

POACEAE

TWO NEW SPECIES OF *HELICTOTRICHON* (POOIDEAE: AVENEAE) FROM SOUTH AFRICA

INTRODUCTION

*Helictotrichon* Besser ex Schult. & Schult.f. (excluding *Avenula* (Dumort.) Dumort. and *Amphibromus* Nees) is a genus of temperate C<sub>3</sub> grasses with about 40 species (Gibbs Russell *et al.* 1990; Mabberley 2008). The genus is most diverse in the temperate regions of the northern hemisphere, especially Europe, from where it extends southwards through the African mountains (Afro-montane Region) with a secondary centre of diversity in southern Africa.

In a taxonomic revision of *Helictotrichon* for southern Africa, Schweickerdt (1937) recognized 12 indigenous species. Except for one, all of these species are endemic to southern Africa, several of which are rare and known from very few collections. A possible new species of *Helictotrichon*, *H.* sp. (Ellis 4663), is mentioned by Gibbs Russell *et al.* (1990). During a taxonomic revision of the genus, the status of this new species was confirmed and a second new species was identified. Note that at PRE, specimens of the second new species were initially identified as *H. namaquense* Schweick., hence the distribution map supplied for *H. namaquense* in Gibbs Russell *et al.* (1990) applies to this new species. In the present contribution, the two new species are described, illustrated and compared with similar members of the genus.

***Helictotrichon rogerellisii* Mashau, L.Fish & A.E.van Wyk**, sp. nov., *H. longifolium* (Nees) Schweick. arcte affinis foliis setaceis spiculisque laxifloris, sed spiculis 13–18 mm longis (arista exclusa) usque ad 4.5 mm latis; glumis acutis, internodio rachillae 2.8–3.3 mm longo differt.

TYPE.—Western Cape, 3420 (Bredasdorp): 2 km from De Hoop Nature Reserve entrance, on road to Wydgelegen, (–AD), 21 October 1984, R.P. Ellis 4663 (PRE, holo.; K, iso.).

Densely tufted perennial, 300–600 mm high, usually flushed purple; culms slender, glabrous, 1- or 2-noded. *Leaves* cauline, sheath folded; blade 100–200 × 1.5 mm, setaceous, involute, both surfaces scabrid; ligule an unfringed membrane up to 2 mm long, lacinate or erose; margins membranous. *Panicle* open, with up to 15 spikelets, branches bare of spikelets for

most of their length; branches and pedicels smooth but with short scattered hairs; pedicels unequal in length. *Spikelets* 13–18 × up to 4.5 mm (excluding awns), laterally compressed, loosely 3- or 4-flowered, variegated, usually mostly dark purple with margins and/or apices light brownish yellow; rachilla internode 2.8–3.3 mm long, densely hairy on upper half, hairs 0.5–4.5 mm long, increasing in size upwards. *Glumes* unequal, narrowly lanceolate, acute, minutely awned, hairy on upper margins; lower glume 2/3 as long as upper glume, 1-nerved; upper glume 2/3 as long as spikelet, 3-nerved. *Lemma* usually purple from awn insertion to base, otherwise light brownish yellow, scaberulous (Figure 10B), nerves raised, 2-lobed; lobes 1.5–2.5 mm long (including awn) from above central awn insertion to apex, awn up to 1.5 mm long; central awn 11.0–21.5 mm long, twisted below, geniculate, scabrid; callus 1 mm long, apex cuneate, hairy all over except on disarticulation scar. *Palea* 2-toothed, 2-keeled, keels hairy. *Anthers* 3.8–4.5 mm long, yellow. *Flowering time*: October. Figure 8.

*Diagnostic characters and affinities:* *Helictotrichon rogerellisii* is similar to *H. longifolium* (Nees) Schweick., possibly its nearest relative. Both species have setaceous leaves and loosely flowered spikelets, but they differ in a number of characters, summarized in Table 1.

*Distribution and ecology:* the species is only known from a single collection by R.P. Ellis in the De Hoop Nature Reserve, east of Bredasdorp, Western Cape (Figure 9). Plants grow in shallow, humic soil among limestone outcrops and are associated with De Hoop Limestone Fynbos (Mucina & Rutherford 2006). Biogeographically this locality falls within the Agulhas Plain Subcentre of the Cape Floristic Region (Goldblatt & Manning 2000).

*Eponymy:* the specific epithet honours Roger Pearson Ellis (1944– ), formerly of the Botanical Research Institute—a predecessor of the South African National Biodiversity Institute—who researched and published extensively on the anatomy of southern African grasses.

***Helictotrichon roggeveldense* Mashau, L.Fish & A.E.van Wyk**, sp. nov., *H. namaquensi* Schweick. arcte affinis lemmatibus partim scabridis, carinisque palearum conspicue pubescentibus, sed paniculis contractis spicu-

TABLE 1.—Differences between *Helictotrichon rogerellisii* and *H. longifolium*

Character	<i>H. rogerellisii</i>	<i>H. longifolium</i>
Spikelet length	13–18 mm	8–10(–12) mm
Glumes (apices)	acute	acuminate
Rachilla internode length	2.8–3.3 mm	± 2 mm
Lemma	scaberulous	smooth or finely papillate
Lemma nerves	raised	not raised
Anther length	3.8–4.5 mm	0.6–3.3 mm
Geographical range	Bredasdorp District, Western Cape (Agulhas Plain Subcentre, Cape Floristic Region)	Drakensberg Range, centred on Lesotho (Drakensberg Alpine Centre)
Habitat	fynbos; mainly in shallow, humic soils between limestone outcrops on coastal plain	grassland; mainly on moist and rocky mountain slopes



FIGURE 8.—*Helictotrichon rogerelisii*, R.P. Ellis 4663 (PRE). A, habit; B, spikelet; C, lemma; D, rachilla. Scale bar: A, 5 mm; B, 10 mm; C, D, 20 mm. Artist: Gillian Condy.

las 15–18 gerentibus, spiculis flosculis aggregatis, lem-  
maque scabrada differt.

TYPE.—Northern Cape, 3220 (Sutherland): Geel-  
hoek (Vyffontein), (–BC), 21 September 1953, J.P.H.  
*Acocks 17178* (PRE, holo.!).

Densely tufted perennial, 250–280 mm high; culms  
slender, 1- or 2-noded. Leaves mainly basal, sheath

strongly ribbed; leaf blade 80–180 × 2–3 mm, expanded  
or convolute, narrowed towards apex, apex boat-shaped,  
strongly ribbed, both surfaces hairy; ligule an unfringed  
membrane, 1.5–2.8 mm long, laciniate or erose; marg-  
ins membranous. Panicle contracted; spikelets 15–18,  
lower branches sometimes spreading, pulvini in axils  
absent, branches and pedicels scabrid; pedicels unequal  
in length. Spikelets 10–17 × 2.5–3.0 mm (excluding



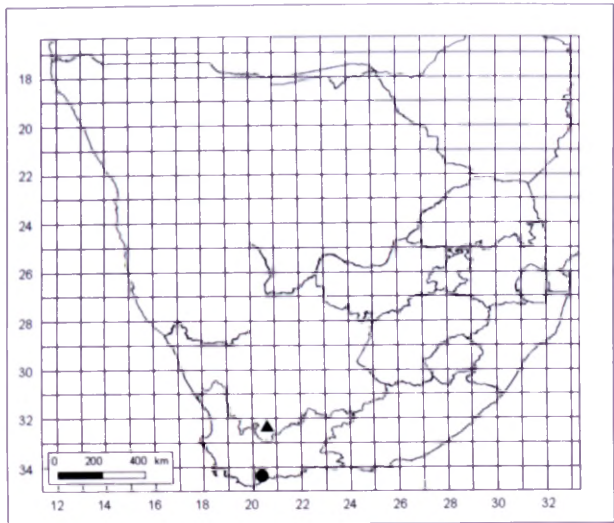


FIGURE 9.—Known distribution of *Helictotrichon rogerellisii*, ●; and *H. roggeveldense*, ▲.

awns), laterally compressed, closely 2- or 3-flowered, pallid (light green) occasionally flushed purple; rachilla internode 2.5–3.0 mm long, densely hairy on upper half, hairs 4.0–6.5 mm long. *Glumes* unequal, lanceolate, acuminate, minutely ciliate on upper margins; lower glume  $\frac{1}{2}$ – $\frac{2}{3}$  as long as upper glume, 1-nerved; upper glume  $\pm$  as long as spikelet (excluding awns), 3-nerved. *Lemma* body densely scabrid (Figure 10A), smooth at base, nerves conspicuous, apex 2-lobed; lobes 5–7 mm long (excluding awn) from insertion of central awn to apex, awn 3.0–5.0 mm long; central awn 12–25 mm long, twisted below, geniculate, scabrid; callus 1 mm long, apex cuneate, hairy all over except on disarticulation scar, hairs up to 6 mm long. *Palea* emarginate, apex fimbriate, 2-keeled, keels hairy. *Anthers* 1.7–2.6 mm long, yellow. *Flowering time*: September. Figure 11.

*Diagnostic characters and affinities:* *Helictotrichon roggeveldense* resembles *H. namaquense* Schweick. in having spikelets with the lemmas scabrid in parts and the keels of the paleae conspicuously hairy, but the two species differ in a number of characters, some of which are compared in Table 2. In Gibbs Russell *et al.* (1990), *H. roggeveldense* was mistaken for *H. namaquense* Schweick., a rare species and near-endemic to the Kamiesberg Centre of Endemism (Van Wyk & Smith 2001; Helme 2009), with an outlier distribution on the Hantamsberg near Calvinia, the latter locality which

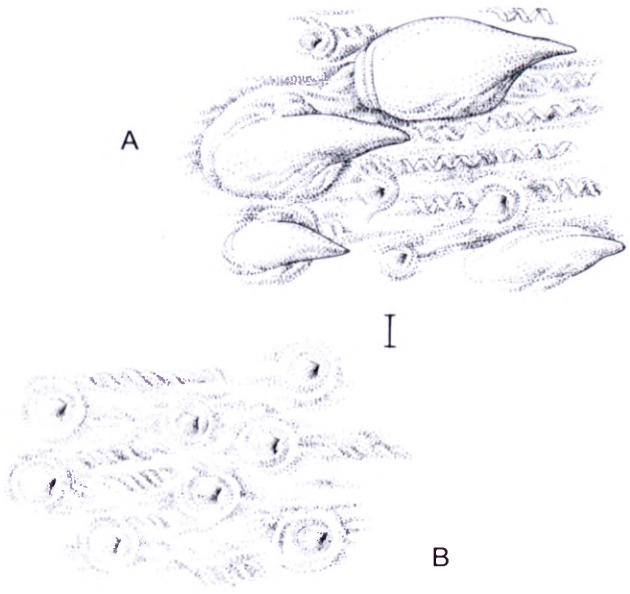


FIGURE 10.—*Helictotrichon roggeveldense*: A, scabrid lemma surface. *H. rogerellisii*: B, scaberulous lemma surface. Scale bar: A, B, 10  $\mu$ m. Artist Gillian Condy.

biogeographically forms part of the Hantam-Roggeveld Centre of Endemism.

*Distribution and ecology:* known only from three collections from two localities south and southwest of Sutherland (Northern Cape), where it is associated with Roggeveld Shale Renosterveld (Mucina & Rutherford 2006) (Figure 9). The area is characterized by sandy to clayey soils derived from mudstone and sandstone of the Beaufort Group. The species is obviously rare and is yet another taxon endemic to the Roggeveld Subcentre of the Hantam-Roggeveld Centre of Endemism (Van Wyk & Smith 2001). The current range of *H. roggeveldense* is closely associated with that of another grass, *Secale africanum* Stapf [= *Secale strictum* (J.Presl) J.Presl subsp. *africanum* (Stapf) K.Hammer], a Roggeveld Subcentre endemic today and on the brink of extinction in the wild, but previously apparently more abundant, though still localized, on deep alluvial soils mainly along the banks of the upper Fish River and its tributaries. The rapid demise of *S. africanum* is ascribed primarily to overgrazing by domestic stock (mainly sheep) following the colonization of the area by farmers in the late 18th century. *H. roggeveldense* may be under similar pressure with its current rarity indicative of

TABLE 2.—Differences between *Helictotrichon roggeveldense* and *H. namaquense*

Character	<i>H. roggeveldense</i>	<i>H. namaquense</i>
Panicle	contracted	open
Pulvini in branch axils	absent	present; purple
Spikelets per inflorescence	15–18	up to 10
Spikelet	closely flowered	loosely flowered
Lemma	scabrid all over, except on lobes and basally	scabrid below awn insertion in a band from margin to margin, rest of body scaberulous
Anther length	1.7–2.6 mm	4.5 mm
Geographical range	Sutherland District (Roggeveld Subcentre, Hantam-Roggeveld Centre of Endemism)	mainly Kamiesberg, Namaqualand (Kamiesberg Centre of Endemism); outlier on Hantamsberg, Calvinia
Habitat	renosterveld; mainly on sandy to clayey soils derived from shale	renosterveld; mainly on sandy soils arising from granite and gneiss



FIGURE 11.—*Helictotrichon roggeveldense*, J.P.H. Acocks 17178 (PRE). A, habit; B, spikelet; C, lemma; D, rachilla. Scale bar: A, 5 mm; B, C, 10 mm; D, 20 mm. Artist: Gillian Condry.

survival as a relict in sites protected from overgrazing. The most recent collections of *H. roggeveldense* (September 1986) are from plants in a road reserve where they enjoyed some protection from grazers.

*Etymology:* *Helictotrichon roggeveldense* is named after the Roggeveld (rye lands/fields), a region named after *Secale africanum* (known as *wilde rog* in Afrikaans), an important grazing grass and a Roggeveld



Subcentre endemic which was once more common, but is very rare today.

### *Additional specimens examined*

NORTHERN CAPE.—3220 (Sutherland): 10 km from Sutherland to Matjiesfontein, (–BC), 29 September 1986, *Spies 3137* (PRE); 10 km south of Sutherland on road to Ceres, (–BC), 29 September 1986, *Ellis 5117* (PRE).

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