Alien species of *Eragrostis* P. Beauv. in the British Isles

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ABSTRACT

A key to and an annotated list of all 51 species of *Eragrostis* P. Beauv. which are known to have occurred in the British Isles are given.

INTRODUCTION

This paper provides a key to and an annotated list of the 51 species of *Eragrostis* P. Beauv. known to have occurred in the British Isles. At present there is no readily available key to these species, which originate from many parts of the world.

Species of *Eragrostis* bear a superficial resemblance to those of *Poa*, both genera having unawned compressed spikelets consisting of many florets. However, the former differ in having 3-nerved lemmas (5-nerved in *Poa*), ligules which are nearly always ciliate or absent (membranous or almost absent in *Poa*), pointed leaves (often blunt in *Poa*), and no basal cottony hairs on the callus of the lemma (possessed by some species of *Poa*).

There are at least 300 species of *Eragrostis* (some authorities give twice that number, according to taxonomic opinion) distributed over the warm-temperate and tropical regions of the world. Less than a dozen species are established in central and southern Europe, being mostly annuals which fruit freely in hot summers and with seeds that survive cold winters. Only one is established in the British Isles (in the Channel Islands) (McClintock 1975) but several other species, occurring as casuals, may occasionally set seed or even survive a mild winter. In warmer countries, especially Australia, many species have become naturalised. There is little information on the occurrence of hybrids, but many species show considerable variation and sometimes precise identification of isolated alien plants is not possible. In the British Isles 51 species of *Eragrostis* are known to have occurred as aliens, some in wool waste or shoddy, and some around docks or, more rarely, on waste tips. To date only 35 of these species have been recorded in the literature, and the rest are here listed for the first time, although many have been represented as herbarium specimens for many years.

Several species other than the 51 listed here have been recorded. *E. verticillata* (Cav.) P. Beauv. has been recorded by J. E. Lousley, but with no detail. *E. articulata* (Schrank) Nees is in RNG; this species resembles young *E. schweinfurthii*, as do specimens of *E. racemosa* in RNG, herb. E.J.C. and herb. T.B.R. Specimens of *E. setifolia* (or *E. falcata* (Gaudich.) Gaudich. ex Steudel) in several collections may well be immature *E. lacunaria* or *E. dielsii*. The specimen labelled *E. capillaris* in RNG was incorrectly identified and is, in fact, *E. trachycarpa*. In Europe a few other alien species have been recorded recently, particularly from Sweden and Holland, adding to the earlier records listed by Probst (1949). In this account *E. subulata* Nees has been included in *E. curvula*. 
The artificial key has been constructed using many reference books (Black 1960, Bogdan 1958, Bor 1968, Cabrera 1970, Clayton 1972, Hitchcock 1950, Norton 1971, de Winter 1955), examination of specimens in the author's herbarium, and notes from Dr C. E. Hubbard.

The list of species gives brief details of native distribution, localities and the frequency of records in the British Isles, and several representative herbaria (certainly not a complete list) where specimens are held. Most species have occurred at Blackmoor, but the numerous individual detailed records have been omitted (see Lousley (1961), Dony (1969) and Ryves (1974) for many earlier records). Specimens of nearly all of the listed species were identified by Dr C. E. Hubbard.

In addition to contrasting characters, the key contains additional information, not readily available elsewhere, to aid the identification of these aliens. The 'collar' is the outer side of the leaf at the junction of blade and sheath; this zone is often a distinctive colour.

### ARTIFICIAL KEY

1. **Rhizomatous perennial** 10–45 (60) cm with a dense tuft of short (<10 cm) glaucous, expanded basal leaves; spikelets c. 5 × 1.5 mm; lemma purplish below with yellow tip 1. *E. bicolor*
2. Different combination of characters 1
3. Annual; leaf-margins with prominent warty glands (not bulbous-based hairs) (also *E. neomexicana*, *E. procumbens* occasionally); panicle <20 cm; grain without dorsal pit 2
4. Leaves glabrous; pedicel without prominent gland; spikelets 2–4 mm wide, often olive or grey; lemmas 2–2.8 mm 2
5. Leaves often with sparse, coarse hairs; pedicels with gland; spikelets 1.3–2 mm wide, often purplish; lemmas 1.5–2 mm 3
6. Leaf-margins without prominent glands (except *E. neomexicana*, *E. procumbens* occasionally) 3
7. Culm-nodes with ring of glandular tissue below; pedicels with gland 4
8. Annual; axillary panicles <20 cm, exserted from lower sheaths; spikelets 5–15 × 1.5–2 mm, yellow-green 4
9. Perennial; panicles >20 cm; spikelets c. 7–10 × 2 mm, grey-green 5
10. Culm-nodes without ring of glandular tissue below; branch axes with glandular tissue occasionally; pedicels without gland 5
11. Annual; sheaths with many prominent circular glands, with or without stout hairs; spikelets 5–8 × 1.5–3 mm 6
12. Culms 40–100 cm; leaves 5–10 mm wide; panicle large, 20–40 cm, with ascending branches; spikelets with 8–12 florets 6
13. Culms <40 cm; panicle small, spreading; spikelets usually with ≤7 florets 6
14. Sheaths without prominent glands 7
15. Spikelets short, ≤5 mm, with 3–5 (6) florets (also *E. caesia*, *E. atherstonei*) 7
16. Panicle spike-like; spikelets with 3 florets, ≤1 mm; glume > first lemma 7
17. Panicle open or very diffuse 8
18. Sheath with or without bulbous-based hairs, throat of sheath with tuft of stiff, long, white bristles; panicle open with spikelets on very short pedicels ± appressed to branches; spikelets with 3–5 florets, ≤3 mm 8
19. Panicle very diffuse, with spikelets on long (up to 2 cm) divaricate pedicels 9
20. Throat of sheath densely hairy but without glands; spikelets with 2–4 florets 9
21. Ligule and sheath glabrous with scattered, very small glands; spikelets with 3–5 (6) florets; grain spherical, pitted, 0.8 mm 10
22. Spikelets usually ≥5 mm long, some with 5–20 florets 10
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12. Spikelets ± ovate (rarely longer), usually ≥ 3 mm wide
13 Annual; spikelets 5–10 × 3–4 mm; glume < lemma, acute, pale green 12. E. wilmaniae
13 Perennial; spikelets ± ovate (like Briza media)
14 Spikelets distant on branches, 3–5 × 3–4 mm; pedicels up to 3 mm; palea ciliate on keel 13. E. obtusa
14 Spikelets clustered on branches, 4 × 2–5–3 mm; pedicels shorter; palea with short wing on keel 14. E. echinochloidea
12. E. wilmaniae
14. E. obtusa
14. E. echinochloidea

15 Leaves short, rigid; spikelets terete, very narrow, very long (often > 20 mm), with imbricate lemma
16. E. wilmaniae

18 Culm slightly flattened and angled, very straight with very hairy sheath; collar very indistinct; panicle and spikelets as in E. curvula 18. E. planiculmis
18. E. planiculmis

22 Annual; pedicels ≤ spikelets
23 Culms up to 35 cm; leaves mostly basal, up to 7 cm, covered and bordered with bulbous-based, coarse hairs; panicle loose and spreading, with short (up to 3 cm) simple branches spreading at 90°, bearing up to 6 spikelets; spikelets c. 5 mm 21. E. schweinfurthii
23. E. schweinfurthii

25 Panicle divaricate, effuse; pedicels 1–3 cm, > spikelets (up to 1 cm); lemma 3 mm, acute (also E. molymbdea) 24. E. patentissima

26. E. patentissima

27 Culm-base bulbous, slightly woody; panicle spike-like, 12 × up to 3 cm; spikelets 8–20 × 1.5 mm; lemma c. 2 mm, soon diverging 26. E. setifolia

27. E. setifolia
falling with lemma at maturity; stamens 3; grain spindle-shaped, ≤1 mm
28 Palea persisting after lemma falls at maturity
29 Panicle very open; pedicels 3–15 mm; spikelets up to 1 cm; lemma 3 mm; grain oblong, with truncate ends and deep ventral groove, c. 1 mm
28 E. molybdea
29 Panicle various; pedicels ≤ spikelets; lemma < 3 mm; grain ± ovoid, ≤1 mm
30 Culms up to 45 cm; leaves up to 7 cm, often very hairy; panicle rather dense, oval-elliptic, c. 7×3 cm; spikelets distant on short spreading branches; lower glume < 1 mm; lemma 1-5 mm; grain ≤ 0-5 mm
29 E. neesii
30 Panicle different; glumes c. 1-5 mm; lemma c. 2 mm; grain >0-5 mm
31 Resembles E. schweinfurthii; culms up to 100 cm but panicle narrower
31 Different details
32 Without rhizomes; spikelets ± densely clustered on stiff branches; spikelets 5–10 mm, with 6–24 closely packed florets; palea-margin conspicuously ciliate; stamens 2; grain oblong-ovoid, 1 mm (resembles E. atrovirens)
31 E. bahiensis
32 Spikelets ± clustered on longer, ± flexuous branches; spikelets 5 mm, with c. 10 looser florets; grain obovoid, c. 0-6 mm
33 Panicle contracted or open; spikelets c. 2 mm wide; palea-margin hardly ciliate (can resemble E. elongata)
32 E. brownii
33 Panicle finally open, with less clustered spikelets on branches; mature spikelets brittle (rhachilla easily fracturing), breaking from the top downwards; spikelets c. 1-7 mm wide; palea-margin shortly ciliate
33 E. philippica
21 Mature spikelets ≤1-5 mm wide (see E. curvula, E. macilenta), often >5 times as long as wide
34 Perennial
35 Top of sheath very hairy; leaves ± hairy, flat; panicle diffuse, c. 15×15 cm; spikelets lanceolate, 3–4 mm; lemmas acute, closely overlapping
34 E. lugens
35 Top of sheath usually not very hairy; spikelets linear to lanceolate, ≥4 mm; lemmas rather loose
36 Basal branches whorled (≥3 branches)
37 Base of branches with tuft of hairs; spikelets 5×1–1-5 mm, with 3–5 florets; lemmas ≥ 2 mm
35 E. atherstonei
37 Base of branches without tufts of hairs; spikelets c. 9×1 mm, with 6–16 florets; lemmas ≤ 1-5 mm, obtuse
36 E. rotifer
36 Basal branches single or sub-opposite
38 Panicle c. 20×20 cm; pedicels sub-sessile, <2 mm; spikelets with 10–12 florets; grain ± spherical (see E. parviflora, E. pilosa, E. leptocarpa)
37 E. microcarpa
38 Some pedicels ≥2 mm; grain oblong
39 Culms rooting at the nodes; nodes usually hairy
39 E. barbinodis
39 Culms usually not rooting at nodes; nodes ± glabrous
40 Glumes very unequal; lemmas narrow, acute, angular, scabrous
39 E. heteromera
40 Glumes ± equal; lemmas ± obtuse, blunt, membranous
41 Culms branched, geniculate, 30–60 cm; lower sheath papery with rounded well-separated nerves; spikelets 1(-1-5) mm wide; lemmas c. 1-5 mm
40 E. lehmanniana
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41 Culms unbranched, erect or geniculate, 30–120 cm; lower sheath tough with flattened close-set ribs; spikelets 1·5(–2) mm wide; lemmas 2·2–2·5 mm.

42 Leaves filiform, curling, rather short; panicle open, lax; spikelets spreading... 41. E. chloromelas

42 Leaves ± narrow, not curling, long; panicle lax or contracted; spikelets usually appressed... 42. E. curvula

34 Annual

43 Collar with fringe of stiff hairs; panicle axes hairy; spikelets breaking up from top downwards; lemma and palea falling together, enclosing the grain; spikelets 4–9 × 1–1·5 mm, with 4–16 florets; lemma obtuse... 43. E. aspera

43 Spikelets breaking up from base upwards; lemma falling before palea

44 Spikelets narrow 3–6 × 0·8 mm, pale grey; lemmas 1·5–2 mm, scabrous or with short appressed hairs; grain oblong-linear, c. 1 mm... 44. E. leptocarpa

44 Spikelets ≥1 mm; lemmas ± glabrous to slightly hairy or scabrous; grain oblong to ovoid

45 Throat of sheath without tuft of long hairs (see E. macilenta)

46 Panicle up to 15 cm; spikelets 3–6 × 1·5 mm; lemmas acute; palea ≤ 2/3 lemma; grain oblong, c. 0·7 mm... 45. E. multicaulis

46 Leaves flat with a pale midrib; panicle up to 25 cm, with spikelets appressed along branches; spikelets 3–10 × 1 mm, usually very dark brown; lemmas obtuse; palea c. 2/3 lemma; grain ovoid, c. 0·6 mm... 46. E. parviflora

45 Throat of sheath (when young) with conspicuous tuft of long (2 mm), white, stiff hairs

47 Panicle very diffuse, c. 15 cm wide, with sub-opposite or single branches spreading divaricately; spikelets not clustered; spikelets oblong 3–6 × 1–2 mm, very dark or black; grain oblong, c. 0·6 mm... 47. E. macilenta

47 Panicle diffuse or loosely contracted, often with whorled branches; spikelets usually linear, often pale

48 Immature spikelets with upper lemma < lower lemma

49 Branch axes glabrous; spikelets often yellow-green; lower lemma 2–3 mm; grain ovoid, 1–1·5 mm... 48. E. tef

49 Branch axes usually with long, white hairs; spikelets purplish grey; lower lemma c. 1·5 mm; grain oblong, 0·5–1 mm... 49. E. pilosa

48 Branch axes glabrous or hairy; spikelets yellow-green to purple-green; in immature spikelets upper lemma equalling lower lemma, c. 1·5 mm

50 Culms 20–70 cm; spikelets 4–6 × 1 mm; grain ovoid with wide, shallow ventral pit, c. 1 mm... 50. E. virescens

50 Culms 15–25 cm; spikelets 4–6 × 1·5 mm; grain ovoid, without pit, c. 1 mm... 51. E. pectinacea

ANNOTATED LIST OF SPECIES

The name, distribution and alien habitat in the British Isles are given. Distributions in italics indicate that the occurrence is adventive. Frequency is expressed as; (VR) = very rare, one to three records; (R) = rare, four to ten records; (Oc) = occasional, eleven to 20 records; (Fr) = frequent, more than 20 records. Representative herbaria where specimens are held are given, usually K and RNG. The private collections of T. B. Ryves (herb T.B.R.) and E. J. Clement (herb E.J.C.) are occasionally cited. Brackets indicate the originator of the record when the location of the specimen is uncertain.
E. bicolor Nees. South Africa. Wool alien (VR). RNG.

2. E. ciliamensis (All.) F. T. Hubbard. Europe, Mediterranean, Asia, South Africa, America, Australia. Occurs as a wool alien (Fr), in bird seed (VR) and on tips (R). BM, K, RNG.

3. E. poaeoides P. Beauv. Europe, the Mediterranean, Asia, South Africa, America, Australia. Occurs as a wool alien (Fr), in bird seed (VR) and on docks (VR). RNG, LTN.

4. E. barrelieri Daveau. Europe, the Mediterranean, Asia, South Africa, America, Australia. Occurs as a wool alien (Oc) and on docks (VR). RNG, LTN.


6. E. mexicana Vasey. North and South America, Australia. Occurs as a wool alien (VR), on tips (VR) and on docks (VR). RNG, LTN.


25. E. caesia Stapf. Wool alien (VR). E, RNG.


32. E. brownii Nees ex Steudel. Australia. Wool alien (Oc). K, RNG.


34. E. hagens Nees. America. Wool alien (Oc). K, E, RNG.


40. E. lehmanniana Nees. South Africa. Wool alien (Oc). K, E, RNG.

41. E. chloromelas Steudel. South Africa. Wool alien (Oc). K, E, RNG.

42. E. curvula (Schrader) Nees. South Africa, America, Australia. Wool alien (Fr). K, E, RNG.

43. E. aspera (Jacq.) Nees. Africa. Wool alien (VR). RNG.


46. E. parviflora (R. Br.) Trin. Australia. Wool alien (Fr). K, E, RNG.


48. E. tef (Zucc.) Trotter. Africa. Occurs as a wool alien (Oc), in bird seed (VR) and as an ornamental (VR). K, E, RNG.

49. E. pilosa (L.) P. Beauv. Europe, Asia, the Mediterranean, South Africa, America, Australia, Jersey. Occurs as a wool alien (R), on tips (VR) and on docks (VR). K, E, RNG.
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50  *E. virens* C. Presl. South America. *Europe, South Africa*. Occurs as a wool alien (R) and on tips (VR). RNG, herb T.B.R.

51. *E. pectinacea* (Michx) Nees. North and *South America*. Occurs as a wool alien (VR) and on docks (VR). K, E, RNG.

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REFERENCES


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