OV4
Chrysanthemum segetum-Spergula arvensis community
Spergulo-Chrysanthemetum segetum (Br.-Bl. & De Leeuw 1936) R.Tx. 1937

Constant species
Chrysanthemum segetum, *Poa annua*, *Polygonum aviculare*, *Spergula arvensis*.

Physiognomy
The distinctive feature of the annual vegetation of the *Spergulo-Chrysanthemetum* is the constancy of *Spergula arvensis* and *Chrysanthemum segetum*, the latter often abundant and especially striking by summer with its big, bright yellow flower heads. *Poa annua* and *Polygonum aviculare* are also constant in the community, *Elymus repens*, *Capsella bursa-pastoris* and *Stellaria media* frequent. Occasionals occurring throughout are *Bilderdykia convolvulus*, *Misopates orontium*, *Euphorbia helioscopa* and *Chamomilla suaveolens*. The perennial grasses *Elymus repens* and, somewhat less commonly *Lolium perenne* and *Agrostis stolonifera* can get a hold each year, though renewed disturbance curtails their continuing growth.

Sub-communities

Typical sub-community. In this sub-community, the only additional distinguishing features are frequent records for *Matricaria perforata* and occasional *Poa trivialis*, *Polygonum lapathifolium*, *Fumaria muralis* ssp. *boraei* and *Lamium purpureum*.

***Ranunculus repens-Sonchus asper* sub-community.** Here, *Ranunculus repens* and *Sonchus asper* are strongly preferential with *Polygonum persicaria* and *Potentilla anserina* also frequent and occasional records for *Anagallis arvensis*, *Viola arvensis*, *Myosotis arvensis*, *Crepis capillaris*, *Vicia sativa* ssp. *nigra* and the perennials *Bellis perennis*, *Trifolium repens*, *Holcus lanatus*, *Cerastium fontanum* and *Plantago major*.

Habitat
The *Spergulo-Chrysanthemetum* is a widespread community of disturbed, light, fertile acidic soils throughout the British lowlands, and a common feature of both cereal and root crops.

Both *Chrysanthemum segetum* (Howarth & Williams 1972) and *Spergula arvensis* (New 1961) are intolerant of non-acidic soils and are most characteristic of sands and light loams, with an optimum pH for *S. arvensis* of 4.5–5. *C. segetum* may also have a requirement for a well-aerated substrate: although this community can extend on to moister soils, and overall has a concentration in the wetter west of Britain, the substrates are generally free-draining. In the drier east of the country, it extends somewhat on to heavier soils which may give protection against drought. Both of these species germinate in spring from seed that can survive lengthy burial. *S. arvensis* may have a requirement for temperature fluctuation (New 1961) and seed needs to be at or near the soil surface for germination. Cultivation in May can destroy a first generation of seedlings but stimulate a subsequent flush.

Also, though *S. arvensis* is often found on infertile sands, *C. segetum* grows best on more eutrophic soils so this community is excluded from very impoverished sands. Indeed, many of the associates are characteristic of fertilised fields, so this is not an assemblage confined to low-input arable agriculture. *C. segetum*, with its waxy foliage, is also somewhat resistant to herbicide treatment (Silverside 1977) though it is certainly a weed that farmers try to exclude from cereal crops: its semi-succulent fruits hinder the drying of grain (Howarth & Williams 1972). In its distribution, then, this community is better represented on arable land on light soils that are naturally quite fertile or which have been lightly manured but not limed: indeed, liming is a treatment that can help control both *C. segetum* and *S. arvensis*.

The differences between the two sub-communities are related to soil moisture. The *Ranunculus-Sonchus* type is more characteristic of wetter substrates and tends to prevail in areas of rainier climate, as on the machair of the Outer Hebrides, or on somewhat more retentive soils.

Zonation and succession

The *Spergulo-Chrysanthemetum* occurs patchily within and around the edges of arable fields, sometimes giving way to other weed assemblages where there are local shifts in soil conditions, or differences in treatments and crops. In fields on clayey soils in the south-west and in Wales, for example, it tends to be replaced by the *Poa annua-Stachys arvensis* community and among summer cereals by the *Papaveretum*. More heavily fertilised or herbicide-treated stretches of crop or fields can see a switch to communities like *Matriciaria-Stellaria* assemblage. With the move to the more extreme oceanic climate of the far south-west of England, the *Spergulo-Chrysanthemetum* is replaced by the *Cerastium-Fumaria* community on similar soils.

Continuing cultivation of arable crops repeatedly creates congenial conditions for the community but traditional alternations of cereals or roots and fallow grassland, as on the machair of the Outer Hebrides, leads to a temporary successional replacement of the *Ranunculus repens* sub-community by swards of the *Festuca-Agrostis-Potentilla* or *Festuca-Galium* types (I. Crawford, personal communication).

Distribution

The *Spergulo-Chrysanthemetum* occurs widely throughout Britain on suitable soils, with highest frequency on less intensive arable land in the west.

Affinities

This kind of weed vegetation is clearly identical to the *Spergulo-Chrysanthemetum* (Br.-Bl. & de Leeuw 1936) R.Tx. 1937 that has been widely described from across Europe, south into France and east to Poland (Westhoff & den Held 1969, Oberdorfer 1983, Pott 1992). It is the major association among the weed assemblages of more base-poor soils in the Atlantic and sub-Atlantic zones of Europe, vegetation usually grouped in the Polygono-Chenopodion. Much of Silverside's (1977) *Briza minor* variant of the *Spergulo-Chrysanthemetum* is here included among the *Cerastium-Fumaria* community.

Floristic table OV4

	a	b	4
Chrysanthemum segetum	V (1–8)	V (1–6)	V (1–8)
Spergula arvensis	V (1–6)	IV (1–3)	V (1–6)
Polygonum aviculare	V (1–3)	IV (1–6)	V (1–6)
Poa annua	IV (1–5)	IV (1–4)	IV (1–5)
Matricaria perforata	III (1–6)	I (6)	II (1–6)
Poa trivialis	II (1–3)	I (3)	I (1–3)
Polygonum lapathifolium	II (1–3)	I (1)	I (1–3)
Fumaria muralis ssp. *boraei*	II (1–3)	I (5)	I (1–5)
Lamium purpureum	II (1–3)		I (1–3)
Ranunculus repens		V (1–4)	III (1–4)
Sonchus asper	I (3)	IV (1–3)	II (1–3)
Polygonum persicaria	I (1)	III (1–5)	II (1–3)
Potentilla anserina	I (3)	III (1–3)	II (1–3)
Bellis perennis		II (1–3)	II (1–3)
Anagallis arvensis	I (1–3)	II (1–3)	II (1–3)
Viola arvensis	I (1–3)	II (1–2)	II (1–3)
Trifolium repens	I (1)	II (1–3)	II (1–3)
Myosotis arvensis		II (1–3)	I (1–3)
Cerastium fontanum		II (1–3)	I (1–3)
Holcus lanatus		II (1–5)	I (1–5)
Crepis capillaris		II (1–3)	I (1–3)
Vicia sativa nigra		II (1–3)	I (1–3)
Plantago major	I (1)	II (1–3)	I (1–3)
Daucus carota		II (1–3)	I (1–3)

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Floristic table OV4 (*cont.*)

	a	b	4
Cirsium vulgare		I (1–2)	I (1–2)
Trifolium dubium		I (1–3)	I (1–3)
Rumex acetosella		I (1–3)	I (1–3)
Veronica arvensis		I (1–3)	I (1–3)
Cerastium glomeratum		I (1–2)	I (1–2)
Brassica rapa		I (1–3)	I (1–3)
Veronica agrestis		I (1–2)	I (1–2)
Galeopsis tetrahit agg.		I (3–4)	I (3–4)
Taraxacum officinale agg.		I (1–3)	I (1–3)
Elymus repens	III (1–5)	III (1–3)	III (1–5)
Stellaria media	III (1–6)	III (1–6)	III (1–6)
Capsella bursa-pastoris	III (1–3)	III (1–5)	III (1–5)
Bilderdykia convolvulus	II (1–3)	II (1–3)	II (1–3)
Lolium perenne	II (1–3)	II (1–3)	II (1–3)
Misopates orontium	II (1–3)	II (1–3)	II (1–3)
Euphorbia helioscopa	II (1–3)	II (1–3)	II (1–3)
Chamomilla suaveolens	II (1–3)	II (1–8)	II (1–8)
Agrostis stolonifera	II (1–5)	II (1–4)	II (1–5)
Anchusa arvensis	I (1–3)	I (1–3)	I (1–3)
Raphanus raphanistrum	I (1–3)	I (1–5)	I (1–5)
Stachys arvensis	I (1)	I (1–3)	I (1–3)
Filaginella uliginosa	I (1–3)	I (1–3)	I (1–3)
Bryum rubens	I (1–3)	I (1–3)	I (1–3)
Agrostis capillaris	I (1–3)	I (1–3)	I (1–3)
Solanum nigrum	I (1–3)	I (1–3)	I (1–3)
Coronopus didymus	I (8)	I (1)	I (1–8)
Senecio vulgaris	1 (1–2)	I (3)	I (1–3)
Lolium multiflorum	I (1–3)	I (1)	I (1–3)
Cirsium arvense	I (1–3)	I (1)	I (1–3)
Rumex crispus	I (1)	I (1–3)	I (1–3)
Dactylis glomerata	I (1–3)	I (3)	I (1–3)
Geranium dissectum	I (1)	I (1)	I (1)
Artemisia vulgaris	I (1)	I (1)	I (1)
Number of samples	13	12	25
Number of species/sample	17 (7–22)	24 (17–41)	19 (7–41)
Vegetation cover (%)	82 (50–100)	77 (20–100)	80 (20–100)

a Typical sub-community
b *Ranunculus repens-Sonchus asper* sub-community
4 *Spergulo-Chrysanthemetum segetum* (total)

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