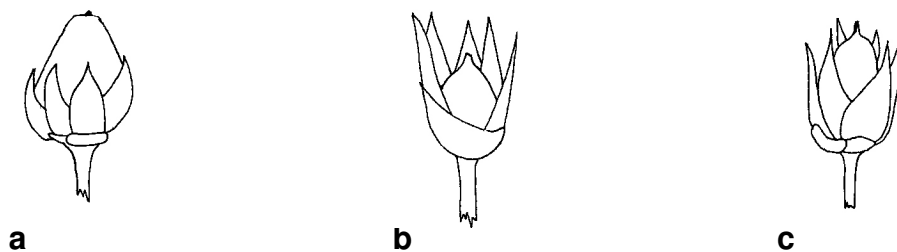


LUZULA

1. *Luzula* × *borreri* (*L. forsteri* × *L. pilosa*)

Luzula × *borreri* is not uncommon in areas where its parents grow together in southern Britain, but is probably under-recorded. The Irish record for the hybrid (Ebinger 1962, Synnott 1973) is *L. pilosa*. The hybrid is similar to *L. pilosa* in general appearance (i.e. leaf width and arrangement of the inflorescence) but it may be robust with hybrid vigour and it is usually ± sterile and produces few seeds. Look for plants with few or no capsules developing (NB *L. pilosa* tends to produce a series of inflorescences so the youngest may not have had time to produce ripe fruits).



Fruiting capsules. (a) *L. pilosa*, (b) *L. × borreri*, one perianth segment removed to show capsule, (c) *L. forsteri*.

The parents are quite distinct, though sometimes confused. Characters found to be of little use in distinguishing them include the presence of a mucro at the leaf tip, anther size and ratio of anthers to the filaments. The following Table has been compiled from Ebinger (1962), *CTM* and from specimens in *CGE* and *NMW*.



Seeds. (d) *L. pilosa*, (e) *L. forsteri*.

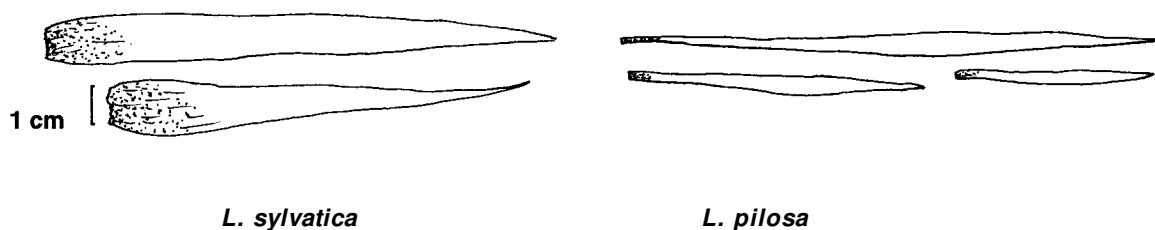
Plant Crib

	<i>Luzula pilosa</i> (L.) Willd.	<i>Luzula</i> × <i>borreri</i> Bromf. ex Bab.	<i>Luzula forsteri</i> (Sm.) DC.
Broadest basal leaf width	Up to 10 mm	Up to 5 mm	Up to 4 mm
Stem leaf length	Less than 4 cm	2-5 cm	Usually more than (2.5-) 3 cm
Pedicels in flower	Spreading-deflexed	Spreading	Spreading or drooping to one side
Pedicels in fruit	Spreading-deflexed	Variable but tending to spread	Erect (to slightly spreading)
Perianth segments	Shorter than or equalling capsule	Much longer than capsule if one develops	Equalling or longer than capsule
Capsules	Wide at base, narrowing abruptly from below middle to truncate apex (Fig. a); usually 3 seeded	Absent or poorly developed (Fig. b); sterile or 1(-2) seeded	Ovoid, apex acuminate (Fig. c); usually 3 seeded
Seeds	c. 1.5 × as long as wide; appendage usually more than 0.6 mm long, hooked (Fig. d)	Shrivelled or similar to <i>L. pilosa</i>	c. 2 × as long as wide; appendage usually less than 0.6 mm, ± straight (Fig. e)

References Ebinger, J. E. (1962). *Watsonia* **5**: 251-254.
 Synnott, D. (1973). *Irish Naturalists' Journal* **17**: 327-330.

2. *Luzula pilosa* / *L. sylvatica* vegetative

Those pondering if a vegetative *Luzula* is *L. pilosa* (L.) Willd. or young *L. sylvatica* (Huds.) Gaudin can examine the leaves; *L. pilosa* has leaves which are widest near the middle and taper to a narrow base, whilst *L. sylvatica* has leaves ± widest and ± sheathing at the base. There should be no difficulty with mature *L. sylvatica*.



Plant Crib

3. *Luzula campestris* / *L. multiflora* group / *L. pallidula*

L. campestris and *L. pallidula* are distinct taxa which should cause few identification problems. The patch-forming *L. campestris* is conspicuous in spring and early summer, but the leaves tend to die down in mid summer when it is over-looked, and re-appear in the autumn. *L. pallidula* is distinctly small and slender, and the tiny seeds and papillose peduncles should distinguish it if the small, light brown florets (tepals 1.5-2.8 mm) are not obvious enough. Pale-flowered forms of *L. multiflora* are not rare in shady places and are regularly misinterpreted as *L. pallidula*. The main difficulty will be separating *L. multiflora* and *L. congesta* in the *L. multiflora* group. Many populations of *L. congesta* have plants with pedunculate clusters of flowers, and have been widely over-recorded as *L. multiflora*. Some hybrids occur within the group but need a chromosome count for verification and are unlikely to be picked out except by the expert.

Taxonomic ranks within the *L. multiflora* group are down to personal preference, and *L. congesta* can be recorded as a species (cf. Buchanan 1960; Kirschner & Rich 1993, 1996; Armstrong 1997) or subspecies (cf. Stace 1997) as long as the taxon within the *L. multiflora* group is made clear. Historical records of these taxa (including those for the Monitoring Scheme) need to be checked against herbarium material as they have for so long been misinterpreted in Britain. We do not currently accept *L. multiflora* subsp. *frigida* in Scotland (cf. Sell & Murrell 1997; see Kirschner 1993); the material on which this was based was examined by us in CGE and represents *L. multiflora*. However, the taxon should be looked for in Scotland.

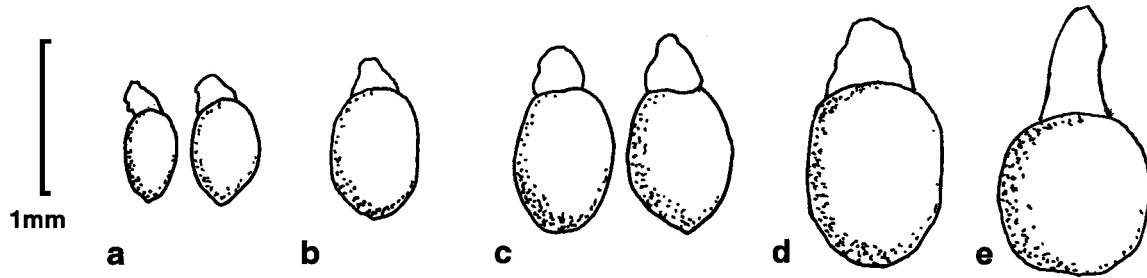
The taxa of the *L. multiflora* group form a polyploid series of increasing size. They are variable and differ in a series of quantitative overlapping characters, and there is little option but to measure plants with a graduated lens to identify them. Ecotypic variation is often complicated by considerable phenotypic plasticity, and the taxa need to be confirmed using a combination of characters. The taxa are less discrete and show considerably more variation in the British Isles as a whole than as reported for NW England by Armstrong (1997). Her lists of characters for distinguishing selected pairs of taxa are generally useful, excluding stalked/congested inflorescence characters.

The best characters are seed shape and size, anther/filament ratio, style length and presence of creeping rhizomes and/or stolons. Ripe brown seeds should be measured flat side down to their full length, ignoring the appendage (unripe or shrunken/wrinkled seeds should be ignored). Style measurements exclude the stigmas. Specimens for identification should include rootstock, lower leaves and ripe seed. Small-flowered plants from Ireland and Scottish mountain plants are especially welcome.

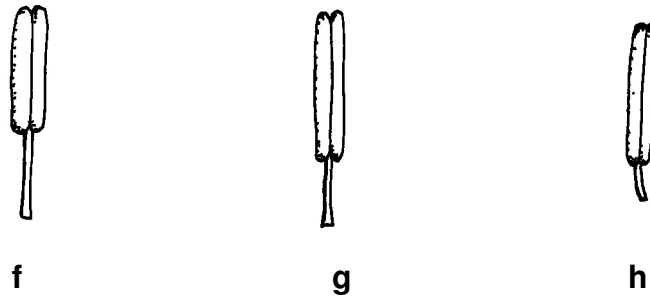
- | | | |
|---|---|----------------------|
| 1 | Plants forming patches with creeping stolons and rhizomes; seeds (ignoring appendage) ± globular (Fig. e); anthers usually more than 3 times as long as filaments (Fig. h) | <i>L. campestris</i> |
| 1 | Plants tufted, rhizome short, oblique or vertical; seeds ov oid to oblong-ov oid (Figs. a-d); anthers usually less than 2.5 times as long as filaments (Figs. f-g) | 2 |
| 2 | Peduncles densely papillose throughout (microscope, in silhouette); outer and inner tepals conspicuously unequal (Fig. i); seeds 0.5-0.6 mm wide | <i>L. pallidula</i> |
| 2 | Peduncles smooth or sparsely papillose below the flower clusters; outer and inner tepals equal or outer tepals slightly longer by 0.2-0.4(-0.6) mm (Figs. j-k); seeds 0.7 mm or more wide | 3 |
| 3 | Seeds (excluding appendage) 1.2-1.5 mm long (Fig. d); inflorescence usually congested or sometimes pedunculate | <i>L. congesta</i> |
| 3 | Seeds (excluding appendage) to 1.1(-1.2) mm long (Figs. b-c); inflorescence usually pedunculate | 4 |

Plant Crib

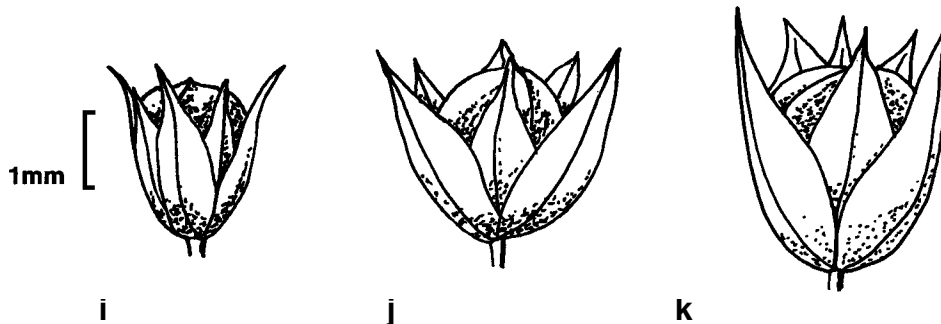
- 4 Peduncles erect, usually straight; seed appendages 0.4-0.5 mm long; basal leaves usually > 3 mm wide; capsule segments 2.0-2.8 mm long
L. multiflora subsp. *multiflora*
- 4 Some peduncles recurved, others often flexuose; seed appendages 0.2-0.3 mm long; basal leaves usually less than 3 mm wide; capsule segments 1.9-2.2 mm long
L. multiflora subsp. *hibernica*



Seeds. (a) *Luzula pallidula*, (b) *L. multiflora* subsp. *hibernica*, (c) *L. multiflora* subsp. *multiflora*, (d) *L. congesta*, (e) *L. campestris*.



Anthers and filaments. (f-g) *L. multiflora* group, (h) *L. campestris*.



Capsules. (i) unequal tepals (*Luzula pallidula*), (j) nearly equal tepals (*L. congesta*, *L. multiflora* subsp. *hibernica*), (k) \pm equal tepals (*L. campestris*, *L. multiflora* subsp. *multiflora*).

Descriptions of taxa (after Kirschner & Rich 1993, 1996)

L. pallidula Kirschner (*L. pallescens* auct.): Densely caespitose, rhizome very short. Peduncles erect, densely papillose (microscope), often with secondary branches. Outer perianth segments 2.0-2.8 mm long, conspicuously longer than the inner. Anthers usually as long as the filaments. Styles 0.2-0.3 mm long. Seeds ovoid, 0.7-0.8 mm long (excluding appendages) \times 0.5-0.6 mm wide, appendages 0.2-0.3 mm long. Diploid. On track sides, open woodland and disturbed open boggy or sandy vegetation, and could be over-looked as it is an annual-biennial flowering in May and June, and disappearing by mid summer. It is a very rare plant still present in V.c. 31, but extinct in Ireland

Plant Crib

(Kirschner & Rich 1993; Rich 1994) (a tentative V.c. 54 record in E. J. Gibbons *Flora of Lincolnshire* is *L. multiflora*).

L. multiflora (Ehrh.) Lej. subsp. *hibernica* Kirschner & T. C. G. Rich: Usually densely caespitose, without stolons. Peduncles usually flexuose and with at least one in an inflorescence recurved, smooth. Perianth segments of \pm equal length or the outer to 0.6 mm longer, 2.6-3.2 mm long. Anthers as long as or just than filaments. Styles 0.6-0.7 mm long. Seeds oblong-ovoid, 0.8-0.9 (-1.0) mm long \times usually 0.7 mm wide, appendages 0.2-0.3 mm long. Tetraploid. Probably widespread in Ireland.

L. multiflora (Ehrh.) Lej. subsp. *multiflora*: Usually densely caespitose, without stolons. Peduncles erect, smooth. Perianth segments of equal length, 2.8-3.5 mm long. Anthers as long as or up to two times the filaments. Styles 0.4-0.9 mm long. Seeds oblong-ovoid, 0.9-1.1(-1.2) mm long \times usually 0.8 mm wide, appendages 0.4 mm long. Hexaploid in Britain. Widespread in Britain often on mineral-rich soils and in meadows.

L. congesta (Thuill.) Lej.: Plants densely caespitose without stolons, rhizome vertical, of medium length. Inflorescence congested, some of the clusters may be pedunculate, peduncles erect, smooth. Perianth segments of \pm equal length, 2.8-3.8 mm long. Anthers as long as the filaments. Styles 0.5-0.8 mm long. Seeds ovoid, 1.2-1.5 mm long \times 0.9-1.0 mm wide, appendages 0.4-0.6 mm long. Octoploid. Possibly the commonest taxon in the *L. multiflora* group, widespread in Britain and Ireland often on peaty soils.

L. campestris (L.) DC.: Laxly caespitose, rhizome long, creeping, short stolons often present. Peduncles smooth, some of them recurved. Perianth segments of equal length, 2.8-4.1 mm long. Anthers usually 3-6 times as long as filaments. Styles 0.9-1.6 mm long. Seeds almost globular, 1.0-1.1 mm long \times 0.9-1.0 mm wide, appendages 0.4 mm-0.7 mm long. Diploid. Common and widespread.

- References** Armstrong, J. (1997). *Watsonia* **21**: 259-270.
Buchanan, J. (1960). *Proceedings of the Linnean Society of London* **171**: 126-128.
Kirschner, J. (1993). *Folia Geobotanica Phytotaxonomica* **28**: 141-182.
Kirschner, J. & Rich, T. C. G. (1993). *Irish Naturalists' Journal* **24**: 297-298.
Kirschner, J. & Rich, T. C. G. (1996). *Watsonia* **21**: 89-97.
Rich, T. C. G. (1994). *Irish Botanical News* **4**: 26-28.

Authors J. Kirschner & T.C.G. Rich, 1997.