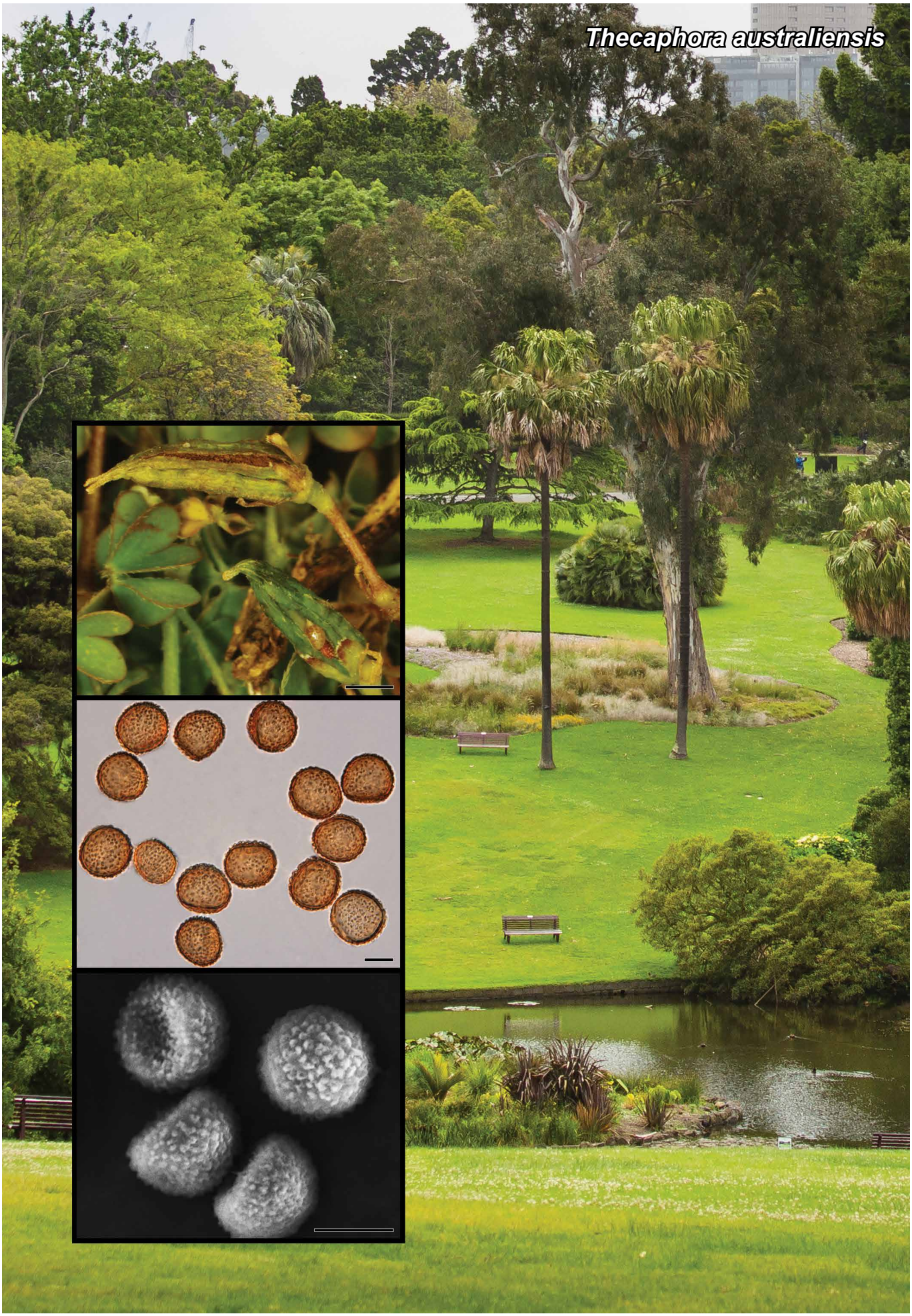
Thecaphora australiensis

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Thecaphora australiensis Stajsic, Y.P. Tan & R.G. Shivas, *sp. nov.*

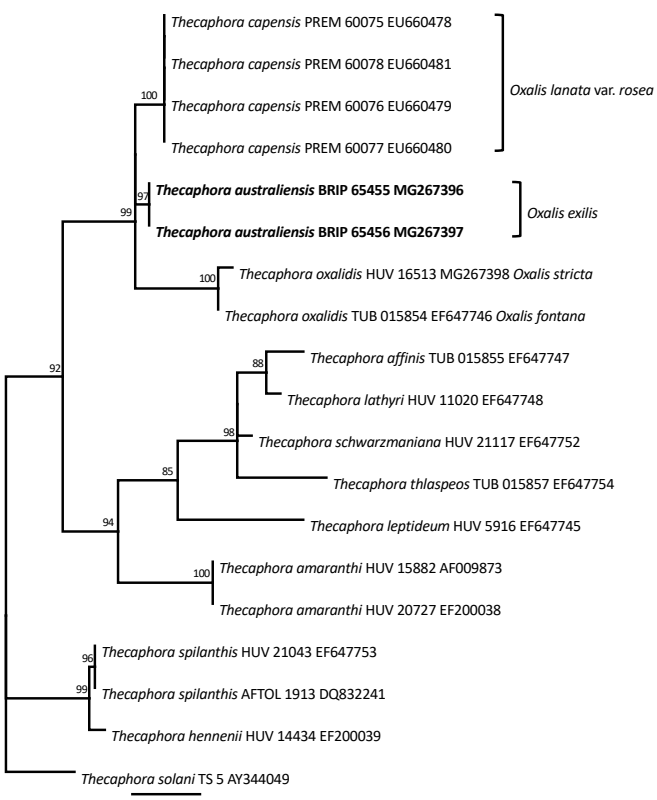
Etymology. Name refers to the country from where this fungus was collected, Australia.

Classification — *Glomosporiaceae*, *Ustilaginales*, *Ustilaginomycetes*.

Sori in all or most capsules on an infected plant, infected capsules slightly swollen and all of the seeds are replaced by a powdery, cinnamon-brown spore mass. *Spores* solitary when mature, subglobose to broadly ellipsoid, 14–26 × 14–19 µm, pale to medium yellowish brown; wall even, 1–2 µm thick including surface ornamentation, densely verruculose, warts c. 1 µm high. *Asexual morph* not seen.

Typus. Australia, Victoria, Beaumaris, Melbourne, Balcombe Road, north side of road, at intersection with Balcombe Park Lane, S37°58'37.7" E145°01'51.7", alt. 27 m, in capsules of a variant of *Oxalis exilis* (*Oxalidaceae*), 7 Feb. 2017, *V. Stajsic 8369* (holotype BRIP 65455, LSU sequence GenBank MG267396, MycoBank MB822652; isotype MEL 2406589A).

Additional material examined. Australia, Victoria, Melbourne, Royal Botanic Gardens, lawn near the National Herbarium of Victoria building, alt. 30 m, in capsules of a variant of *Oxalis exilis*, 10 Feb. 2017, *V. Stajsic 8379*, BRIP 65456, MEL 2406590A, LSU sequence GenBank MG267397; Beaumaris, Fairleigh Avenue, 20 Apr. 2017, *V. Stajsic 8513*, MEL 2417667A.



Colour illustrations. Gardens of the Royal Botanic Gardens Victoria (photo credit Adrian Vittorio); infected capsule of *Oxalis exilis*; spores. Scale bars = 1 mm (infected capsule), 10 µm (spores).

Notes — The smut genus *Thecaphora* contains approximately 60 species, which infect hosts in 16 eudicot families (Vánky 2011). Four species have been found in Australia, two of which are endemic, none of which occur on *Oxalis* (Vánky & Shivas 2008). Only two species, *Thecaphora oxalidis* and *T. capensis*, are known to infect *Oxalis*. *Thecaphora oxalidis* occurs on *Oxalis corniculata*, *O. dillenii*, *O. fontana* and *O. stricta* (all in sect. *Corniculatae*) and *O. laxa* (sect. *Alpinae*) in Asia, Europe, North and South America (Vánky et al. 2008). The second species, *T. capensis* is only known on *O. lanata* f. var. *rosea* (sect. *Oppositae*) from the type locality in South Africa (Salter 1944, Roets et al. 2008). *Thecaphora australiensis* is the only smut fungus known to occur on *Oxalis* in Australia. *Thecaphora australiensis* is morphologically very similar to *T. oxalidis*, but it has longer spores than those of *T. oxalidis*, which are 12–17 × 13.5–21(–24) µm (Vánky 2011). Phylogenetic analyses of the LSU sequences show that it clusters with *T. oxalidis* and *T. capensis*. *Thecaphora australiensis* infects a variant of *Oxalis exilis* (sect. *Corniculatae*), a species which is indigenous to Australia, New Caledonia and New Zealand. This variant occurs mainly in lawns, nature-strips, gardens, edges of paths, parkland and ditches. The origin status of this form of *O. exilis* is uncertain. The discovery of a novel *Thecaphora* species on this variant of *O. exilis* lends support to the likelihood that the host may be indigenous to Australia. An examination of all the Australian-collected specimens from *Oxalis* sect. *Corniculatae* held at MEL did not yield any specimens with *T. australiensis*.

A maximum likelihood tree of *Thecaphora* based on an alignment of LSU sequences. Analyses were performed using RAxML v. 7.2 (Stamatakis & Alachiotis 2010) on the Geneious v. 9.1.8 platform (Biomatters Ltd.) based on the GTR substitution model with gamma-distribution rate variation. In the tree, branch lengths are proportional to distance. Bootstrap support values ≥ 70 % are indicated on the nodes. *Thecaphora solani* TS5 was used as outgroup. The *Oxalis* hosts are indicated after the *Thecaphora* spp. names. The new species proposed in this study is indicated in **bold**.

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