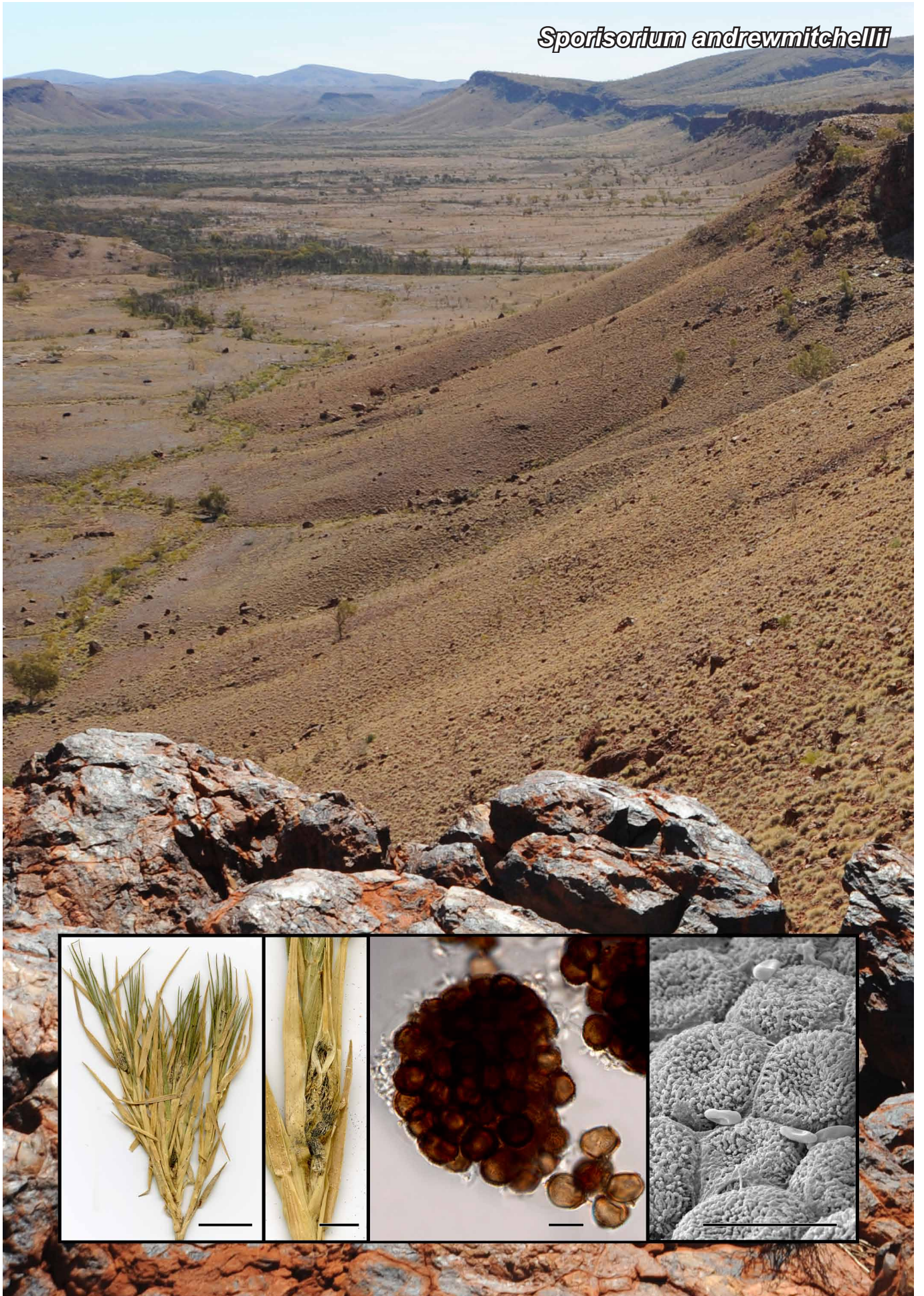


*Sporisorium andrewmitchellii*



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**Sporisorium andrewmitchellii** R.G. Shivas, McTaggart & Vánky, *sp. nov.*

*Etymology.* Named after Andrew Arthur Mitchell (1949–), a botanist and friend, who has collected many rare and unusual smut fungi on grasses and sedges in Australia.

*Sori* on the top of sterile shoots destroying the basal part of the uppermost, congested leaves, swollen, narrow ovoid or fusiform, 10–20 × 2–6 mm, partly hidden by intact leaf sheaths, covered by a yellowish peridium of host and fungal origin, at maturity revealing numerous (20 or more) filiform columellae intermixed with black spore balls. Infection systemic, all shoots on an infected plant affected. *Spore balls* variable in shape and size, subglobose, ovoid, ellipsoidal or irregular, 40–210 × 30–140 µm, opaque, composed of tens or hundreds of agglutinated spores which separate only by hard pressure. *Spores* subglobose, ellipsoidal to subpolyhedrally irregular, 9–13.5 × 8–12 µm, yellowish brown; wall slightly uneven, 0.5–1(–1.5) µm thick, finely and densely verruculose, spore profile of the outermost spores finely, densely subechinulate; inner spores lighter, wall thinner, densely punctate, profile smooth. *Sterile cells* of the peridium in chains, single cells variable, globoid, elongated, subpolyangularly irregular, 6–16 µm long, hyaline; wall even, thin, c. 0.5 µm thick, smooth.

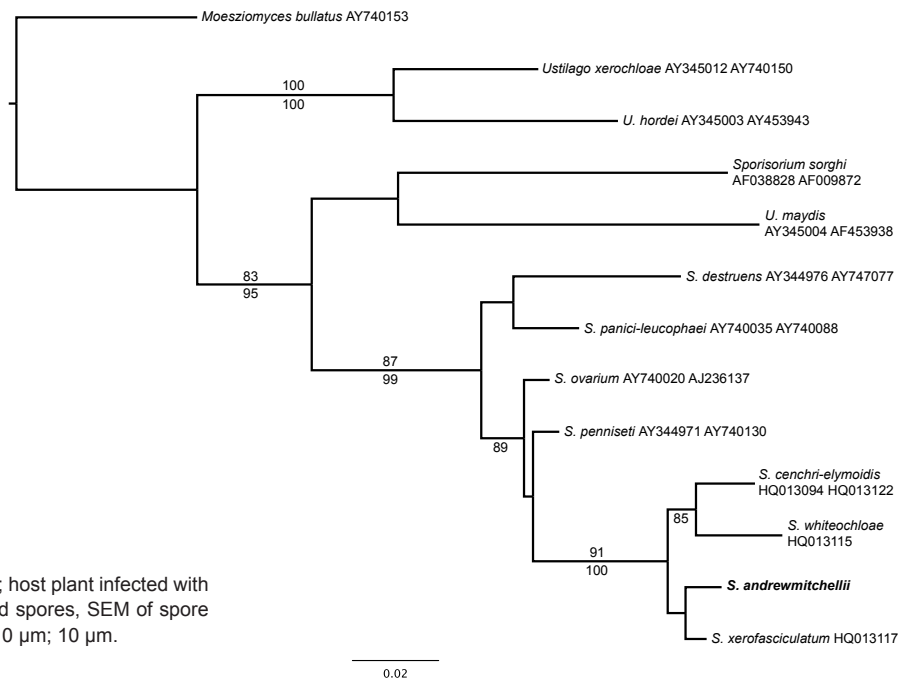
On *Poaceae*: *Enneapogon* aff. *lindleyanus*. Known only from the type collection.

*Typus.* AUSTRALIA, Western Australia, Central Hamersley Ranges, S22°43' 20.0", E119°19'37.0", on *Enneapogon* aff. *lindleyanus*, 1 July 2011, A.A. Mitchell & B. Matthews, holotype BRIP 54879, isotype PERTH, HUV 21.982, ITS sequence GenBank JQ995369 and LSU sequence GenBank JQ995370, MycoBank MB800262.

*Notes* — Six smut fungi are known on grasses in the tribe *Pappophoreae* of the subfam. *Chloridoideae*, i.e. on *Enneapogon*, *Pappophorum*, and *Schmidtia*. These are, *Sporisorium modestum*, *Ustilago austroafricana*, *U. enneapogonis*, *U. pappophori*, *U. schlechteri*, and *U. schmidtiae* (Vánky 2012). A key to the smut fungi of the tribe *Pappophoreae* follows.

1. Sori in basal part of the uppermost, congested, swollen leaf sheaths and leaves . . . . . 2
1. Sori in the flowers, ovaries or in the whole inflorescence 3
2. Spores single, sparsely echinulate; columellae absent . . . . . *U. schlechteri*
2. Spores in balls, densely verruculose; columellae present . . . . . *S. andrewmitchellii*
3. Sori in whole inflorescence . . . . . 4
3. Sori in the flowers or ovaries of an inflorescence . . . . . 5
4. Sori only in the inflorescence; spores 10.5–13.5(–14.5) µm long . . . . . *U. enneapogonis*
4. Sori also in the basal part of the uppermost leaves; spores 9.5–12 µm long . . . . . *U. pappophori*
5. Sori in flowers . . . . . 6
5. Sori in some ovaries; spores 9–12 µm long *U. schmidtiae*
6. Sori in all flowers; columellae and sterile cells present; spores 11–14 µm long . . . . . *S. modestum*
6. Sori in some flowers; columellae and sterile cells absent; spores 6.5–9(–10) µm long . . . . . *U. austroafricana*

A BLASTn search of the ITS region of *Sporisorium andrewmitchellii* had high identity to species of *Sporisorium* with filiform columellae, spore balls, a host derived peridium and with hosts in the tribe *Paniceae*; namely *S. xerofasciculatum* (GenBank HQ013117; 97 % identical over 99 % query coverage), *S. cenchrī-elymoidis* (GenBank HQ013094; 95 % identical over 98 % query coverage), and *S. whiteochloae* (GenBank HQ013115; 94 % identical over 100 % query coverage). A combined maximum likelihood analysis of the ITS and LSU regions of *S. andrewmitchellii* and closely related taxa from GenBank recovered identical topologies in RAXML v. 7.2.8 and PhyML 3.0. Bootstrap values from a ML search in RAXML are shown above the nodes and aRLT values from a search in PhyML are shown below the nodes.



*Colour illustrations.* Central Hamersley Ranges; host plant infected with *Sporisorium andrewmitchellii*; sorus, spore ball and spores, SEM of spore surface. Scale bars (left to right) = 2 cm; 0.5 mm; 10 µm; 10 µm.

Roger G. Shivas & Alistair R. McTaggart, Plant Biosecurity Science, Ecosciences Precinct, Dutton Park 4102, Queensland, Australia; e-mail: roger.shivas@deedi.qld.gov.au & Alistair.McTaggart@deedi.qld.gov.au  
 Kálmán Vánky, Herbarium Ustilaginales Vánky (HUV), Gabriel-Biel-Str. 5, D-72076 Tübingen, Germany; e-mail: VANKY.K@cityinfonetz.de