of stands of communities with *Erigeron mucronatus*
 a. with *Ficus carica*
 b. with *Asplenium adiantum-nigrum*

exposure:		1	2	3	4	6	t	t%
geographical region:								
a	111	-	1	4	1	-	6	40
	112	1	4	2	2	-	9	60
	t	1	5	6	3	-	15	-
	t%	7	33	44	20	-	-	100
b	310	1	1	1	1	-	4	40
	320	1	1	1	1	-	4	40
	331	-	1	-	1	1	2(+1)	20
	t	2	3	2	3	(1)	10(+1)	-
t%	20	30	20	30	-	-	100	

Apparently the communities found in S. Europe show no pronounced preference to a certain type of exposure, but those occurring in W. Europe are more frequently encountered on S.-facing walls and but rarely on N.-facing ones. *Erigeron mucronatus* seems to avoid very dry habitats and is, therefore, often associated with species that do not survive (or become dormant during) periods of prolonged drought, such as *Asplenium trichomanes* and *Ceterach officinarum*. The impression was gained that this alien species is frequently met with in areas where granites or schists occur and are used as building stones. A coincidence of occurrence with *Asplenium adiantum-nigrum* is more commonly encountered than cohabitation with *A. ruta-muraria* and this might point to a certain dislike of *Erigeron mucronatus* of walls built of lime-stone or brick, but both kinds of walls are of the mortar-jointed type and the mortar is always rich in lime. If the composition of the mortar is not the same in the different areas (and this needs looking into), certain processes may be involved which lower the pH of the surface of the joints more rapidly in walls built of acid rocks than in lime-stone or brick walls (compare 6.6.2).

The stands of type (a) are floristically differentiated by a number of Mediterranean forms such as *Ficus carica*, *Phagnalon sordidum* and *Mentha rotundifolia*, and those of type (b) by e.g. the ferns *Asplenium adiantum-nigrum*, *A. ruta-muraria* and *Phyllitis scolopendrium*.

Both types have a certain affinity to other communities with *Asplenium trichomanes*. The affinity index (Poore's index) of (a) and (b) is 0.53. Stands of (a) are upon the whole richer in species than those of (b), but the percentage of coverage of their herb layer is lower as a rule. Community (a) shows some affinity to both the *Bromo-* and the *Sedo-Parietarium*. In a single instance *Parietaria lusitanica* was recorded (Table 19, no. 3). Community (b) is allied to a number of vegetation types, more particularly with several Atlantic communities with *Asplenium trichomanes* and with *Parietaria judaica*. Sometimes transitions

Table 19 Communities of *Erigeron mucronatus* and *Linaria cymbalaria*
a. with *Ficus carica*,
b. with *Asplenium adiantum-nigrum*

Date Year Nr R Ex Geo R CH CM	Nr C	a.							b.							total				
		1	2	3	P	U W	MGT	MGP	4	5	6	P	U W	MGT	MGP	26st	U W	MGT	MGP	
		26-4	21-4	9-5	11st				4-8	9-8	8-8	15st								
		65	62	65					64	62	62									
		068	166	156					433	575	561									
		2	6	3					3	3	4									
		320	331	310					111	112	112									
		50	30	25					55	40	25									
		2	-	-					5	-	5									
<i>Erigeron mucronatus</i>		3a	2b	2b	100	1a-3b	16	16	4a	3b	2b	100	1b-4a	30	30	100	1a-4a	24	24	
<i>Linaria cymbalaria</i>		1a	-	2a	64	+p-2a	2	4	2a	-	-	73	+p-2a	3	4	68	+p-2a	3	3	
<i>Sonchus oleraceus</i>		+p	1p	-	55	+r-1p	0.1	0.1	+p	-	-	60	+r-1p	0.1	0.1	58	+r-1p	0.1	0.1	
<i>Tortula muralis</i>		2m	-	-	45	2m-2a	2	4	2m	-	+p	60	+p-2m	0.8	1	60	+p-2a	1	2	
<i>Parietaria judaica</i>		2b	2a	-	64	+p-3a	8	12	-	+p	-	40	+p-2b	2	5	50	+p-3a	5	10	
<i>Asplenium trichomanes</i>		-	-	2a	45	+r-2a	1	2	2a	+p	+r	47	+r-2a	0.6	1	46	+r-2a	0.8	2	
<i>Centranthus ruber</i>		-	-	1b	36	+r-1b	0.4	1	+p	+p	-	57	+p-2a	1	2	46	+r-2a	0.8	2	
<i>Homalothecium sericeum</i>		-	-	-	18	1p-2m	0.3	1	1p	-	1b	33	+p-1b	0.7	2	27	+p-2m	0.5	2	
<i>Umbilicus rupestris</i>		-	+p	-	18	+p-1a	0.1	0.8	-	-	-	20	+p-2m	0.2	1	19	+p-2m	0.2	0.9	
<i>Ceterach officinarum</i>		-	-	1p	45	+p-2m	0.3	0.7	1p	-	-	13	+p	<0.1	0.1	27	+p-2m	0.1	0.5	
<i>Catapodium rigidum</i>		1p	-	-	27	+r-1p	<0.1	0.2	1p	-	-	13	1p	0.1	0.4	19	+r-1p	0.1	0.3	
<i>Mercurialis annua</i>		-	1a	-	27	+r-1a	<0.1	<0.1	-	-	-	13	+r-1p	<0.1	0.1	19	+r-1p	<0.1	<0.1	
<i>Euphorbia peplus</i>		-	1p	-	18	+r-1a	0.1	0.8	-	-	+r	13	+p-1p	<0.1	0.1	15	+r-1a	0.1	0.4	
<i>Ficus carica</i>		-	-	+b	55	+r-1b	0.5	0.8	-	-	-	7	+r	0	0	27	+r-1b	0.2	0.7	
<i>Mentha rotundifolia</i>		2m	+p	-	36	+p-2m	0.3	0.8	-	-	-	-	-	-	-	15	+p-2m	0.1	0.8	
<i>Phagnalon sordidum</i>		-	+r	-	36	+r-1a	0.1	0.5	-	-	-	-	-	-	-	12	+r-1a	<0.1	0.5	
<i>Sedum dasyphyllum</i>		-	-	1a	27	1p-2a	0.9	3	-	-	-	-	-	-	-	12	1p-2a	0.4	3	
<i>Campanula erinus</i>		-	1a	-	27	+p-2m	0.4	1	-	-	-	-	-	-	-	12	+r-2m	0.2	1	
<i>Bromus madritensis</i>		2m	+p	-	27	+p-2m	0.2	0.9	-	-	-	-	-	-	-	12	+p-2m	0.1	0.9	
<i>Barbula acuta</i>		1p	-	-	18	1p-2m	0.3	1	-	-	-	-	-	-	-	8	1p-2m	0.1	1	
<i>Fumaria capreolata</i>		2m	+r	-	18	+r-2m	0.2	1	-	-	-	-	-	-	-	8	+r-2m	0.1	1	
<i>Crepis vesicaria</i> sp. taraxaci- folia		-	+r	-	18	+r-1a	0.1	1	-	-	-	-	-	-	-	8	+r-1a	0.1	0.8	
<i>Avena barbata</i>		-	1p	-	18	1p	0.1	0.4	-	-	-	-	-	-	-	8	1p	<0.1	0.4	
<i>Veronica polita</i>		1p	-	-	18	+p-1p	<0.1	0.3	-	-	-	-	-	-	-	8	+p-1p	<0.1	0.3	
<i>Bromus sterilis</i>		+p	-	-	18	+p	<0.1	0.1	-	-	-	-	-	-	-	8	+p	<0.1	0.1	
<i>Sedum sediforme</i>		-	+p	-	18	+p	<0.1	0.1	-	-	-	-	-	-	-	8	+p	<0.1	0.1	
<i>Inula viscosa</i>		-	-	-	18	+r	0	0	-	-	-	-	-	-	-	8	+r	0	0	
<i>Galactites tomentosa</i>		-	+r	-	18	+r	0	0	-	-	-	-	-	-	-	8	+r	0	0	
<i>Euphorbia helioscopia</i>		-	+r	-	18	+r	0	0	-	-	-	-	-	-	-	8	+r	0	0	
<i>Barbula vinealis</i>		-	-	-	9	2m	0.2	3	2a	-	-	13	2m-2a	0.7	5	12	2m-2a	0.5	4	
<i>Oxalis corniculata</i>		-	-	-	9	+r	0	0	-	-	-	13	+r-1p	<0.1	0.1	12	+r-1p	<0.1	<0.1	
<i>Hedera helix</i>		-	-	+b	9	+b	0.3	4	-	+p	-	20	+r-1b	0.5	2	15	+p-1b	0.4	3	
<i>Poa annua</i>		-	-	-	9	1p	<0.1	0.4	-	-	1a	20	+r-1a	0.1	0.5	15	+r-1a	0.1	0.5	
<i>Asplenium ruta-muraria</i>		-	-	-	9	2m	0.2	3	-	-	-	33	+r-2m	0.2	0.5	23	+r-2m	0.2	0.9	
<i>Taraxacum</i> (div.) spec.		-	-	-	9	+r	0	0	+p	-	+r	33	+r-1p	<0.1	0.1	23	+r-1p	<0.1	0.1	
<i>Asplenium adiantum-nigrum</i>		-	-	-	-	-	-	-	-	-	1b	60	+r-2m	1	2	35	+r-2m	0.6	2	
<i>Polypodium vulgare</i>		-	-	-	-	-	-	-	+r	-	-	47	+r-1p	0.1	0.1	27	+r-1p	<0.1	0.1	
<i>Dactylis glomerata</i>		-	-	-	-	-	-	-	+p	+r	-	33	+r-1p	<0.1	0.1	19	+r-1p	<0.1	0.1	
<i>Streblotrichum convolutum</i>		-	-	-	-	-	-	-	+p	-	-	20	+p-2m	0.2	0.9	12	+p-2m	0.1	0.9	
<i>Bryum capillare</i>		-	-	-	-	-	-	-	-	-	-	20	+p-2m	0.2	1	12	+p-2m	0.1	1	
<i>Rubus</i> (div.) spec.		-	-	-	-	-	-	-	+p	-	-	20	+p-1a	0.1	0.5	12	+p-1a	0.1	0.6	
<i>Buddleja davidii</i>		-	-	-	-	-	-	-	+p	-	-	20	+p	<0.1	0.1	12	+p	<0.1	0.1	
<i>Phyllitis scolopendrium</i>		-	-	-	-	-	-	-	-	-	-	20	+r-1p	<0.1	<0.1	12	+r-1p	<0.1	<0.1	
<i>Bromus erectus</i>		-	-	-	-	-	-	-	-	-	-	13	+p-2m	0.2	1	8	+p-2m	0.1	0.9	
<i>Bryoerythrophyllum recurvirostre</i>		-	-	-	-	-	-	-	-	-	2m	13	2p-2m	0.2	1	6	2p-2m	0.1	1	
<i>Barbula unguiculata</i>		-	-	-	-	-	-	-	-	-	+p	13	+p-2m	0.1	0.8	8	+p-2m	0.1	0.8	
<i>Orthotrichum anomalum</i>		-	-	-	-	-	-	-	1p	-	-	13	+p-1p	<0.1	0.3	6	+p-1p	<0.1	0.3	
<i>Epilobium parviflorum</i>		-	-	-	-	-	-	-	-	-	+p	13	+r-1p	<0.1	0.1	8	+r-1p	<0.1	0.1	
<i>Bryum murorum</i>		-	-	-	-	-	-	-	-	-	+p	13	+p	<0.1	0.1	8	+p	<0.1	0.1	
<i>Bryum argenteum</i>		-	-	-	-	-	-	-	-	-	-	13	+r-1p	<0.1	0.1	8	+r-1p	<0.1	0.1	
<i>Agrostis stolonifera</i>		-	-	-	-	-	-	-	-	-	+r	13	+r	0	0	8	+r	0	0	
MNS - MCH - MCM		16	-	31	-	2 (5)			13	-	38	-	3 (4)			14	-	34	-	3 (5)

In addition in 1: *Parietaria lusitanica* 2m; *Arabisoides thaliana*, *Euphorbia exigua* 1p; *Veronica cymbalaria*, *Fumaria officinalis*, *Reichardia piccoloides*, *Hyoscyamus radicans*, *Sisyrinchium arvensis*, *Geranium sanguineum*, *C. mollis*, *Sonchus arvensis* +p; in 2: *Matthiola incana* 1b; *Scrophularia peregrina*, *Antirrhinum majus* +p; *Centaurea aspera*, *Apium graveolens*, *Muscari neglectum* +r; in 3: *Sempervivum tectorum* +p; in 5: *Mycelis muralis* +r; in 6: *Sagina procumbens* 1a; *Dryopteris filix-mas*, *Pteridium aquilinum* +p.

LEGEND

1. Parrana San Giusto (Toscana, Italy), wall alongside road to Siena.
2. Ramatuelle (Var, France), wall alongside Rue Victor Leon.
3. Ascona (Ticino, Switzerland), wall alongside road to Brissago.
4. Yealton (Cornwall, England), wall alongside high road above the church.
5. Quimperlé (Finistère, France), wall alongside road N 783 near the Mairie.
6. Flouedan (Finistère, France), wall around church.

towards the *Filici-Saginetum* were noted (Table 19, no. 6), in a single case *Soleirolia soleirolii* appeared in the relevé and twice a few specimens of *Cheiranthus cheiri*. Presumably the initial stage of communities of type (a) is mostly a community with *Parietaria judaica*, of those of type (b) rather a community with *Linaria cymbalaria* and *Asplenium ruta-muraria*. Both type (a) and type (b) can be regarded as *Erigeron*

mucronatus facies of various communities, but the frequently high percentage of coverage of this species and the special ecological conditions plead in favour of a separate treatment.

The communities can be classified in the *Parietarium judaicae* as follows:

- | | |
|--|--|
| 1. Association Fico-Erigeronetum
mucronati | Linario-Erigeronetum
mucronati
ficetosum caricae |
| 2. Association Polypodio-Erigeronetum
mucronati | polypodietosum vulgaris |

In stands with *Erigeron mucronatus* phanerophytes are rather conspicuous, at least qualitatively, in the stands with *Asplenium adiantum-nigrum* being represented with a score of 10% and with *Ficus carica* of 7%. In the stands with *F. carica*, however, therophytes are more numerous (score: 30% U and 5% W as against 11% and 1%, respectively). Myrmecochory is important in stands with *F. carica* and is hardly (or not at all) of importance in stands with *A. adiantum-nigrum* (the respective scores being U: 25% and 8%, W: 30% and 7%).

6.1.11 Vegetation with *Parietaria judaica* and *Asplenium ruta-muraria*

Parietaria judaica communities occurring in W.- and central Europe are easily distinguished from Mediterranean types, the resemblance with those of eu-atlantic regions (especially of area 112) being the greatest. Roughly speaking at least three categories can be distinguished:

- a. communities with *Centranthus ruber* and/or *Phyllitis scolopendrium*
- b. communities with *Poa compressa*, and
- c. communities with *Lycopus europaeus*

Table 20 Geographical distribution and exposure of stands of *Parietaria judaica* and *Asplenium ruta-muraria*
a. with *Centranthus ruber* and/or *Phyllitis scolopendrium*
b. with *Poa compressa*
c. with *Lycopus europaeus*

exposure:	1	2	3	4	t	t*
geographical region:						
111	2	2	8	3	15	40
112	5	4	1	5	15	40
120	1	-	-	1	2	5
132	3	1	2	-	6	15
t	11	7	11	9	38	-
t*	29	18	29	24	-	100
-						
111	-	1	-	-	1	3
112	-	-	1	-	1	3
120	2	3	7	1	13	44
131	-	2	4	2	8	28
132	1	-	3	-	4	14
310	1	-	-	-	1	3
332	-	-	-	1	1	3
t	4	6	15	4	29	-
t*	14	21	52	14	-	100
.						
111	2	-	-	-	2	29
120	-	1	-	3	4	57
132	-	1	-	-	1	14
t	2	2	-	3	7	-
t*	29	29	-	43	-	100