

HINTS ON THE DETERMINATION OF SOME CRITICAL SPECIES, MICROSPECIES, SUBSPECIES, VARIETIES AND HYBRIDS IN THE BRITISH FLORA*

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This list includes some of the taxa which it is hoped will be included in a critical supplement to the *Atlas of the British Flora*, the data for which must be collected during the next two years.

The marginal numeration and nomenclature used follow Perring (1958): the numbers following the name of the taxa in brackets are the Maps Scheme code numbers.

CRITICAL SPECIES AND MICROSPECIES

18/2.2 *Athyrium flexile* (Newm.) Druce [210b]

Differs from *A. alpestre* in the very short (1-2 cm.) petioles, smaller and relatively narrower leaves, suddenly bent near the base. The pinnae are short and the sori, usually with very few sporangia, are borne mainly on the lower part of the leaf. Mountains of Scotland.

21/6 *Dryopteris lanceolatocristata* (Hoffm.) Alston (*D. spinulosa* Watt) [666]

Some forms of *D. dilatata* have more or less concolorous scales and have been named *D. lanceolatocristata* in error: this character alone should not be relied upon in separating these two species.

D. lanceolatocristata is usually *without* glands on the indusium, and can generally be distinguished by the lighter, yellowish-green of its leaves, the less inrolled pinnules, and the creeping rootstock.

25/1 *Polypodium vulgare* agg.

Three segregates are now recognised in Britain and the following key to their determination has been drawn up by A. C. Jermy and Dr. M. G. Shivas:

1. Fronds linear-lanceolate (more than half the pinnae \pm equal in length), basal pair of pinnae not inflexed; sori circular in outline, number of thickened cells in the annulus 10-14, appearing dark brown when sporangial wall still yellow. New fronds produced in early summer, spores ripen July-August. Common.

P. vulgare L. s.s. [1544b]

Fronds ovate or triangular, basal pair of pinnae usually inflexed; some of the sori oval in outline, number of thickened cells in the annulus less than 10, darkening at same time as sporangial wall.

2.

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2. Fronds broadly ovate to triangular (longest pinnae 2nd pair from base), not coriaceous; number of thickened cells in annulus 4-7, paraphyses present amongst the sporangia. New fronds produced in autumn, spores ripen in late autumn or following spring. Rare, on limestone rock-faces and walls. *P. australe* Fée [1544a]

Fronds ovate to ovate-lanceolate (longest pinnae 4th-6th pair from base), coriaceous; number of thickened cells in annulus 8 or 9, paraphyses absent. New fronds produced in summer, spores ripen July-December. Common. *P. interjectum* Shivas [1544c]

For further details see Shivas (1961).

58/3 *Papaver lecoqii* Lamotte [1429]

P. lecoqii can readily be distinguished from *P. dubium* L. by having latex which turns yellow on exposure to the air. The capsule character given in C.T. & W. is not reliable. *P. lecoqii* is most likely to be found on limestone soils in south-east England.

102/1-2 *Rorippa nasturtium-aquaticum* agg.

The two segregates are best separated by the following characters:

Pods relatively short (13-18 mm.), broad and straight; seeds with about 25 depressions on the surface, easily seen with a hand lens.

R. nasturtium-aquaticum (L.) Hayek [1347]

Pods longer (16-22 mm.) narrow and usually curved; seeds with about 100 depressions, not easily seen under a lens.

R. microphylla (Boenn.) Hyland. [1346]

N.B. The number of rows of seeds is *not* a reliable character. The hybrid is almost sterile—but may have 1 or 2 ripe seeds/pod. (q.v., page 380).

141/1-2 *Arenaria serpyllifolia* agg.

The following key for the separation of the two segregates has been provided by A. O. Chater and G. Halliday:

Sepals c. 3.4-5 mm.; capsule slightly exceeding sepals, less than twice as long as wide, broadly ovoid-conic, distinctly swollen at base. *A. serpyllifolia* L. [162]

Sepals usually less than 3 mm.; capsule usually equalling or shorter than sepals, usually twice as long as wide, straight-sided.

A. leptoclados (Reichb.) Guss. [163]

A. leptoclados is more delicate in all its parts, but the capsule-shape is the only definite character.

169/4 *Erodium glutinosum* Dumort. [747]

This species may be separated from *E. cicutarium* (L.) L'Hérit. by following this key (after C.T. & W.):

Flowers zygomorphic, mostly 12 mm. in diam. or more, often with blackish spot at base of the upper petals; fruit with a conspicuous pit at the apex, beak 22-40 mm.; peduncles mostly 3-or more flowered; indumentum variable.

E. cicutarium

Flowers scarcely zygomorphic, c. 7 mm. diam., unspotted; fruit with small pit at apex, beak 15-24 mm.; peduncles mostly 2-3-flowered; plant densely glandular.

E. glutinosum

E. glutinosum is confined to dunes etc. near the sea mainly on the west coast. It should not be confused with *E. cicutarium* subsp. *dunense* (q.v., page 374).

192/O *Trifolium occidentale* D. E. Coombe [2268]

This species has recently been described by Coombe (1961), and the following notes on how it may be distinguished from *T. repens* L. are taken from his paper:

Leaflets dark green and glaucous without light or dark markings, smaller, thicker, rarely exceeding 10 × 10 mm. orbicular, or very broadly cuneate at the base; margin very narrowly hyaline, with fewer less prominent teeth; lateral veins fewer, not translucent to strong diffuse light with the naked eye; petiole and petiolules with sparse but persistent flexuous erecto-patent colourless hairs to 1 mm. Heads fewer flowered, often c.20; flowers creamy-white, scentless; the upper two calyx-teeth often with one or two prominent teeth on the upper margins. Flowers earlier, from late March to early July. Only known from W. Cornwall, Isles of Scilly and the Channel Isles.

211/9 *Rubus caesius* L. [1726]

It is probable that this species has been over-recorded in error for taxa of *Rubus fruticosus* agg., particularly in north and west Britain. Note that *R. caesius* has ternate leaves and lanceolate stipules and that the stems and drupelets are covered in a whitish bloom (pruinose). The drupelets are usually few in number (c.2-5), and never more than 20 occur.

211/11.129 *Rubus ulmifolius* Schott [1732]

This segregate is an easily recognised member of *R. fruticosus* agg. E. S. Eedes has provided the following description:

Stem waxy (dark) on the side turned to the sun; prickles strong like those of the Dog Rose; leaflets small, smooth, convex, dark green above and white below.

These characters make it possible to identify *R. ulmifolius* almost throughout the year, as its leaves are long-persistent. It is the most frequent bramble in lowland England where it occurs particularly on the limestones and heavy clays, and is probably only rare on acid sands.

221/1-2 *Aphanes arvensis* agg.

The two segregates are best separated by the following characters:

Lobes of stipules surrounding inflorescence triangular-ovate; fruit 2.2—2.6 mm. including divergent sepals.

A. arvensis L. [132]

Lobes of stipules oblong; fruit 1.4-1.8 mm. including the convergent sepals.

A. microcarpa (Boiss. & Reut.) Rothm. [133]

Both species occur throughout the British Isles: *A. microcarpa* is more frequent on acid soils.

254/5 *Epilobium roseum* Schreb. [700]

This species has perhaps been over-recorded for other species of *Epilobium* or hybrids. It may be recognised by its clavate stigma (not 4-lobed as in *E. montanum* L.), its pale coloured petals, and its long-stalked (3-20 mm.) leaves which are ovate-elliptical to lanceolate-elliptical, narrowed both to the acute apex and to the cuneate base. Like *E. adenocaulon* it has many glandular hairs on the upper part of the stem but that species has short-stalked leaves (1.5-3 mm.) and seeds with a rounded pellucid appendage lacking in *E. roseum*. Not as frequent as *E. adenocaulon*, which is now common in southern England.

254/7-8 *Epilobium adnatum* agg.

The two segregates are best separated by the following characters:

Leaves generally parallel-sided, their limbs decurrent down the stem, surface shiny; petals 5-7 mm., pale lilac.

E. adnatum Griseb. [689]

Leaves lanceolate, narrowed to a short stalk, never decurrent, surface dull; petals 10-12 mm., red.

E. lamyi F. W. Schultz [693]

Continental authorities often treat these two as sub-species because they lack precise qualitative distinction. The aggregate is often confused with *E. obscurum* Schreb. but that species always has a few patent glandular hairs on the calyx-tube which can be seen with a hand lens if the plant is held up to the light.

E. adnatum agg. has a southern distribution and is probably casual in Scotland. *E. obscurum* is one of the commonest species of the genus in the country except in parts of eastern England. It has apparently been overlooked and under-recorded.

258/3 *Circaea alpina* L. [511]

This species is much rarer than was once appreciated and confirmed records are only known from v.-cs 41, 42, 48, 49, 60, 65, 69, 70, 97, 100.

Recent work by Dr. P. Raven has suggested that the following characters are best used in separating it from *C. × intermedia* Ehrh:

Open flowers clustered at stem-apex; petals less than 1 mm. long. *C. alpina*

Open flowers well spaced along the rachis; petals more than 2 mm. long. *C. × intermedia*

262/1-2 *Callitriche stagnalis* agg.

The two segregates can be separated when well-developed flowering and fruiting material is available. The following key is based on the work of Schotsman (1954):

Rosette leaves elliptical; stigmas up to 5 mm., erect or spreading; seeds in T.S. of the fruit parallel.

C. platycarpa Kütz. [307a]

Rosette leaves almost circular; stigmas 2-3 mm., arcuate-recurved; seeds in T.S. of the fruit divergent.

C. stagnalis Scop. [307]

Both species probably occur throughout the British Isles.

262/4 *Callitriche intermedia* Hoffm. [303]

This species has often been recorded in error for submerged forms of *C. platycarpa* Kütz. from which, however, it may be distinguished by its almost linear, not elliptical, leaves which are *widened* at the tip like a bicycle spanner. In both species the apex is emarginate but only in *C. intermedia* is the leaf also widest here. *C. intermedia* may also be distinguished by the stigmas, the bases of which are pressed close to the lateral faces of the fruit: occasionally subsp. *pedunculata* (DC.) Syme [303b] may be found in which the fruits are borne on stalks up to 50 mm. Rare in east England, probably frequent elsewhere.

320/1 *Polygonum aviculare* agg.

Four segregates are now recognised in Britain, and the following key to their determination has been drawn up by B. T. Styles:

1. Branch- and stem-leaves \pm equal; persistent perianth divided for half its length; fruit with 2 sides convex, 1 concave.

P. arenastrum Bor. (*P. aequale* Lindm.) [1520]

Branch-leaves much smaller than stem-leaves; persistent perianth divided almost to base; fruits trigonous with three concave sides. 2

2. Stem-leaves narrow, linear-lanceolate, 1-4 mm. broad; perianth segments and fruit narrow, fruit exserted.

P. rurivagum Jord. [1540]

Stem-leaves broad, 5-18 mm.; perianth-segments overlapping, fruit broad. 3

3. Stem-leaves ovate-lanceolate, subsessile or with petioles c. 2 mm. included in the ochreae; fruit 2.5-3.5 mm.

P. aviculare L. s.s. [1523]

Stem-leaves obovate-spathulate, petioles 4-8 mm., projecting from the ochreae; fruit 3.5-4.5 mm.

P. boreale (Lange) Small [2269]

P. aviculare and *P. arenastrum* are probably throughout the British Isles—don't try to separate these two on leaf-size alone.

P. rurivagum is a cornfield weed on chalk and limestone in the south. *P. boreale* has so far only been found in Orkney and Shetland.

325/1.3 *Rumex tenuifolius* (Wallr.) Löve [1756]

This segregate may be separated from *R. acetosella* L. *sensu stricto* by having the stems decumbent at the base and narrow leaves 7-10 times as long as broad, with the margins inrolled.

R. tenuifolius occurs on the poorest acid soils.

342/4 *Populus nigra* L. [1554]

This has been confused with *P. × canadensis* Moench, but the two species can be separated if attention is paid to the nature of the branching (see C.T. & W.):

Trunk and larger branches usually bearing large swollen bosses; branches spreading, arching downwards, forming a wide crown. *P. nigra*

Trunk without bosses; branches ascending, curving upwards, forming a fan-like crown. *P. × canadensis*

P. nigra is much the less common of the two and may be found in eastern and central England where it is possibly native by streams and in wet woods.

372/2-3 *Anagallis arvensis* agg.

There are two blue pimpernels in Britain which can best be separated by the following characters:

Pedicels considerably exceeding length of leaf; petals up to 6 mm. broad, fringed with very numerous 3-celled glands. *A. arvensis* L. var. *caerulea* Lüdi [99c]

Pedicels not, or only slightly exceeding length of leaf; petals up to 3.5 mm. broad, fringed with few 4-celled glands. *A. foemina* Mill. [99b]

A. arvensis var. *caerulea* is merely a colour variety of *A. arvensis* so that the latter can always be used for reference.

392/1-2 *Symphytum officinale* L. [2024] and *S. asperum* Lepech. [2023]

The limits of these species are disputed; it is probable that extensive hybridisation has occurred in Britain or that hybrid stock has been introduced. For the time being it seems wisest to take a narrow view and only to class as species plants with the following combination of characters:

Flowers white or pale pink, anthers in front view longer than exposed portion of filaments; leaves strongly decurrent; pubescence soft, hairs not swollen at the base.

S. officinale

Flowers blue, anthers in front view shorter than filaments; leaves not decurrent, with distinct petioles; pubescence stiff, hairs swollen at the base.

S. asperum

Any specimens belonging to this group without either of these two combinations should perhaps be placed under *S. × uplandicum* Nyman.

I am grateful to Professor J. G. Hawkes for his help with this diagnosis.

S. asperum is a very rare introduction: *S. officinale* occurs as a native in fens and marshes in eastern England.

400/1 & 4 *Myosotis scorpioides* L. (*M. palustris* (L.) Hill) [1322] and *M. caespitosa* K. F. Schultz [1319]

There has been some confusion between these two species because there is considerable overlap of characters often used to distinguish them in keys, for example flower-size. They are best separated as follows:

Style \pm equalling the calyx-tube, calyx-teeth forming an equilateral triangle; hairs on lower part of stems spreading.

M. scorpioides

Style half the length of the calyx-tube, calyx-teeth with sides $1\frac{1}{2}$ -2 times as long as base (isosceles triangle); hairs of stem always appressed.

M. caespitosa

I am grateful to A. E. Wade & D. Welch for their help with this diagnosis.

Both species are widespread in the British Isles but *M. caespitosa* is commoner in the north and west where *M. scorpioides* is probably only frequent near the coast. In eastern England *M. scorpioides* is commoner and *M. caespitosa* is restricted to less basic soils.

406/1-3 *Calystegia sepium* agg.

Although there is little difficulty in separating good material of *C. sepium* (L.) R.Br. and *C. silvatica* (Kit.) Griseb. three factors have confused the records:

- (i) The occurrence of intermediate populations.
- (ii) The existence of a third and, until recently, overlooked taxon, *C. pulchra* Brummitt & Heywood.
- (iii) The continued use of *C. sepium* as an aggregate name.

The following key is after Brummitt & Heywood (1960), taking into account the work of Stace (1961):

- 1. Bracteoles not overlapping, flat or somewhat keeled at base, acute at apex; corolla less than 55 mm. long and stamens less than 18 mm. long, except in some pink-flowered plants; anthers 4.5-5.5 mm.

C. sepium [311]

Bracteoles overlapping, saccate at the base, obtuse to truncate at apex; corolla more than 55 mm. long; stamens more than 23 mm.; anthers 6-7 mm. 2

- 2. Plant glabrous; corolla white, or (var. *zonata* Beauverd) with deep pink veins outside.

C. silvatica [313]

Plant with sparse hairs on stem and usually petiole and peduncle; corolla pink with paler veins outside.

C. pulchra [2266]

A fertile hybrid between *C. sepium* and *C. silvatica* also occurs, *C. × lucana* (Tenore) G. Don, and a description is given by Stace (1961). "Pedicels 30-100 mm. long; corolla white (? always), 41-62 mm. long; stamens 20-21 mm. long; style and stigma 20-23 mm. long; bracteoles broadly ovate, 14-25 mm. wide when flattened out, acute, obtuse or mucronate at apex, weakly cordate at base, slightly to strongly inflated, midrib very prominent especially at base, edges overlapping at each side and partially obscuring the calyx".

409/1-2 *Lycium chinense* agg.

Records of the two segregates *L. halimifolium* Mill. and *L. chinense* Mill. appear to have been confused. They are best separated as follows:

Leaves of fertile axillary shoots linear-lanceolate, tapering into a short petiole, 4-5 times as long as broad; lower stem-leaves lanceolate.

L. halimifolium [1212]

Leaves of fertile axillary shoots ovate, 2-3 times as long as broad; lower stem-leaves distinctly rhomboid.

L. chinense [1211]

An examination of herbarium material suggests that many specimens of *L. halimifolium* have been misidentified as *L. chinense* in the past.

442/1-2 *Utricularia vulgaris* agg.

Because both species in this aggregate flower only sporadically (not at all in the northern part of their range), and as they cannot be separated on vegetative characters alone, their complete distribution is unknown. If flowering material is found, the segregates may be distinguished as follows (after C.T. & W.):

Upper pedicels 6-8 mm., rather stout; upper lip of corolla about as long as the projecting palate of the lower lip; margins of lower lip deflexed \pm at right angles; fruit freely produced after flowering.

U. vulgaris L. [2133]

Upper pedicels 11-15 mm., rather slender; upper lip of corolla about twice as long as the palate; lower lip \pm flat, somewhat undulate; fruits rarely after flowering.

U. neglecta Lehm. [2131]

U. neglecta is probably more frequent in the north and west of Britain, *U. vulgaris* in the south and east.

538/1 *Arctium lappa* L.

Some confusion has arisen with this species, partly on taxonomic grounds, and partly because of the continued use of the name in the aggregate sense. It can be distinguished from other *Arctium* spp. in Britain by its large solitary, straw-coloured heads (42 mm. diam. including the phyllaries) on long stalks (c. 20 cm.) and by its solid petioles.

A. lappa is almost confined to south and east England, south Wales and south-east Ireland.

538/2 & 4 *Arctium minus* agg.

The taxonomic limits of species described within this aggregate are not clear. However, two extreme forms are recognisable and may be separated as follows:

Heads large (diam., including phyllaries, of mature heads c. 38 mm.), sessile and with c.3 heads clustered at the end of arched branches; petals of open flowers not protruding beyond phyllaries.

A. nemorosum Lejeune (*A. vulgare* auct.) [153]

Heads small (diam. 20-30 mm.), on short stalks (c. 10 mm.) of primary and secondary branches; petals of open flowers protruding beyond phyllaries.

A. minus Bernh. [152]

Intermediates without these combinations of characters are widespread and should be referred to a specialist for naming.

A. nemorosum occurs mainly in the north of England and in Scotland; *A. minus* is frequent in the south, particularly in woods.

544/6-7 *Centaurea nigra* agg.

The two species of this aggregate are best separated as follows:

Stems conspicuously swollen beneath the heads; appendages of bracts dark blackish brown, ± completely concealing the pale basal parts of the bracts.

C. nigra L. [444b]

Stems not much swollen beneath the heads; appendages of bracts paler, not completely concealing the basal parts of the bracts.

C. nemoralis Jord. [444a]

Intermediates between these two species often occur.

C. nigra is common in the north and on heavier and wetter soils in the south; *C. nemoralis* is common in the south, particularly on dry, calcareous soils.

550/2-3 *Leontodon hispidus* L. [1130] and *L. taraxacoides* (Vill.) Mérat (*L. leysseri* G. Beck) [1131]

Although these two species are not critical they appear to have been confused, in some cases, with other yellow composites, e.g., unbranched forms of *Hypochaeris radicata* L. in north Scotland.

The two species of *Leontodon* are perhaps best separated as follows:

Outermost achenes surmounted by a cup of scarious scales; involucre not exceeding 10 mm.; outer florets grey-violet beneath.

L. taraxacoides

Achenes all with feathery pappus; involucre exceeding 10 mm.; outer florets orange or reddish beneath.

L. hispidus

It is not sufficient to depend upon the relative hairiness of the scape: an almost or wholly glabrous variety of *L. hispidus* occurs in this country (var. *glabratus* (Koch) Bischoff).

559/2 & 5 *Crepis vesicaria* subsp. *taraxacifolia* (Thuill.) Thell. [578] & *C. biennis* L. [571]

C. vesicaria has probably been over-recorded in north Britain in error for large-flowered plants of *C. capillaris* (L.) Wallr. (var. *anglica* Druce & Thell.). *C. biennis* has been recorded in error for *C. vesicaria*, the latter being the more common of the two in most areas. The species can perhaps best be separated by using the following key:

1. Achenes all gradually narrowed into a beak about as long as the achene; ribs of achene rough. *C. vesicaria*
Achenes narrowed above, but not beaked; ribs of achene smooth. 2
2. Achenes 4-8 mm. usually with 13 ribs; inner bracts of involucre downy within. *C. biennis*
Achenes 1-2.5 mm. with 10 ribs; inner bracts of involucre glabrous within. *C. capillaris*

560/1-4 *Taraxacum* agg.

Although this genus presents great difficulties, it is worthwhile attempting to place specimens into one of four aggregate species. Intermediates occur so that one cannot hope always to succeed. The following key may be helpful, but only if used on material collected before the end of May:

1. Involucral bracts all appressed. Marshes.
T. palustre agg. [2037]
Some involucral bracts, at least, spreading or reflexed. 2
2. Heads small, less than 1 cm. diam. across at base of pappus; inner involucral bracts with an appendage on the outer side, visible in side view in fresh material. Dry habitats, dunes, chalk downs, etc.
T. laevigatum agg. [2036]
Heads large, more than 1.5 cm. diam. at base of pappus; inner involucral bracts without an appendage. 3
3. Outer bracts of involucre narrowly lanceolate or linear, more than three times as long as broad, strongly reflexed; heads large, c. 2.0 cm. diam. at base of pappus, untidy in appearance. Common in man-made habitats.
T. officinale agg. [2035]
Outer bracts of involucre narrowly ovate, usually less than three times as long as broad, spreading; heads smaller, c. 1.7 cm. diam., neat. Frequent in permanent pastures, woodland rides and other semi-natural habitats.
T. spectabile agg. [2038]

605/4 *Juncus compressus* Jacq. [1062]

This species has been frequently confused with *J. gerardii* Lois. in areas near the coast. The two can, however, be distinguished as follows:

Capsule obtuse, c. $1\frac{1}{2}$ times as long as the light brown perianth; style shorter than capsule. *J. compressus*
Capsule acute, rarely exceeding the dark brown to blackish perianth; style at least as long as capsule. *J. gerardii*
J. compressus is a local species of calcareous wet meadows, and is probably confined to south and east England.

670/9 *Festuca tenuifolia* Sibth. [822b]

Festuca tenuifolia has been under-recorded. It can, however, be readily distinguished from *F. ovina* L. by its smaller (2.5-3.5 mm.) awnless lemmas and very slender (0.2-0.4 mm.) leaf blades.

F. tenuifolia occurs throughout the British Isles on acid sands, gravels and peats.

676/10-12 *Poa pratensis* agg.

Three segregates are now recognised and they are described in Hubbard (1954), on whose work the following key to their separation is based:

1. Basal leaf-blades bristle-like, 1-2 mm. wide; lemmas 2-3 mm. long. *Poa angustifolia* L. [1506b]
Basal leaf-blades 2-4 mm. wide; lemmas 3-5 mm. long. 2
2. Panicle-branches mostly in clusters of 3 to 5 at a node; culms in tufts; glumes abruptly pointed.

P. pratensis L. [1506d]

Panicle-branches usually in pairs or threes; culms mostly scattered or solitary; glumes tapering to a finely pointed tip.

P. subcaerulea Sm. [1506e]

Poa pratensis L. is widespread, but *P. angustifolia* is a plant of dry grassland and wall-tops in southern England while *P. subcaerulea* is more frequent in damp habitats in the north and west.

683/12 *Bromus thominii* Hardouin [275]

This segregate has probably been overlooked. It can be distinguished from *B. mollis* L. as follows:

Lemmas 6.5-7.5 mm.; spikelets 10-15 mm., glabrous.

B. thominii

Lemmas 8-9 mm.; spikelets 15-20 mm., usually pubescent.

B. mollis

B. thominii is probably widespread in lowland Britain in hayfields, and on roadsides and wasteland.

683/14 *Bromus racemosus* L. [271]

This species has probably been over-recorded in error for *B. commutatus* Schrad. However, the two taxa can be separated on floral characters as follows (after Hubbard, 1954):

Spikelets 12-16 mm.; lemmas 6.5-8 mm.

B. racemosus

Spikelets 18-28 mm.; lemmas 8-11 mm.

B. commutatus

B. racemosus is a rare grass of meadows, arable fields and waste places in south and central England.

707/1-2 *Phleum pratense* agg.

It is almost impossible to separate the two segregates on the length of the panicle alone, if this is less than 8 cm. They may, however, be distinguished if measurements of populations are made as follows:

Panicles 4-5 mm. wide, 1-6 (-8) cm. long; leaf blade of 3rd leaf below panicle less than 4 mm. wide, 2-8 (-15) cm. long.

P. bertolonii DC. (*P. nodosum* auct.) [1461]
Panicles 6-10 mm. wide, (3)-6-15 cm. long; leaf blade of 3rd leaf below panicle 4-6 mm. wide, up to 30 cm. long.

P. pratense L. [1463]

As a quick guide:

Sum of width of panicle and width of leaf less than 9 mm.

P. bertolonii

Sum of width of panicle and width of leaf more than 9 mm.

P. pratense

P. bertolonii is generally in drier permanent pastures whereas *P. pratense* is more often clearly an escape from cultivation on field margins, roadsides and in waste places: it is probably only native in water meadows and other damp grasslands.

SUBSPECIES AND VARIETIES

29/1b. *Ophioglossum vulgatum* L. subsp. *ambiguum* (Coss. & Germ.) E. F. Warb. (subsp. *polyphyllum* E. F. Warb. *pro parte*) [1381a]

This subspecies may be separated from subsp. *vulgatum* as follows (after C.T. & W.):

Leaves solitary (exceptionally 2), rarely less than 8 cm.; sterile blade 3-15 cm.; sporangia (12-) 16-40 on each side of the spike.

subsp. *vulgatum*

Leaves (1-) 2-3 together, 4-10 cm.; sterile blade 1.5-3.5 cm.; sporangia 6-14.

subsp. *ambiguum*

Subsp. *ambiguum* is found in short turf near the sea in the north and west.

34/1a & b *Juniperus communis* L. subsp. *communis* and subsp. *nana* Syme

These two subspecies are best separated as follows:

At least the lower leaves of the stem spreading almost at right angles, 8-15 × c. 1 mm., gradually tapering to a long point; fruit globose.

subsp. *communis* [1080a]

All the leaves ascending or loosely appressed, 4-10 × c. 1.5 mm., more suddenly contracted to a short point; fruit longer than broad.

subsp. *nana* [1080b]

Subsp. *communis* is the more eastern and southern form, whereas subsp. *nana* occurs on moors and mountains in north and west Britain.

- 46/22a & b *Ranunculus aquatilis* L. subsp. *aquatilis* (including subsp. *radians* (Revel) Clapham) and subsp. *peltatus* (Schränk) Syme (including subsp. *sphaerospermus sensu* Clapham).

Experimental work recently carried out by C. D. K. Cook suggests that these two subspecies are probably best separated as follows:

Lobes of floating leaves usually dentate; peduncle in fruit usually shorter than petiole of subtending leaf, rarely exceeding 50 mm.; petals 5.0-9.75 (mean 7.4) mm.

subsp. *aquatilis* [1643a]

Lobes of floating leaves crenate; peduncle in fruit usually longer than petiole of subtending leaf, rarely less than 50 mm.; petals 9.0-17.0 (mean 13.2) mm.

subsp. *peltatus* [1643b]

- 46/24 *Ranunculus ficaria* L.

Three subspecies of *R. ficaria* have been recognised in Britain and may be separated as follows:

1. Fruiting specimens without bulbils in the axils of the leaves. subsp. *ficaria* [1649b]

Fruiting specimens with bulbils. 2.

2. Bulbils generally rounded at apex or abruptly pointed; leaves small, less than 40 mm. wide.

subsp. *bulbifer* (Albert) Lawalrée [1649a]

Bulbils cone-shaped narrowing gradually to a point; leaves large, some, at least, 50 mm. wide.

subsp. *ficariiformis* Rouy & Fouc. [1649c]

Subsp. *ficaria* occurs throughout Britain generally in full sunlight in wet meadows or on ditch-banks; subsp. *bulbifer* is rare or absent in the west of Britain, and elsewhere is usually found in semi-shade in copses and hedgerows; subsp. *ficariiformis* is very rare and in southern England only.

- 74/1 *Raphanus raphanistrum* L.

There is a great range of colour in the flowers of this species, and varietal rank has been given to three of the more widespread.

These three are:

var. *raphanistrum*, white petals. [1667c]

var. *flavus* Schub. & Mart., pale yellow petals with deep yellow veins [1667b]

var. *aureus* Wilmott, full golden-yellow petals. [1667a]

var. *raphanistrum* is commonest in the south, var. *aureus* in the extreme north and west; var. *flavus* is widespread.

- 113/4a & b *Viola riviniana* Reichb. subsp. *riviniana* and subsp. *minor* (Gregory) Valentine.

These two subspecies differ both in size of parts and in habitat, and may be distinguished as follows:

Leaves c. 30 mm. broad; flowers (14-) 20-22 mm.; sheltered habitats. subsp. *riviniana* [2218b]

Leaves 15-20 mm. broad; flowers 17-18 (-20) mm.; exposed habitats. subsp. *minor* [2218a]

- 113/9b *Viola palustris* L. subsp. *juressi* (Neves) P. Fourn. [2215a]

Any specimens of the species with spreading hairs on the petiole could be referred to this taxon. The petioles are always glabrous in subsp. *palustris*.

Subsp. *juressi* has so far been found mainly in the south of the British Isles.

- 115/6a & b *Hypericum maculatum* Crantz subsp. *maculatum* and subsp. *obtusiusculum* (Tourlet) Hayek

Robson (1957) has established the presence of two subspecies of *H. maculatum* Crantz (*H. dubium* Leers) in Britain and gives the following characters by which they may be distinguished:

Plant more slender, less branched; inflorescence rather strict, branches making an angle of c. 30° with the stem; leaves usually without pale glands, venation densely reticulate; sepals broad, entire; petals entire, marginal dark dots absent, superficial dark glands mainly in the form of dots. subsp. *maculatum* [1006a]

Plant stouter, more branched; inflorescence more spreading, branches making an angle of c. 50° with the stem; leaves more often with pale glands, venation laxer; sepals often narrower, eroded; petal-margins sometimes crenate, one or two marginal dots sometimes present, superficial dark glands mainly in the form of lines or dashes.

subsp. *obtusiusculum* [1006b]

Subsp. *obtusiusculum* is much commoner than the type; the latter has, however, been found in Scotland, and similar material has been seen from two places in the south of England.

- 133/1b *Stellaria nemorum* L. subsp. *glochidisperma* Murb. [2014a]

This subspecies was reported in Britain by Green (1954), and the following key to its distinction from subsp. *nemorum* is based on his work and that of Lawalrée (1953):

Inflorescence-bracts decrease gradually in size at each dichotomy of the cyme; edge of *ripe* seeds with rows of short hemispherical tubercles; uppermost leaves sessile or subsessile.

subsp. *nemorum*

Inflorescence-bracts reduced abruptly to small scales, the lower hardly or not transitional to leaves; edge of *ripe* seeds with rows of long cylindrical papillae c. 0.15 mm. long; uppermost leaves usually stalked.

subsp. *glochidisperma*

Subsp. *glochidisperma* has been recorded in a number of Welsh counties.

168/16b & c *Geranium robertianum* L. subsp. *celticum* Ostenf. and subsp. *maritimum* (Bab.) H. G. Bak.

These two subspecies may be distinguished from the type by using the following key. (*G. purpureum* Vill. is included as there is sometimes confusion between this species and subspecies of *G. robertianum*).

1. Pollen yellow; petals 6-9 mm. *G. purpureum*

Pollen orange; petals (8-) 9-12 mm. (*G. robertianum*) 2

2. Fruits \pm glabrous; flowers small, petals usually less than 10 mm. Maritime shingle.

subsp. *maritimum* [918b]

Fruits \pm hairy; flowers larger, petals 10-12 mm. 3

3. Plant dull deep-red in colour. Common.

subsp. *robertianum* [918c]

Plant pale green except at the nodes. Limestone rocks in the west, rare.

subsp. *celticum* [918a]

For further details of these subspecies see Baker (1956).

169/3b *Erodium cicutarium* (L.) L'Hérit subsp. *dunense* Andreas [746b]

This subspecies may be separated from the type as follows:

Peduncles 3 (-4)-flowered, longest pedicel less than 13 mm.; petals rarely spotted; fruit 5-6 mm.; mature beak usually less than 25 mm.

subsp. *dunense*

Peduncles 4-7-flowered, longest pedicel more than 15 mm.; petals often spotted; fruit \pm 6 mm.; mature beak 25-40 mm.

subsp. *cicutarium*

Subsp. *dunense* should not be confused with *E. glutinosum* Dumort. (q.v., page 361) which has small pale-pink or white flowers and is smaller in nearly all respects.

Subsp. *dunense* usually occurs near the sea whereas subsp. *cicutarium* is the more frequent inland.

- 188/1b *Sarothamnus scoparius* (L.) Wimm. subsp. *maritimus*
(Rouy) Ulbr. (subsp. *prostratus* (C. Bail.) Tutin)
[1822a]

This subspecies with prostrate stems, densely silky leaves and young twigs, occurs on cliffs in the west.

In subsp. *scoparius* the mature leaves are \pm glabrous.

- 193/1 *Anthyllis vulneraria* L.

J. Cullen has kindly provided the notes and key for this species:

- 1 Calyx (4.5-) 5-7 mm. broad, with the lateral teeth obvious, not appressed to the upper teeth*. 2

Calyx 2-4.5 (-4.8) mm. broad, with the lateral teeth obscure, appressed to the upper teeth*. 3

- 2 Calyx with spreading shaggy hairs, grey-brown; stems usually few, 1-5 (-10). Mountains and hills, usually limestone; Scotland and N. Ireland.

subsp. *lapponica* (Hyland.) Jalas [126b]

Calyx with appressed silky hairs, yellowish-white; stems usually numerous, 10-30. Waste places, fields, etc.; common in S. England, becoming less frequent in the north.

subsp. *vulgaris* (Koch) Corbière

var. *pseudovulneraria* (Sagorski) Cullen ined. [126c]

- 3 Stem with spreading shaggy hairs over its whole length; leaves fleshy, inserted in the lower part of the stem only. Maritime cliffs; known only from Anglesey, Cornwall and Sark.

subsp. *corbieri* (Salmon & Travis) Cullen ined. [126a]

Stem with appressed silky hairs over its whole length, or occasionally shaggily hairy in the lower part; leaves not very fleshy, evenly distributed along the stem.

(subsp. *vulneraria*) [126d] 4

- 4 Some or all of the petals red; plants small, up to 20 cm. Maritime cliffs; sporadic along W. coasts.

var. *vulneraria/coccinea* L.

All the petals yellow, except occasionally for a red tip to the keel; plants usually taller, robust, up to 60 cm. 5

- 5 Branches present in the axils of the upper leaves; undersides of lower leaves often densely hairy. Sand dunes; common, less frequent in the north.

var. *langei* Jalas

Branches absent from the upper axils; undersides of lower leaves sparsely hairy. Chalk and limestone; common, somewhat less frequent in Scotland.

var. *vulneraria*

*The calyx measurements refer to the flowers at anthesis;

measurements made later than this are misleading, as the calyx expands considerably in fruit. The character of the calyx teeth is difficult to use until one's eye is in.

Subsp. *vulgaris* var. *pseudovulneraria* is a Central European race which has been introduced into Britain; it seems to occur in small, short-lived populations, mainly near cultivated fields.

Subsp. *vulneraria* var. *coccinea* is restricted to Sweden (Öland & Gotland), but intermediates between it and var. *vulneraria* occur sporadically on the coasts of western Europe as far south as Anglesey (Aberffraw), and possibly also Pembroke and Cornwall.

234/1a *Malus sylvestris* Mill. subsp. *sylvestris* [1230b]

This subspecies may be recognised by the glabrous calyx and leaves, and the small fruits not exceeding 2.5 cm. in diam.

This appears to be native in woods and scrub in scattered localities throughout Britain.

314/1b *Daucus carota* L. subsp. *gummifer* Hook. f. [621]

This local subspecies can be separated from the common subsp. *carota* as follows:

Rays of umbel hispid; umbels flat or convex in fruit.

subsp. *gummifer*

Rays of umbel glabrous or nearly so; umbels concave in fruit.

subsp. *carota*

Intermediates exist, but subsp. *gummifer* is found on cliffs and dunes by the sea in the south and west.

343/11b *Salix caprea* L. subsp. *sericea* (Anderss.) Flod. [1788b]

This subspecies may be recognised by having leaves broadest above the middle, cuneate at the base, and thinly appressed unidirectional silky hairs above at maturity, not scattered or glabrous as in subsp. *caprea*. Subsp. *sericea* has been found in the Scottish Highlands.

430/4 *Veronica scutellata* L.

A very distinct variety of this species, var. *villosa* Schum., occurs occasionally, often in rather drier habitats than the type. It is densely long-pubescent. [2179a]

430/13b *Veronica serpyllifolia* L. subsp. *humifusa* (Dickson) Syme [2180a]

This subspecies may be distinguished from the type as follows:

Corolla white with slatey-violet lines; capsule shorter than sepals, sub-glabrous, with a few gland-tipped hairs at the apex.

subsp. *serpyllifolia*

Corolla blue; capsule longer than sepals, densely ciliated with gland-tipped hairs. subsp. *humifusa*

Subsp. *humifusa* occurs quite widely in the mountains of the north and west.

- 436/1a and b *Odontites verna* (Bellardi) Dumort. subsp. *verna* and subsp. *serotina* (Wettst.) E. F. Warb.

These two subspecies are best separated as follows (after C.T. & W.):

All branches coming off at an angle of less than 45°; bracts longer than flowers. subsp. *verna* [1361b]

At least some of the branches spreading at a wide angle (often ascending at the tip); bracts shorter than or equalling the flowers. subsp. *serotina* [1361a]

Subsp. *verna* is rare in southern England but common in north Scotland; subsp. *serotina*, in contrast, is common in southern England and rare or absent in north Scotland.

- 485/8a and b *Galium palustre* L. subsp. *palustre* and subsp. *elongatum* (C. Presl) Lange

These two subspecies are best separated as follows (after C.T. & W.):

Leaves 5-10 mm.; flowers 3 mm. diam.; mericarps 1.2 mm. diam. Small plant of marshes or peaty areas with standing water in winter only. subsp. *palustre* [882b]

Leaves 15-20 mm.; flowers 4.5 mm. diam.; mericarps 1.6 mm. diam. Larger plant of reed-swamps, etc., usually in standing water. subsp. *elongatum* [882a]

- 506/8 *Senecio vulgaris* L.

Forms which have up to 8 shortly revolute ray florets occur occasionally, particularly in waste places in the south. Record as 'radiate form'. [1905g]

- 509/1 *Petasites hybridus* (L.) Gaertn., Mey. & Scherb.

The 'male' and 'female' plants of this species may be separated as follows (after C.T. & W.):

Heads 7-12 mm., with 0.3 female and 20-40 sterile 'hermaphrodite' florets. Inflorescence not markedly expanding in fruit. 'Male' [1447a]

Heads 3-6 mm., with c. 100 female and 1-3 sterile florets. Inflorescence expanding in fruit, exceeding 1 metre in height from May onwards.

'Female' [1447b]

The male plant is locally common throughout the British Isles. The female plant is not uncommon in the Midlands, but is rare or absent elsewhere.

552/1a *Tragopogon pratensis* L. subsp. *pratensis* [2074c]

This subspecies may be distinguished from the more common subsp. *minor* (Mill.) Wahlenb. by having pale yellow florets which almost or quite equal the pale-bordered involucre bracts. Rare, and mainly in the south-east.

636/1a and b *Gymnadenia conopsea* (L.) R. Br. subsp. *conopsea* and subsp. *densiflora* (Wahlenb.) G. Camus, Bergon & A. Camus

There is considerable overlap between these two subspecies which may be separated as follows:

Lower leaves broad, more than 15 mm.; some spikes exceeding 10 cm., dense; flowers bright-rose or magenta with smell of cloves. subsp. *densiflora* [948b]

Lower leaves narrow, less than 15 mm.; spike short, usually less than 10 cm., lax; flowers reddish-lilac, fragrant but not smelling of cloves. subsp. *conopsea* [948a]

Plants should not be determined unless a population of at least twenty specimens has been investigated.

Subsp. *conopsea* is found in base-rich grassland, particularly on chalk and limestone, whereas subsp. *densiflora* occurs in fens and marshes.

652/1 *Sparganium erectum* L. (*S. ramosum* Huds.)

Recent work by Cook (1961) has disclosed the presence of four subspecies in Britain. They are best recognised by the use of the key provided by Cook:

1. Fruit with distinct shoulder; upper part dark brown to black. 2
Fruit with indistinct shoulder, spherical to ellipsoidal; upper and lower parts uniform, shiny, light brown. 3
2. Fruit large, (5-) 6-8 (-10) mm. long (excluding style), (3-) 4-6 (-7) mm. wide (at shoulder); upper part of fruit flattened. subsp. *erectum* [1981a]
Fruit smaller, 6-7 (-8) mm. long, 2.5-4.5 mm. wide; upper part of fruit domed, wrinkled below style. subsp. *microcarpum* (Newm.) Hyland. [1981c]
3. Fruit ellipsoid, 7-9 mm. long, 2-3.5 mm. wide. subsp. *neglectum* (Beeby) Schinz & Thell. [1981b]
Fruit \pm spherical, 5-8 mm. long, 4-7 mm. wide. subsp. *oocarpum* (Celak.) C. D. K. Cook [1981d]

Subsp. *erectum* and subsp. *oocarpum* have been found only in southern Britain, north to the Wash; subsp. *neglectum* is also most common in the south but extends as far north as Westmorland; subsp. *microcarpum* occurs throughout the British Isles.

656/5b *Eleocharis palustris* (L.) Roem. & Schult. subsp. *microcarpa* Walters [675a]

This subspecies may be separated from subsp. *palustris* by reference to the following key (after Walters, 1949):
Ripe fruit (1.3-) 1.45-1.8 (-2.0) mm. long (excluding style base); middle glumes of spike 3.5-4.5 mm. long; glumes rather variable in colour, but usually brownish.

subsp. *palustris*

Ripe fruit (1.1-) 1.2-1.4 (-1.5) mm. long; middle glumes of spike 2.75-3.5 mm. long; glumes rather pale, often light brown or straw-coloured.

subsp. *microcarpa*

Subsp. *microcarpa* has been found in a number of counties in central and eastern England.

670/6b *Festuca rubra* L. subsp. *commutata* Gaudin [825b]

This subspecies may be separated from subsp. *rubra* and the closely related *F. ovina* L. as follows (after Hubbard, 1954):

1. Plants forming loose to dense mats, or with scattered shoots and culms; rhizomes present, very slender, extensively creeping. *F. rubra* subsp. *rubra*
Plants densely tufted, without rhizomes. 2

2. Leaf-blades 0.3-0.6 mm. wide; lemmas tipped with an awn 0.5-1.5 mm. long; leaf-sheaths with free margins. *F. ovina*

Leaf-blades 0.6-1 mm. wide; lemmas tipped with an awn 1-3 mm. long; leaf-sheaths tubular, with margins united, though soon splitting.

F. rubra subsp. *commutata*

Subsp. *commutata*, besides being found as an escape from cultivation, is widely recorded in Britain, particularly on well-drained soils in the south.

HYBRIDS.

The following hybrids are frequent. Some are fertile and form swarms showing great variation due to back-crossing with either parent. Most of these can also be found in the absence of the parents. Those which are sterile do not usually occur without their parents, except for some aquatic species. Failure to produce good seed and/or pollen is often a sign of hybrid origin and this feature should be investigated when making a determination of a putative hybrid. The characters given below will assist in the detection of the hybrids concerned in the field but further study may be required for reliable determination.

- 102/2 × 1 *Rorippa* × *sterilis* Airy Shaw (*R. microphylla* (Boenn.) Hyland. (*Nasturtium microphyllum* (Boenn.) Reichb.) × *R. nasturtium-aquaticum* (L.) Hayek (*N. officinale* R.Br.)) [1349]

This hybrid resembles *R. microphylla* (q.v., page 360) in that the stem and leaves turn purple-brown in autumn. The pods are dwarfed and deformed, though some with 1 or 2 ripe seeds do occur. These seeds are intermediate in size and markings between those of the parents.

R. × sterilis is a common plant in the north and west.

- 123/14 × 13 *Silene alba* (Mill.) E. H. L. Krause (*Melandrium album* (Mill.) Garcke) × *S. dioica* (L.) Clairv. (*M. rubrum* (Weigel) Garcke) [1260]

This hybrid can generally be recognised by its pink flowers, though in Orkney and Shetland it should not be confused with *S. dioica* var. *zetlandica* Compt. with flowers varying from light pink to dark crimson. The hybrid is also intermediate between the two parents in other characters. For further details see Moss (1920). Fertile. Common.

- 216/3 × 1 *Geum* × *intermedium* Ehrh. (*G. rivale* L. × *G. urbanum* L.) [923]

This hybrid is intermediate and should be looked for where the parents occur together. Fertile. Frequent.

- 247/2 × 1 *Drosera* × *obovata* Mert. & Koch (*D. anglica* Huds. × *D. rotundifolia* L.) [656]

This hybrid resembles *D. intermedia* Hayne but has a straight scape 2-3 times as long as the leaves arising from the centre of the rosette. Sterile. Occasional; especially in Scotland.

- 367/3 × 5 *Primula* × *variabilis* Goupil, non Bast. (*P. veris* L. × *P. vulgaris* Huds.) [1606]

Very variable. The commonest form of this hybrid differs from *P. veris* in having leaves not contracted at the base, and larger, paler yellow flowers. Fertile. Frequent.

- 392/2 × 1 *Symphytum* × *uplandicum* Nyman (*S. asperum* Lepech. × *S. officinale* L.) [2025]

This hybrid is widespread and often occurs, probably as an introduction, in the absence of either parent. For further details see under *S. officinale* (page 365). Fertile.

- 420/3 × 4 *Linaria* × *sepium* Allman (*L. repens* (L.) Mill. × *L. vulgaris* Mill.) [1162]

This hybrid may be distinguished from *L. repens* by the larger corolla (12 × 21 mm. as against 7-14 mm.), usually yellowish, striped with violet, and the broader leaves of the flower-bearing stems (mainly more than 2 mm., as against mainly less than 2 mm.). Partially fertile. Locally common where parents occur together.

- 445/4 × 3 *Mentha* × *verticillata* L. (*M. aquatica* L. × *M. arvensis* L.) [1286]

Differs from *M. arvensis* in having calyx-teeth twice as long as broad, upper bracts sometimes shorter than the flowers and by the hairy pedicels, from *M. aquatica* by the leafy inflorescence, and from both parents in having stamens normally not exerted. Sterile. Common throughout the British Isles.

- 445/4 × 5 *Mentha* × *piperita* L. (*M. aquatica* L. × *M. spicata* L.) [1279]

Differs from *M. aquatica* by having a terminal oblong spike-like inflorescence and glabrous pedicels, from *M. spicata* by its petiolate leaves (more than 3 mm.) and from both parents in having stamens not exerted. Sterile. Locally common throughout the British Isles.

- 459/6 × 7 *Stachys* × *ambigua* Sm. (*S. palustris* L. × *S. sylvatica* L.) [1999]

This hybrid may be recognised by its linear-lanceolate shortly-petioled lower leaves, which are 2-4 times as long as broad, and broadest about the middle. Sterile. Not uncommon throughout the British Isles, and sometimes in the absence of *S. sylvatica*, e.g. in the north and west.

- 469/1 × 2 *Scutellaria* × *hybrida* Strail (*S. × nicholsoni* Taub.) (*S. galericulata* L. × *S. minor* Huds.) [1872h]

This hybrid has the remotely and shallowly crenate leaves of *S. galericulata* and the small flowers (less than 10 mm.) of *S. minor*. Occasional.

N.B. *S. minor* usually has one tooth at the base of the lower leaves.

- 506/2 × 1 *Senecio* × *ostenfeldii* Druce (*S. aquaticus* Hill × *S. jacobaea* L.) [1891h]

The following note has been provided by D. H. Kent:

Resembles *S. aquaticus* in having large terminal leaf lobes and a few-flowered corymb, and *S. jacobaea* in the much cut upper leaves. The fruits are usually hispid. Partially fertile.

Probably widespread wherever the two parents occur together which happens more frequently in the west and north.

- 605/9 \times 8 *Juncus* \times *diffusus* Hoppe (*J. effusus* L. \times *J. inflexus* L.) [1065]

The inflorescence of this hybrid resembles *J. inflexus*, but the plant differs from that species in having green, not glaucous, scarcely grooved stems, with 18-45 coarse striae. Sterile. Probably rather rare but widespread.

- 606/2 \times 1 *Luzula* \times *borreri* Bromf. (*L. forsteri* (Sm.) DC. \times *L. pilosa* (L.) Willd.) [1200]

Resembles *L. pilosa* but is often taller, with fewer, spreading inflorescence-branches. The capsule is much shorter than the perianth. Sterile. Frequent within the range of *L. forsteri*.

- 669/1 \times 2 *Glyceria* \times *pedicellata* Townsend (*G. fluitans* (L.) R.Br. \times *G. plicata* Fr.) [935]

This hybrid may be distinguished from its two parents by the intermediate length of the lemma (5.5-5 mm.), and the anthers (1.2-1.5 mm.) which are indehiscent. Sterile, but spreads vegetatively and may therefore be found in the absence of either parent. Frequent throughout the British Isles.

- 670/1 \times 671/1 \times *Festulolium loliaceum* (Huds.) P. Fourn. (*Festuca pratensis* Huds. \times *Lolium perenne* L.) [815]

Spikelets resemble *F. pratensis* but are more compressed, and sessile in a simple or somewhat branched raceme. Glume next to the axis usually present. Sterile. Widespread.

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FURTHER NOTES ON VERONICA FILIFORMIS

By E. B. BANGERTER and D. H. KENT

Since the publication of our paper on *Veronica filiformis* in the British Isles (Bangerter & Kent, 1957) a number of additional facts have been discovered and many more records accumulated; these are brought together in the present paper.

METHODS OF REPRODUCTION

In our previous paper we mentioned that we had seen fruiting material of *V. filiformis* from only Hampshire and Kent; since then we have seen specimens from N. Devon, 2 capsules (coll. R. G. B. Roe); S. Somerset, 3 capsules each containing a single seed (coll. J. B. Marshall); Surrey, three localities, each producing 1 capsule (coll. F. D. S. Richardson and Mrs. J. E. Smith); N. Essex, 1 capsule (coll. J. Bevington-Smith); Buckinghamshire, 1 capsule (coll. W. D. Delderfield); Cambridge, 2 capsules (coll. K. M. Blades), Lanark, 1 capsule (coll. E. B. Bangerter & Mr. and Mrs. P. C. Hall), and Haddington, 1 capsule (coll. M. McCallum Webster).

FLOWERING PERIOD AND GROWTH

The normal flowering period of *V. filiformis* is April-June, rarely as late as August. D. E. Kimmins, however, reports that he noted the species in flower at Landulph, E. Cornwall, on 9th November 1957.

During 1957 Mrs. J. Oldaker sent us specimens from Culmstock, S. Devon, containing small growths in some of the leaf-axils, and suggested that they may be sessile cleistogamous flowers. After a detailed examination of the material we reached the same conclusion.

In the same year, Mrs. J. E. Smith, of Claygate, Surrey, gave a small piece of the plant from her garden to one of us (E.B.B.); the specimen was in a poor state, having been subjected to weed-killer in an attempt to eradicate it. Transplanted to a north London garden it very soon revived and has thriven since. The plant has been cut back each year, though it has been noted that a circular patch of about nine inches diameter will attain a diameter of three feet in seven to eight months. Attempts by the other author (D.H.K.), however, to cultivate the plant in his west London garden have been unsuccessful, for though it thrives for a short time it will not survive over winter. D. McClintock tells us that he has experienced similar difficulty in attempting to grow the species in his garden in West Kent.