

# A new Australian species of *Carex* (Cyperaceae) and notes on two other species

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## Abstract

Wilson, Karen L. (National Herbarium of New South Wales, Royal Botanic Gardens, Sydney NSW 2000, Australia) 1996. A new Australian species of *Carex* (Cyperaceae) and notes on two other species. *Telopea* 6(4): 569–577. A new species *Carex klaphakei* is described from the Central Tablelands region of New South Wales. Two other species that occur in this State but were not included in the *Flora of New South Wales* are *C. raleighii* (a native species) and *C. buxbaumii* (introduced from Europe). Descriptions in the 'Flora' format are given for these two species, and the 'Flora' key to species is amended to include the extra species.

## Dedication

I am pleased to contribute to this publication in honour of Dr Lawrie Johnson. It is apposite for several reasons. Firstly, he was one of the instigators of our institution's recent four-volume 'Flora of New South Wales'. Secondly, he has had a long-standing interest (among his many others) in the family Cyperaceae. Thirdly, I have been privileged to work with him on various projects and to benefit from his extensive botanical knowledge, always generously given.

## Introduction

When the treatment of Cyperaceae for the 'Flora of New South Wales' (Wilson 1993) was being prepared, a species of *Carex* that was either a new introduction or an undescribed species had to be omitted because only immature specimens were available. Since then, more material has been collected by Mr V. Klaphake that confirms this to be an undescribed native species.

The opportunity is also taken here to provide descriptions for *Carex buxbaumii* Wahlenb. and *C. raleighii* Nelmes in the format of 'Flora of New South Wales'. Both species were found to occur in this State too late to be included in the Flora treatment, although *C. raleighii* was included in the key to species. An amended 'Flora' key is given, to accommodate the extra species. Terminology for ligule and utricule beak morphology follows Jermy, Chater & David (1982).

***Carex klaphakei* K.L. Wilson, sp. nov.**

Inter speciebus *Caricis* australiensis, combinatione sequente characterum distinguitur: stylus 2-fidus; rhizoma longa; inflorescentia parva; utriculus grandis rostro longe acuminato, nervosis numerosis abaxialiter instructus.

**Type:** New South Wales: Central Tablelands: Blackheath, V. Klaphake 663, 10 Jan 1993; holo NSW; iso MEL, P. Figure 1.

Perennial herb; rhizomes long, firm but not strongly woody; shoots at 2–6 cm intervals along rhizomes. Culms erect, terete or oval, 45–160 cm long, to 1.2 mm diam., smooth or faintly scaberulous. Leaves with reduced, flat blades to 7 cm long, c. 1.5 mm wide; ligule white- to brown-membranous, rounded, c. 0.3 mm wide. Inflorescence 0.8–1.5 cm

long, composed of a single spike or up to 3 spikes forming a short cluster; lowest 1 or 2 leafy involucral bracts shorter than the inflorescence or rarely slightly exceeding it, to c. 1.5 cm long. Spikes androgynous with upper male portion often half-hidden by the female portion, 6–10 mm long, 1–3 per inflorescence, few-flowered. Male bracts ('glumes') c. 4 mm long, pale yellow-brown to pale red-brown, with apex acute and mucro c. 0.3 mm long; female bracts ('glumes') 3–4 mm long, pale yellow-brown to red-brown, with apex acute and mucro 0.5–1 mm long. Stamens 3; anthers c. 2 mm long excluding apical appendage c. 0.2 mm long. Utricles ovate in outline, plano-convex, thickened near base, strongly 8–10-nerved on abaxial surface, not or faintly few-nerved adaxially, exceeding the subtending bract, 5.5–7 mm long, 1.7–2 mm diam. in broadest part, green to yellow-brown, eventually grey-brown, shining when mature; beak long-tapering, more or less excurved eventually, slightly hispidulous on margins, with 2-fid or split apex. Style 2-fid. Nut narrow-elliptical to obovate in outline, with obuse apex, plano-convex, 2–2.5 mm long, 1.3–1.5 mm diam., pale brown. Figure 2.

**Distribution and habitat:** Known from only three locations, near Blackheath (about 1000 m altitude), Mt Werong (1200 m), and Penrose (about 600 m alt.), on the Central Tablelands of New South Wales. In all locations, it was growing mixed with other native sedges and rushes in undisturbed swamps on sandstone.

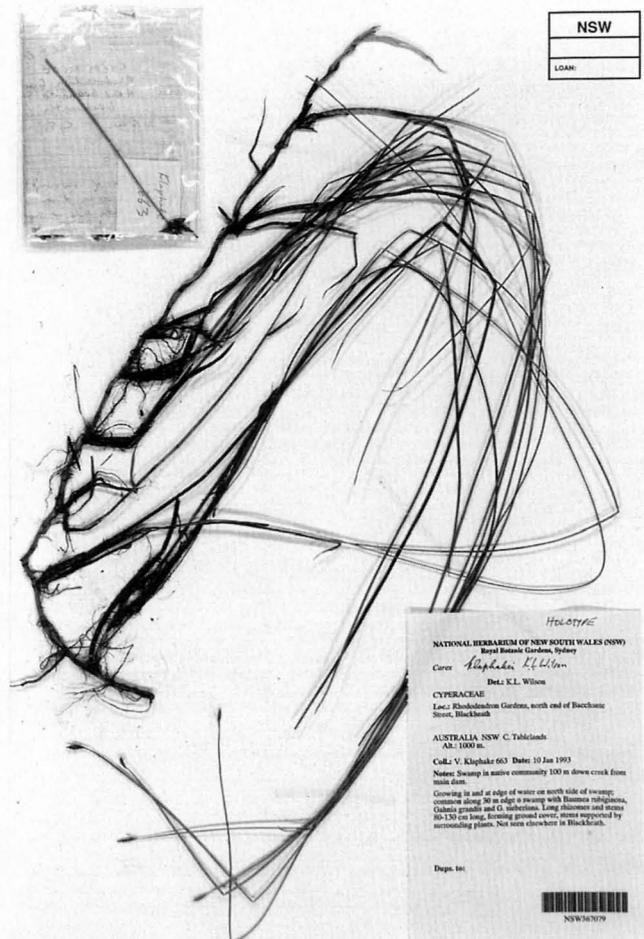


Fig. 1. Holotype of *Carex klaphakei*.

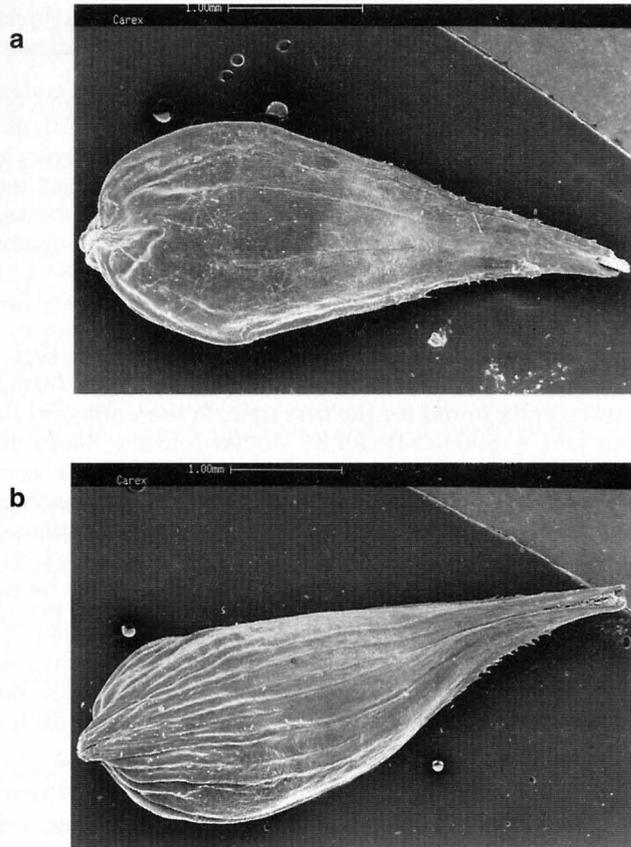


Fig. 2. Utricle of *Carex klaphakei*: a, adaxial surface; b, abaxial surface.

**Conservation status:** 3K; the species is not known from any national parks or reserves, but it is a very slender species and could well be overlooked because it grows mixed with other sedges and rushes such as *Empodisma minus* in swamps.

**Notes:** The long rhizome, extremely long slender culms, short leaf-blades, small inflorescence, and large, tapering utricle are distinctive features amongst the Australian species of *Carex*. These features place *C. klaphakei* in Kükenthal's section *Divisae* (Kükenthal 1909). There are no other members of that north-temperate section native to Australia, but *C. divisae* is introduced in Victoria and possibly in Tasmania (it is also naturalised in New Zealand (Healy & Edgar 1980: 157)). *C. klaphakei* is grossly similar to *C. divisae* but it differs from the latter in the following features: the inflorescence in the new species is more slender; the utricle is larger, more gradually tapered to the apex, and less shining (cf. Figure 2 and the illustration of the utricle of *C. divisae* in Wilson 1994: fig. 71e); the rhizome is not as woody. *C. klaphakei* resembles another introduced species, *C. disticha* Hudson, in having a long rhizome but that species differs in having a bigger inflorescence with up to twenty spikes, the arrangement of sexes in the spikes being rather variable (see notes in Wilson 1994: 350), and a narrowly winged utricle.

In the 'Flora of New South Wales' treatment (Wilson 1993), this species can be slotted in as *Carex* species no. 20a, between *C. tereticaulis* F. Muell. and *C. arenaria* L. This does not reflect a close relationship to either of those species but rather its

placement in the arrangement of Australian species given by Nelmes (1944); this arrangement needs re-assessment in the light of more recent studies.

**Epithet:** The species is named after Mr Van Klaphake, who has collected this and many other species of monocots in the Sydney region.

**Specimens seen:** New South Wales: Central Tablelands: Rhododendron Gardens, Blackheath, *Klaphake* 373, Nov 1991 (NSW), 549, Mar 1992 (NSW, CHR, NY); Yarramundi Road, 1 km E of Mt Werong turn-off, *Klaphake* 1032, Apr 1994 (NSW, CANB); Hanging Rock Swamp, 4 km NW of Penrose railway station, *Klaphake* 805, Mar 1993 (NSW, K); Hanging Rock Swamp, *Godden* 211 & *Wilson*, Apr 1995 (NSW, GENT, L, MEL, US).

### **Carex buxbaumii**

*C. buxbaumii* Wahlenb. subsp. *buxbaumii* is a European taxon that has become naturalised in a few localities in New South Wales, Victoria and Tasmania. In New South Wales, it was recently found for the first time, in the Cathedral Rock National Park between Ebor and Armidale. It can be slotted into the 'Flora of New South Wales' treatment as *Carex* species no. 11a, following *C. brownii* Tuckerman and preceding *C. maculata* Boott. This does not reflect a close relationship to either of those species but rather its placement in the arrangement of Australian species given by Nelmes (1944), where it was given under the name *C. canescens* L. However, that name applies to another species (native in Australia) that used to be called *C. curta* Gooden., as explained by Toivonen (1981) when he lectotypified *C. canescens* L.

Only the type subspecies of *C. buxbaumii* has been introduced into Australia. Most Australian specimens have rather paler male and female bracts than European specimens but are otherwise similar. The utricle is illustrated in Wilson 1994: fig. 70l.

Rhizome short; shoots loosely tufted. Culms erect, triquetrous, smooth below, scabrous above, 25–70 cm long, c. 1.3 mm diam. Leaves shorter than or scarcely exceeding culms, 1.5–3 mm wide. Inflorescence erect, 4–10 cm long, with 2–5 spikes solitary at nodes; lowest involucral bract shorter than to exceeding inflorescence. Spikes sessile,  $\pm$  contiguous, spreading slightly at maturity, 0.7–2.5 cm long; uppermost spike gynaeandrous; lower spikes female. Male and female bracts ('glumes') acuminate to acute, often long-mucronate (mucro to 1.5 mm long), red-brown to dark red-brown with paler midrib; female bracts 3–6 mm long. Utricles ovoid to narrow-ellipsoid, nerveless or indistinctly nerved, 3.0–4.5 mm long, c. 2 mm diam., minutely papillose, pale green to brown; beak a minute notch to 0.2 mm long. Style 3-fid. Nut obovate to elliptical in outline.

Occasionally naturalised on swampy flats at higher altitudes; in N.S.W. in Cathedral Rock National Park. \*NT; \*Vic., \*Tas.; native of Europe.

**Specimens seen:** New South Wales: Northern Tablelands: c. 6 km W of Ebor–Armidale road on road to Round Mountain, Cathedral Rock National Park, *James* 1383 & *McCune*, Nov 1992.

Victoria: Snowy plains between the Cabongra and Bogong Range [sic], *Mueller*, Dec 1854 (MEL 226617); snowy wet plains between the Cabangra and Boyong Mountains [sic], *Mueller*, — (K); Cobboras Mountains, *Mueller*, — (K); below Red Bank Plain on the upper Victoria River, 28 km NW of Omeo (direct), *Scarlett* 80–120, Mar 1980 (NSW ex LTB); Rocky Plain (approx. 15 km WNW of Suggan Buggan), *Wakefield* 3024, Jan 1949 (MEL).

Tasmania: Western Mountains, 3500 ft [1070 m], *Rodway*, Dec 1908 (K).

### **Carex raleighii**

*C. raleighii* Nelmes is a slender native species, found at high altitude in New South Wales (only one record) and Victoria, and also in Tasmania. The opportunity is taken to provide a description of this species in the format of the 'Flora of New South Wales' (it was included in the published key). It can be slotted into that