

Schizachyrium fragile (R.Br.) A.Camus

Firegrass, Red Spathe Grass; (Shy-zac-e-ree-um; frag-eel-e)

A tufted or single stemmed, slender annual, very common on sandy soils throughout the savanna regions of northern Australia. Plants erect or lying along the ground, 10-75 cm tall, with narrow leaves arising from the base and along the stems (Fig. 1). Leaves, stems and flowers often red-tinged or rusty brown especially when drying out through the dry season. Stems give rise to one or a few separate flowering heads or spikes each enclosed or partially enclosed in a leaf-like sheath (or spatheole) (Fig. 2). The basic flowering units or spikelets are arranged in compact pairs, each pair arranged one after the other in what appears as a solid spike-like flowering head (Fig. 2). The flowering spike becomes fragile with age and breaks apart between the pairs of spikelets (Fig. 3). Each spikelet pair consists of a stalkless spikelet, a stalked spikelet and an internode (a segment of the flowering stem) (Fig. 3 & 4). The internode connects each spikelet pair to the next spikelet on the spike (Fig. 5). The spikelet pairs are clothed in long white hairs making details on the spikelets difficult to see without dissection and magnification. The stalkless spikelet is characterised by a large glume, flattened from front to back, with flaps or wings along the margin that taper into a fine tip (Fig. 3i, 4iv & 4vii, 6ii), it contains 1 fertile floret (a modified grass flower) with a distinct awn or bristle which is bent along a 1/3 to a half of its' length (Fig.6). The stalked spikelet consists of a single glume only, tapered into a bristle or awn, it is much smaller than the glume on the stalkless spikelet, however it can appear larger as the stalk and glume are generally appear as one structure (Fig. 3i). Be aware that the terminal spikelet cluster occurring at the tip of each flowering spike will often have two stalked spikelets which will not reflect the typical spikelet arrangement described above.



Fig. 1. Sheet of pressed herbarium specimen of *Schizachyrium fragile*.

> BOTANICAL DESCRIPTION

Annual. Culms erect, stature slender to delicate, 10-75 cm tall. Leaf-blades 1-3 mm wide, flat or conduplicate, 2-10 cm long, surface scaberulous. Inflorescence a rame (an unbranched inflorescence in which the main axis produces a series of paired spikelets, one sessile

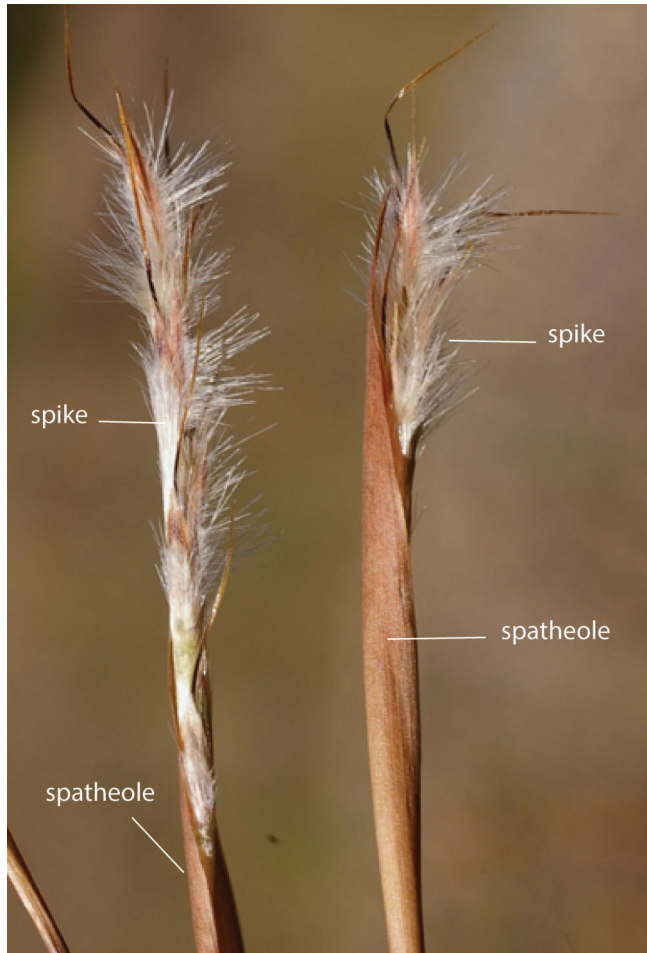


Fig. 2. Image of inflorescence of *Schizachyrium fragile* showing spike and sheathing spatheole. PHOTO: R J Cumming

and one pedicellate, the oldest at the base and the youngest at the top), 3-6 cm long, 7-12 jointed (Fig. 2). Rhachis fragile at the nodes. Spikelets partially enclosed in spatheole at maturity (Fig. 2). Sessile spikelets 5-10 mm long, narrowly ovate to oblong, dorsally compressed; lower glume winged, lemma awn 9-15 (-28) mm long (Fig. 3i, 4iv & vii, 6ii). The pedicelled spikelet consists of the lower glume only, the glume 1-3.5 mm long with an awn 1.5-11 (30) mm long, on a stalk longer than the spikelet (Fig. 3i). The rhachis internode typically has an oblique beard or arc of long hairs running along its' length (Fig. 4v, 5). Usually this arc is quite distinct when most of the internode is glabrous, however, sometimes the arc is obscured by the presence of other hairs on the internode (Fig. 4vi & 6).

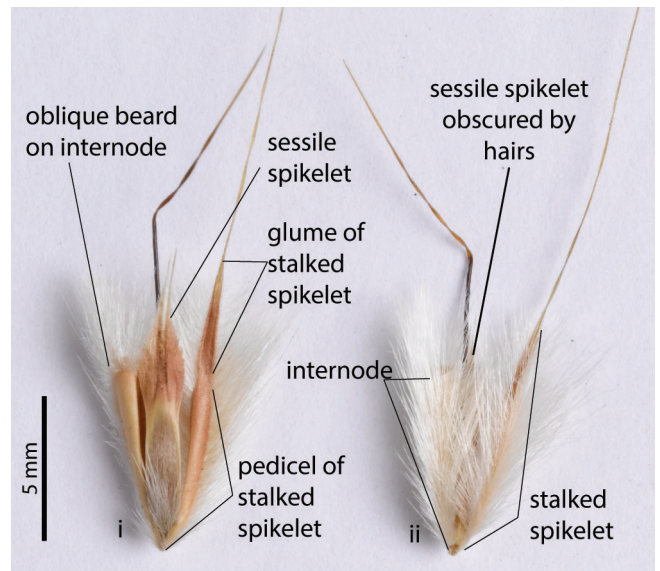


Fig 3. Image of two spikelet pairs from a pressed specimen of *Schizachyrium fragile* i) front of spikelet pair with few hairs showing oblique beard on internode and winged margin on lower glume of sessile spikelet; ii) back of spikelet pair with internode and sessile spikelet obscured by long hairs.

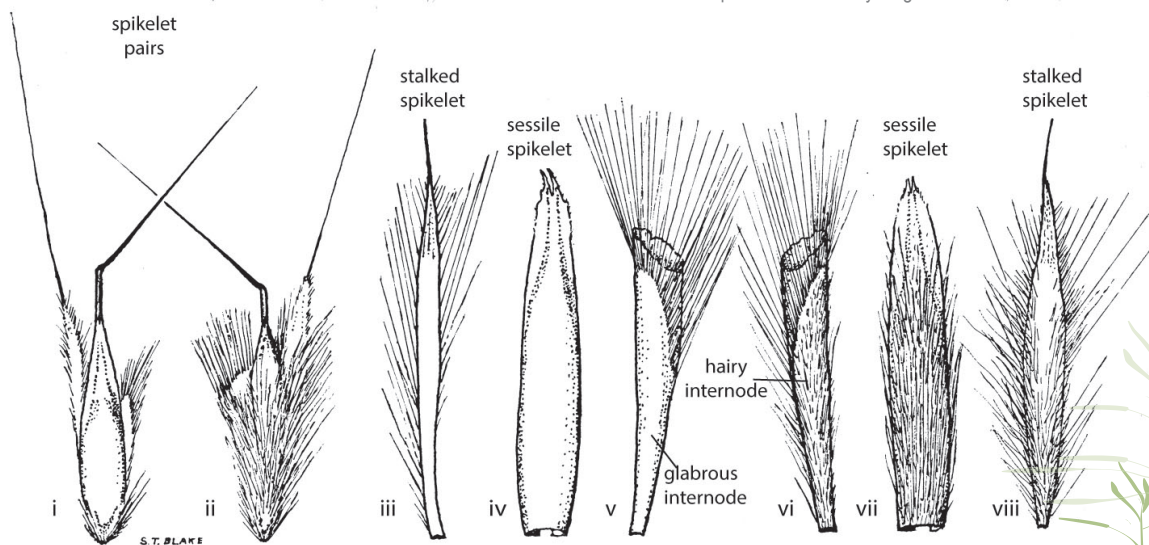


Fig 4. Line drawings of *Schizachyrium fragile* spikelet pairs showing variability in hairiness (taken from Blake 1974). i) & ii) spikelet pair with internode; iii) & viii) stalked spikelet; iv) & vii) lower glume of sessile spikelet; v) & vi) internode. CC By: S.T.Blake

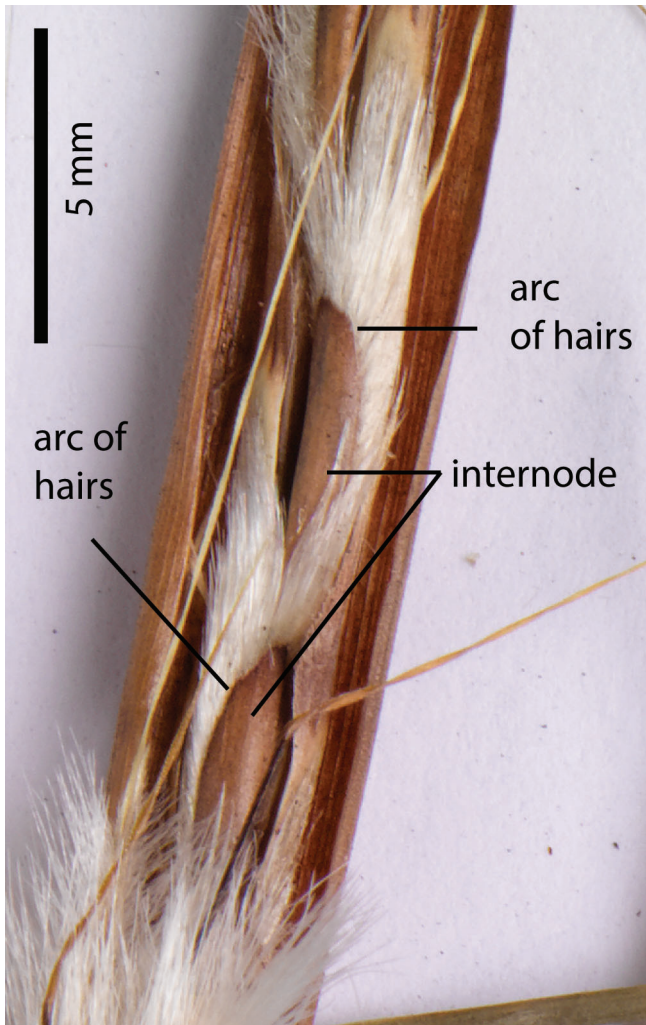


Fig 5. Image of a section of inflorescence of *Schizachyrium fragile* showing two internodes and an arc of hairs (oblique beard) along each internode.

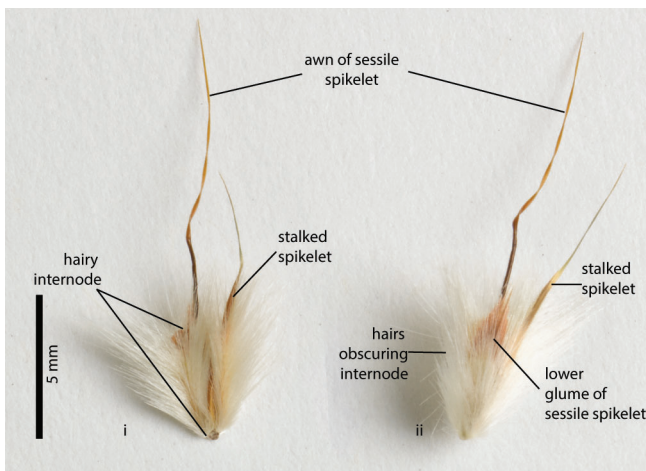
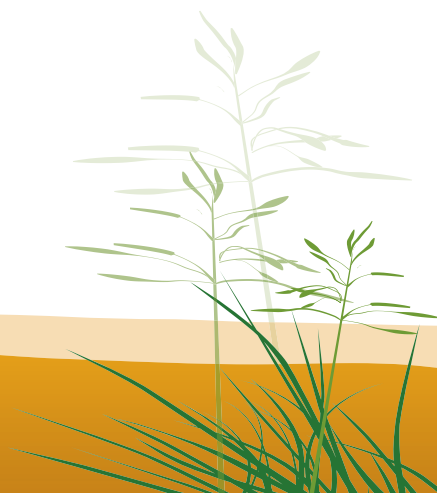


Fig. 6. Image of two spikelet pairs from a pressed specimen of the 'hairy form' of *Schizachyrium fragile*. i) back of spikelet pair with internode obscured by hairs; ii) front of spikelet pair with internode obscured by long hairs and with only the apex and winged margin of lower glume of sessile spikelet visible.

> DIAGNOSTIC FEATURES

The slender flowering spikes emerging from a leaf like sheath are characteristic of most *Schizachyrium* species seen in northern Australia. From a distance the silky or fluffy white flowering spikes of *Schizachyrium fragile* can be confused with *Mnesithea formosa* (Fig. 7), however, close examination will show that *Mnesithea formosa* spikelets have no bristles (are awnless) and are not partially enclosed within a spatheole or leaf like sheath when mature (Fig. 8). *Schizachyrium fragile* can dominate the ground layer in large patches and is usually reddish brown in colour at maturity. As it is the most common species of *Schizachyrium* in northern Australia it is the most likely species collectors will encounter.

Distinguishing *Schizachyrium fragile* from other species in the genus can be difficult as it is a highly variable species and accurate identification requires mature spikelets, dissection of the spikelet pair, attention to detail and magnification with either a hand lens or dissecting microscope. The easiest character for identifying *S. fragile* is the presence of an oblique beard on the rachis internode (Fig. 4v, 5), however, this beard can be obscured by other hairs in some specimens and therefore is sometimes difficult to recognise (Fig. 4vi & 6). In those instances the species most likely to be confused with *S. fragile* are *Schizachyrium perplexum* (Fig. 9 & 10) and *Schizachyrium pachyarthon* (Fig. 11 & 12). From *S. perplexum* it is distinguished by the size of the stalkless (sessile) spikelet, 5-10 mm for *S. fragile*, 3.5-4.5 mm in *S. perplexum*. From *S. pachyarthon* it is recognised by the shape of the lower glume on the stalkless (sessile) spikelet, strongly tapered in *S. fragile* (Fig. 3i, 4iv & 4viii) compared to more rounded or truncated in *S. pachyarthon* (Fig. 11i & 12iii). Identification keys to other species in the area can be found at Simon & Alfonso (2011).



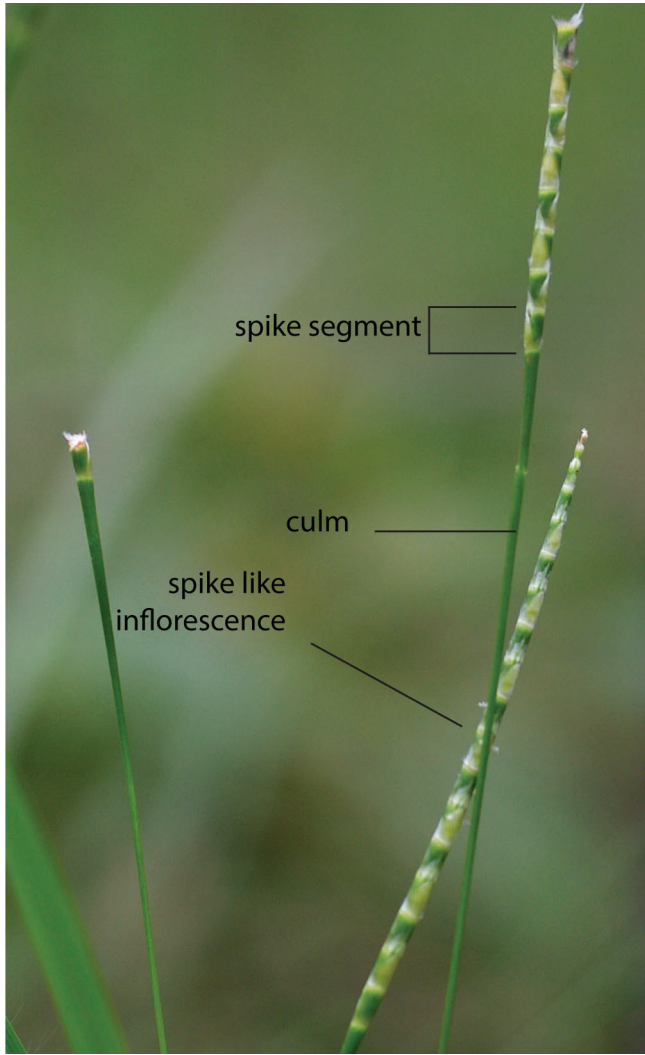


Fig. 7. Image of inflorescences of *Mnesithea formosa*. PHOTO: R J Cumming

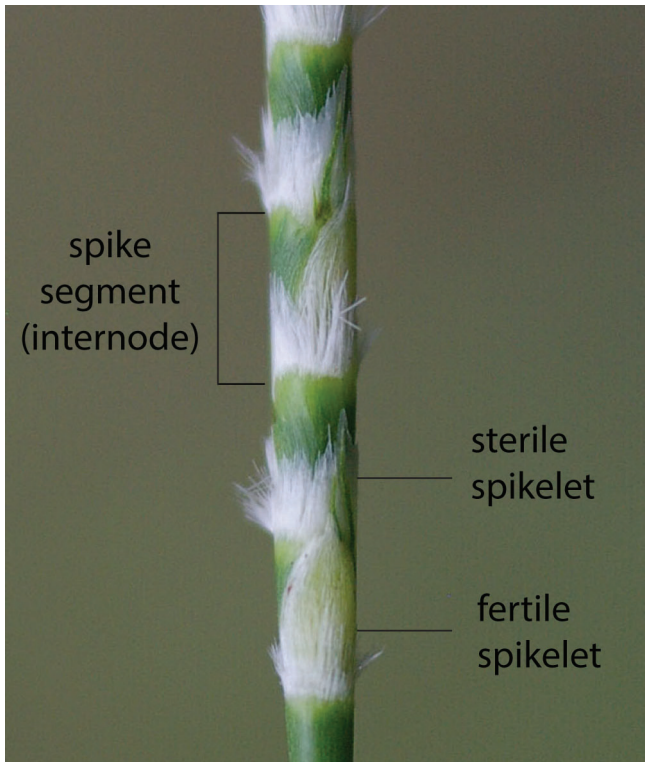


Fig. 8. Image of a section of inflorescence of *Mnesithea formosa* showing visible parts of paired spikelets from the same segment. PHOTO: R J Cumming

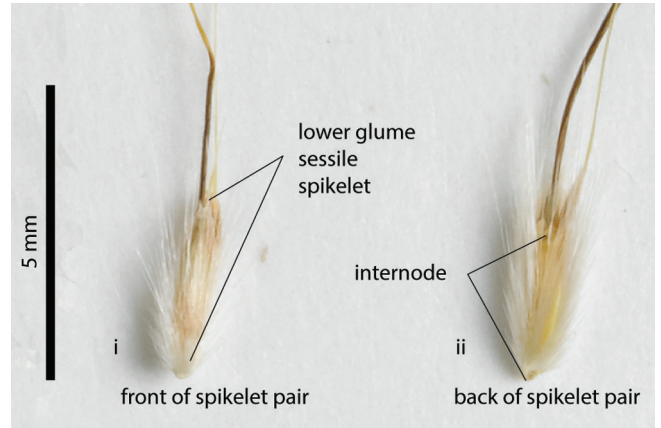


Fig. 9. Image of two spikelet pairs from a pressed specimen of *Schizachyrium perplexum*. i) front of spikelet pair with lower glume of sessile spikelet visible and with tapered apex; ii) back of spikelet pair with internode obscured by long hairs and narrowly tapering at base.

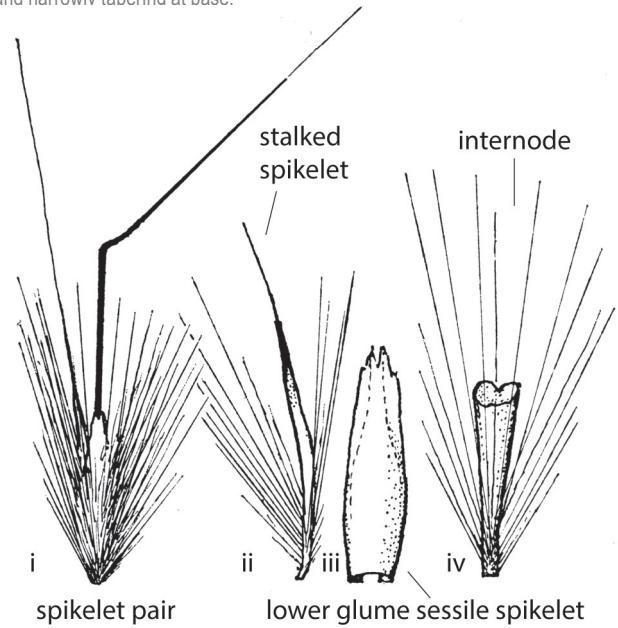


Fig. 10. Line drawings of *Schizachyrium perplexum* spikelet pair from Blake (1974). Showing i) spikelet pair with internode; ii) stalked spikelet; iii) lower glume of sessile spikelet; iv) internode tapering narrowly at base. CC By: S.T.Blake.

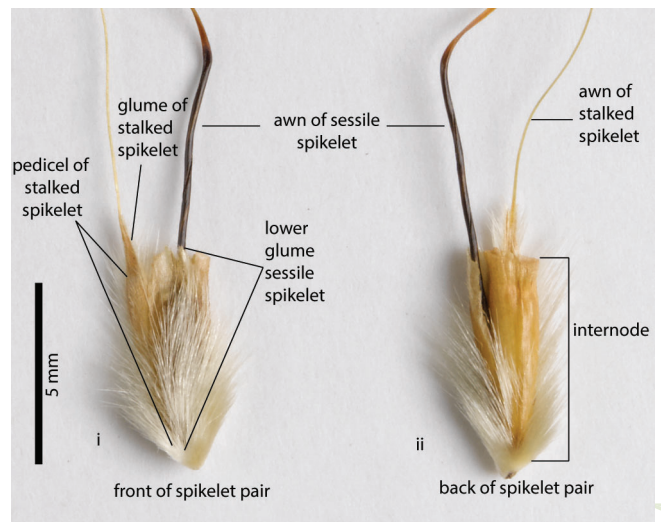


Fig. 11. Image of two spikelet pairs from a pressed specimen of *Schizachyrium pachyarthron*. i) front of spikelet pair with truncated apex and winged margin of lower glume of sessile spikelet visible; ii) back of spikelet pair with stout internode visible.

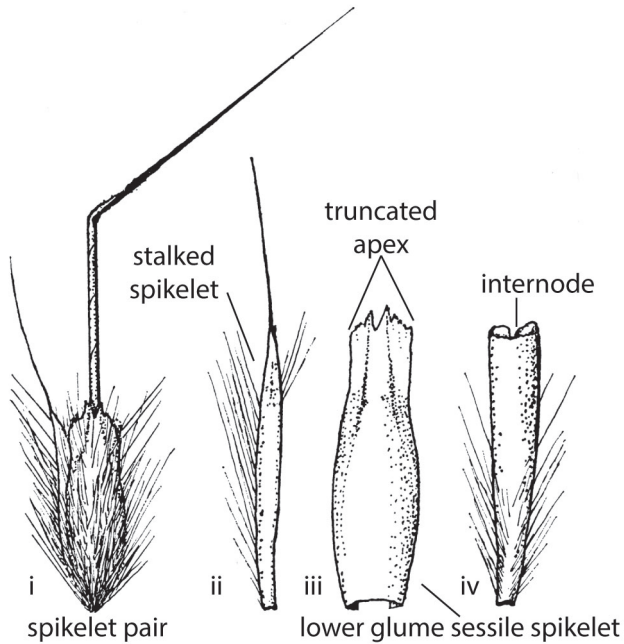


Fig. 12. Line drawings of *Schizachyrium pachyarthron* spikelet pair from Blake (1974). Showing i) spikelet pair with internode; ii) stalked spikelet; iii) lower glume of sessile spikelet; iv) internode only narrowing slightly towards base. CC By: S.T.Blake.

> NATURAL VALUES

The species in this genus are collectively referred to as firegrass in Crowley *et al* (2004) and are considered a critical food source for the Golden Shouldered Parrot. *Schizachyrium* species produce large amounts of seed which fall to the ground and persist through the dry season. They provide an important food source for many seed-eating specialists before the seeds start to germinate in the early wet season. Although recorded as being grazed by stock they are not considered a valuable fodder species, probably because they offer little in the amount of bulk for grazing stock (Simon 1992, Rolfe 1997, Milson 2000, Lazarides 2002).

> HABITAT

A common and widespread species from the savanna regions of northern Australia but also recorded from sub-tropical Qld and NSW. Usually collected from sandy soils and often very abundant in local patches (Fig. 13) (Simon & Alfonso 2011). The absence of collections in the lower western quadrant of Cape York Peninsula is likely to be a result of collection effort in that region rather than a true reflection of species distribution (Fig. 14).



Fig. 13. Image of *Schizachyrium fragile* in situ. PHOTO: R J Cumming

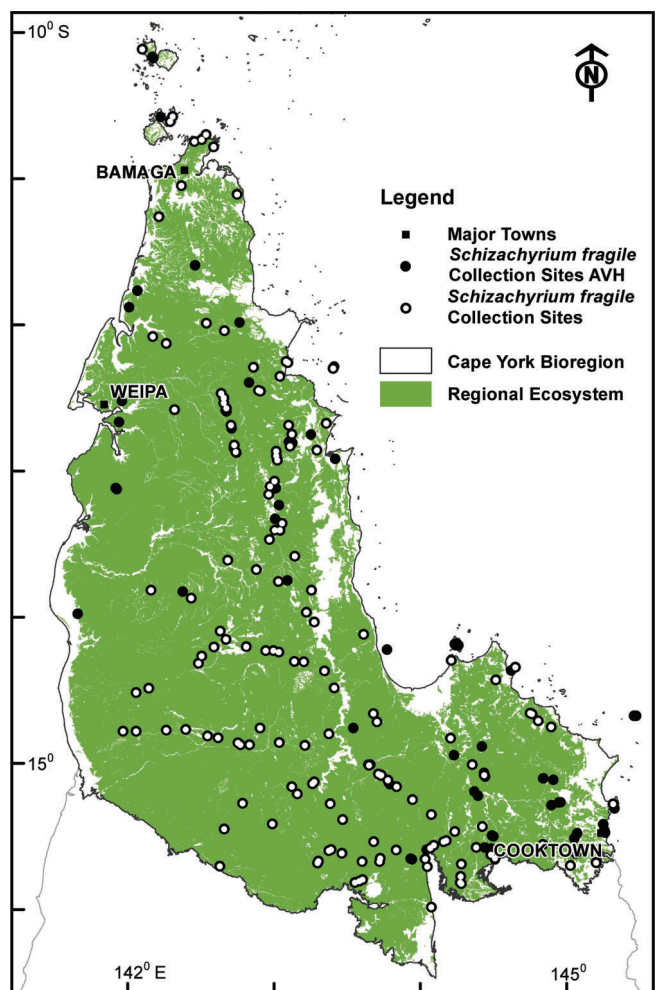


Fig 14. Map of CYP bioregion showing actual herbarium collections (from BRI and CNS) (solid circle) and site records (open circle) of *Schizachyrium fragile*. The green shading indicates areas where this species might also be found, based on similarity of habitat to locations where the species has been recorded. (Mapping supplied by P. Bannink, DES). Data attribution: Environment and Science, Queensland Government, Biodiversity status of pre-clearing and 2015 remnant regional ecosystems series - version 10.0 licensed under Creative Commons Attribution.

RESOURCES:

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This project is supported by the Queensland Government Department of Natural Resources and Mines through the Queensland Regional Natural Resource Management Investment Program