Elytrigia repens (L.) Desv. ex Nevski subsp. arenosa (Spenner) A. Löve (Poaceae) in north-western Europe

P. J. O. TRIST
Glovers, 28 High Street, Balsham, Cambridge CB1 6DJ

ABSTRACT

Elytrigia repens subsp. arenosa differs from subsp. repens in being a much smaller plant with shorter ribbed cauline leaves and shorter panicles and spikes. It is recorded from the east, south and south west coasts of England and the Channel Islands on maritime sand. Its nomenclature is summarised, specimens seen are listed and the north western European distribution is given and mapped.

KEYWORDS: nomenclature, European specimens, distribution, maritime sands, sandy heaths.

INTRODUCTION

Elytrigia repens (L.) Desv. ex Nevski subsp. arenosa (Spenner) A. Löve has had a chequered history. It is an undistinguished grass which has had little attention. It was first recognised by Koch & Ziz (1814) in Germany, later by Jansen & Wachter (1933) in the Netherlands and by Holmberg (1926) and Hylander (1953) in Denmark, Finland and Sweden. Korneck (1966) and Hecker (1987) both record it in studies on the Mainz sands in Germany. In Britain it was not recorded in Bentham & Hooker (1858) or subsequently. As far as I know, Melderis (1980) was the first to report this taxon from Britain. It is likely that Stace (1991) carried its first description in a British Flora. Of this taxon he says “its distribution and taxonomic status are very uncertain”. I here attempt to clarify this uncertainty.

The late C. E. Hubbard had early knowledge of subsp. arenosa and had been alerted by a specimen he collected in 1936 from reclaimed land near The Wash, W. Norfolk, v.c. 28. The specimen is in K, labelled “Agropyron repens var.?” . I have examined it and consider it to be Elytrigia repens subsp. arenosa. Further evidence of his early interest in this taxon comes from a sheet recently found at NWH. The label records “Agropyron maritimum (Triticum maritimum) Koch & Ziz, sea bank, Burnham Overy Staith, Norfolk, 28 July 1967: collected by C. E. Hubbard and E. L. Swann”. I have seen this specimen and agree the determination with the nomenclature updated to Elytrigia repens subsp. arenosa. Swann also annotates the sheet “like A. repens but glaucous with glabrous leaves, convolute when dry, with stout smooth ribs, spikelets small”. This agrees with my own description.

Hubbard (in litt. 1972) informed me “I have a living plant of the plant originally named Triticum repens var. maritimum by Koch & Ziz in Germany”. He had also received six sheets of specimens of var. maritimum from K. Watermann of Ingelheim which were collected from the type locality on the Mainz sands in Germany; these were later incorporated at K. Of these sheets, Hubbard also commented “these I hope to pass to Melderis for study”. Hubbard’s health intervened and Melderis never received the sheets. When the latter included Elymus repens subsp. arenosus in Flora Europaea (Melderis 1980) I was interested to see a specimen. In 1986 I asked Melderis if he had a list of British localities for this taxon. He did not reply to my question but said that the inclusion of this taxon in Melderis & McClintock (1983) “was simply on the authority of C. E. Hubbard”. He said he would shortly go to Kew and study the Watermann specimens of E. repens var. maritimum and later let me have a report. However, this intention, written into his last letter which was addressed to me and in his pocket at the time of his death, was never realised. Melderis had also referred (in litt. 1986) to specimens at BM, but in my subsequent researches I found no annotations on any sheets referring to Elymus repens subsp. arenosus. From these events it seems clear that Melderis was
unable to complete his proposed study and had accepted Hubbard’s opinion in the listing of subsp. arenosus. It is not known which of the two proposed the rank of subspecies.

The specimens at K from the Mainz area of Germany subsequently proved of guidance to me in the primary field identification. In 1986 on coastal dunes on L’Ancrese Common, Guernsey I found my first living specimens of subsp. arenosa. Subsequent searches at CGE and LTR yielded several British specimens which matched those I had taken in Guernsey. I then made further successful searches on the east coast of England and was satisfied that this taxon could be included in the British list and its description could be improved.

NOMENCLATURE

The original description of this taxon was made under Triticum repens var. maritimum Koch & Ziz in 1814. It will later be shown that this name is unacceptable. Smith (1800) in recording Triticum repens var. γ did not give a description of the plant but as his authority he cited Ray and Withering and referred to material in herb. Lightfoot. Roth (1802) validly published a description of Smith’s plant under Triticum repens var. maritimum Sm. ex Roth. It is evident that the name var. maritimum Koch & Ziz published in 1814 was not based on var. maritimum Sm. ex Roth (1802), but was a later homonym and a nom. illeg.

It is likely that the Smith plant was based on British material and the Koch & Ziz plant was probably based on a different type as the authors were accounting for plants on the Continent and published in Catalogus plantarum Palatinatus.

The synonym Triticum repens var. maritimum Koch & Ziz non Sm. ex Roth is retained in the summary of the nomenclature and confirms that the plant Triticum repens var. maritimum Sm. ex Roth (1802) was unrelated to Triticum repens var. maritimum Koch & Ziz published in 1814.

The first valid and legitimate name for our plant is Triticum repens var. arenosum Spenner published in 1825. This latter was elevated to Elymus repens subsp. arenosus by Melderis in 1978 although he used a later publication of the epithet by Petif (1830) as the basis for his new combination (Melderis 1978).

Stace (1991) has corrected the nomenclature and returned the species to Elytrigia.

The following summarises the nomenclature.


Triticum maritimum Jansen & Wachter in Nederlandsch kruidkundig archief 43: 178 (1933), non L. (1762).


DESCRIPTION OF ELYTRIGIA REPENS SUBSP. ARENOUSA

Perennial, usually forming small patches but sometimes as a single-culmed plant, with rhizomes; whole plant glaucous-green. Culms (16-)28-65 cm high, 0.4-1.0(-1.6) mm wide below the spike, erect, slender, sometimes geniculate at or near the base; nodes 2-3, light to dark pink. Sheaths glabrous, rounded on the back with well developed auricles; ligules less than 0.5 mm. Lower leaves few, (4-)7-14(-20) cm × 2-4 mm, rigid, finely pointed at apex. All leaves with prominently raised, broad, whitish or green veins c. 0.15-0.2 mm wide on the adaxial surface, glabrous or with a few scattered hairs, with margins sometimes minutely scabrid, all leaves involute or quickly becoming so on drying. Upper cauline leaves 1.5-6(-9.5) cm × 1-2(-3.4) mm, long-acuminate at apex. Spikes
ELYTRIGIA REPENS SUBSP. ARENOSA IN N.W. EUROPE

(2.5-)4–9 cm long, erect, short and narrow, rhachis strap-shaped, with scabrid margins. Spikelets few, (7–)9–14 mm long, sessile, 2–6 flowered. Glumes (4.4–)6–9(–10) mm long, lanceolate to lanceolate-oblong, strongly keeled, scabrid, slightly unequal, blunt or mucronate and sometimes with awns (0.2–)1·0–2·3 mm at apex; veins 3(–7). Lower lemmas (5.5–)7–10(–12) mm long, lanceolate-oblong, blunt or mucronate at apex, sometimes with an awn (0.3–)1·8–2·8(–4·6) mm. In both glumes and lemma the awn is an extension of the central nerve and is sometimes scabrid distally. Palea shorter than the lemma, with ciliate margins. Anthers 4·0–5·3 mm.

The incidence of awns on subsp. arenosa is variable. On British material I found 22 spikes awned and 25 awnless. All 26 spikes of Swedish specimens were awned but only two out of 23 in German material. Those from Finland and Spain were awned but in French specimens the incidence was only two out of ten. The incidence of hairs on the adaxial leaf surfaces on subsp. arenosa is of little help in effecting determination. Four specimens of 50 British plants had leaf hairs, one in 26 of German and 15 of 18 in Swedish material. The occasional presence of hairs on subsp. arenosa leaves should not lead one to confuse the leaves with those of subsp. repens, as in the latter the leaf surface is flat and the leaf is flaccid and longer than in subsp. arenosa. Another possible confusion in determination may arise from the rare occurrence of cilia on the sheath margin of Elytrigia repens subsp. arenosa which is a character of Elytrigia atherica (Link) Kerguelen ex Carreras Mart. and its hybrids. Where a specimen with sheath cilia also has narrow and stiff leaves with involute margins and raised veins, it should be determined as Elytrigia repens subsp. arenosa.

An examination of a wide range of European specimens has enabled me to expand and modify the previous descriptions given by Melderis (1978, 1980) and Stace (1991). As examples I consider that all leaf margins of subsp. arenosa are involute or become so soon after collection; that geniculation at lowest nodes is infrequent; that leaves are found with either flat or round topped ribs and that none have been found more than 4 mm wide; and that lemmas are sometimes awned.

A comparison of the two subspecies is given in Table 1.

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**TABLE 1. A COMPARISON OF ELYTRIGIA REPENS SUBSP. REPENS AND SUBSP. ARENOSA**

<table>
<thead>
<tr>
<th>Elytrigia repens subsp. repens</th>
<th>Elytrigia repens subsp. arenosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culm length</td>
<td>30–120 cm</td>
</tr>
<tr>
<td>Culm genciliation</td>
<td>Sometimes at or near the base</td>
</tr>
<tr>
<td>Culm nodes</td>
<td>Light to dark brown</td>
</tr>
<tr>
<td>Leaves</td>
<td>Generally flat and flaccid,</td>
</tr>
<tr>
<td></td>
<td>veins narrow; usually with</td>
</tr>
<tr>
<td></td>
<td>dispersed hairs on adaxial</td>
</tr>
<tr>
<td></td>
<td>surface</td>
</tr>
<tr>
<td>Upper leaves</td>
<td>8–16(–25) cm x 2·8–8·5 mm</td>
</tr>
<tr>
<td>Basal leaves</td>
<td>8–30 cm x 3–10 mm</td>
</tr>
<tr>
<td>Spike length</td>
<td>5–20(–30) cm</td>
</tr>
<tr>
<td>Spike habit</td>
<td>Erect to nodding with up to c.</td>
</tr>
<tr>
<td></td>
<td>25 spikelets</td>
</tr>
<tr>
<td>Spikelet length</td>
<td>10–20 mm</td>
</tr>
<tr>
<td>Number of florets</td>
<td>3–8</td>
</tr>
<tr>
<td>Glume length</td>
<td>7–12 mm</td>
</tr>
<tr>
<td>Glumes: no. of veins</td>
<td>3–7</td>
</tr>
<tr>
<td>Glume awns</td>
<td>Sometimes mucronate and rarely</td>
</tr>
<tr>
<td></td>
<td>awned in British specimens</td>
</tr>
<tr>
<td>Lemma length</td>
<td>8–13 mm</td>
</tr>
<tr>
<td>Lemma awns</td>
<td>Usually absent in British</td>
</tr>
<tr>
<td></td>
<td>material but in var. aristatum</td>
</tr>
<tr>
<td></td>
<td>are thin and weak up to 15 mm</td>
</tr>
<tr>
<td></td>
<td>long</td>
</tr>
<tr>
<td>Anthers</td>
<td>3·5–6 mm</td>
</tr>
</tbody>
</table>
Elytrigia repens subsp. arenosa occurs on maritime sand and dunes and can be seen within 30 m of the tide but is more often at least 70 m from the sea. It is also found at the rear of partially colonized sand beaches where infrequent tidal overflows encourage the growth of a salt tolerant flora. More observations and sampling for salinity are necessary before an opinion can be given on the salt tolerance of subsp. arenosa. The pH of the sands examined ranges from 6 to 7.

To the east of Caen, Normandy, it is seen on high dunes of mobile fine sand which are partially colonized with Ammophila arenaria (L.) Link, Ononis repens L. and Tamarix gallica L. At Sizewell E. Suffolk (v.c. 25) it grows on similar dunes with Elytrigia atherica, Rumex crispus L. and Carex arenaria L. At both of these sites subsp. arenosa only colonizes the perimeter of the associated vegetation. At L’Ancresse Common, Guernsey it grows as single-culmed plants widely spaced in semi-open consolidated dunes with Agrostis stolonifera L., Cynosurus cristatus L., Gaudinia fragilis (L.) P. Beauv. and Vulpia bromoides (L.) Gray.

In the vicinity of the Old Dunwich River at Walberswick, E. Suffolk (v.c. 25) it is found on consolidated sand subject to occasional tidal overflow, the soil of which is a mixture of fine sand and undecomposed organic matter derived from plant remains of Festuca rubra L., Glaux maritima L., Atriplex portulacoides L. and Spergularia marina (L.) Griseb. indicating a low salinity. On the beach at Thorpness, E. Suffolk (v.c. 25) it is found in small shingle and coarse sand with Silene uniflora Roth, Senecio vulgaris L. and Ononis repens L. On the same coast at Dunwich it is sparingly seen in small isolated colonies in sandy areas in large shingle on the back of the sea defences with Lathyrus japonicus Willd. It is recorded from the sand banks of the tidal estuary of the River Parret, S. Somerset (v.c. 5).

In Germany subsp. arenosa occurs on sandy heaths and in sandy arable land in the Mainz area c. 400 km inland (Korneck 1966; Hecker 1987). The protologue of this taxon by Koch & Ziz (1814) reads “Triticum repens maritimum in sabulosis prope Moguntiam (Mainz) cum alis plantis salinis copioso occurrit”. Hecker (1987) lists 217 taxa on the Mainz sands, and 159 of these are also found on the sands in the West Suffolk Breckland. Subsp. arenosa has not yet been reported from the latter, but it could well occur there. Recalling the above “plantis salinis copioso occurrit”, the Breckland sands support some maritime taxa including Corynephorus canescens (L.) P. Beauv., Carex arenaria L., Phleum arenarium L., Trifolium scabrum L. and T. suffocatum L.; the area is today c. 40 km from the tidal bay of The Wash. The inland stations of Elytrigia repens subsp. arenosa in the Rhine locality of Mainz suggests that it requires open sandy habitats rather than specifically maritime ones. It may well be a taxon like Hippophae rhamnoides L. which was once more widespread and now occurs predominantly on the coast of Britain as its former inland sand habitats have been eroded (Godwin 1975). Both subsp. arenosa and H. rhamnoides are included in Hecker’s (1987) list.

The distribution of Elytrigia repens subsp. arenosa in north-western Europe is shown in Fig. 1.

**HABITAT**

The distribution of Elytrigia repens subsp. arenosa in north-western Europe is shown in Fig. 1.

**DISTRIBUTION OF ELYTRIGIA REPENS SUBSP. ARENOsa IN NORTH-WESTERN EUROPE**

**ENGLAND**

S. Somerset, v.c. 5. Banks of River Parret between Stert Point and Combwich, 1907, *E. S. Marshall (CGE, OXF)*.


ELYTRIGIA REPENS SUBSP. ARENOSA IN N.W. EUROPE

FIGURE 1. European distribution of Elytrigia repens subsp. arenosa.

E. Norfolk, v.c. 27. Sandy waste, Gt Yarmouth, 1953, B. A. Poulton (E).
W. Norfolk, v.c. 28. Hunstanton, 1935, T. G. Tutin (LTR); near the river by the paper mill, West Newton, 1936, C. E. Hubbard (K); sea defence bank, Burnham Overy Staithe, 1967, C. E. Hubbard & E. L. Swann (herb. E.L.S. in NWH).

SPAIN
San Sebastian, 1895, M. Gandoger (E).

FRANCE

THE NETHERLANDS
Oostvoorne, 1914, A. W. Kloos & J. W. Henrard (L); Oostvoorne, 1917, J. T. Henrard (L); Hook of Holland, 1910, P. Jansen & W. H. Wachter (L); Noordwolde, Hemelumer Oldeferd, 1929, A. N. Koopmans (L).
GERMANY
Sandy area near Cleves, E.S.E. of Nijmegen, 1866. Florae rhenanae Fasc. 6 (BM); Offenbach am Main, undated. C. B. Lehmann (K); heathland on ‘Mainzer sand’, Mainz, 1971, Kurt Watermann (K); sandy arable field, Weilersberg near Mainz, 1969, 1971, Kurt Watermann (K); Priwall, near Travemünde, N.E. of Lubeck, 1845, G. R. Haecker (E).

FINLAND
Upper part of the sea shore meadow, west of Kuljunmaa in the Tirkka1e group, off Lokalahti, 1973, Sakari Hinneri (E).

SWEDEN
Nyköping, Södermanland, 1921. Carl Blom (K); sandy shore south of Kristineberg, Skaftö, Bohuslän, 1947, K. H. Mattessson (NMW); Norrvreda, Singö, Upplandia, 1928, G. A. Ringselle (NMW); Tranvik, Singö, Upplandia, 1928, G. A. Ringselle (NMW); Lund, Skåne, 1901, O. R. Holmberg (BM); Rundskär, Nyköping archipelago, 1882, Hugo Samzelius (E).

I have been unable to identify any specimens from collections sent from Trondheim (TRH) and Tromsø (TROM) in Norway and it is likely that these areas are too far north for subsp. arenosa to occur. Dr Sivertsen of Trondheim suggests that this taxon might be found on the sands around Lista and in the Jaeren district in the south of Norway. I was surprised to find no specimens of subsp. arenosa in a large collection from Copenhagen (C).

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