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First record of *Prospodium appendiculatum* on *Tecoma stans* in Thailand

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Abstract The rust *Prospodium appendiculatum* was collected on *Tecoma stans*, commonly called yellow bells or yellow trumpet bush, from northeastern Thailand. The identification was based on the morphology of uredinial and telial stages. This is the first report of this rust fungus in Thailand where *T. stans* is often cultivated as an ornamental.

Keywords Bignoniaceae · Environmental weed · Teliospores · Urediniospores

Tecoma stans (Bignoniaceae), commonly called yellow bells or yellow trumpet bush, is a flowering perennial shrub or small tree that is native to tropical America, extending from the southern USA to Argentina (Mabberley 2008). It is a common ornamental plant in Thailand and many parts of the world, although it is an invasive weed in parts of South America, Africa, Australia and the Pacific Islands (Swarbrick 1997; Henderson 2001). *Tecoma stans* has become an invasive weed in South Africa where the rust, *Prospodium transformans*, was released as a biological control agent in 2010 (Madire et al. 2011). In Jan. 2011, leaves of *T. stans* infected with rust were collected from a garden in Rai Suwan, Nakhon Ratchasima Province, Thailand.

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Dried herbarium specimens of *T. stans* infected with rust were deposited in the Plant Pathology Mycological Herbarium, Department of Agriculture, Thailand (TTPH) as TTPH 002450. Specimens were prepared for microscopic observation by placing freehand sections of sori or scrape mounts of spores in lactic acid on microscope slides that were gently heated. The sections were examined with an Olympus BX60 and images taken with a Nikon DS-Fi1 camera.

Rust infected leaves showed faint chlorotic spots on the upper surface that corresponded to minute brown uredinia and telia on the lower surface. Uredinia were hypophyllous, subepidermal, erumpent, pulverulent, about 100 μm diam., pale cinnamon-brown, with peripheral incurved short hyaline paraphyses, 28–40 μm long; urediniospores were 22–27 μm [av.=25.2, SD=1.5, n=10] x 17–25 μm [av.=17.8, SD=5.3, n=10], outer wall 3–5 μm thick. Telia similar to uredinia, except blackish brown, sometimes developing in the uredinia, about 100 μm diam.; teliospores 43–49 μm [av.=45.4, SD=1.8, n=10] x 26–32 μm [av.=26.1, SD=8.1, n=10], oblong to ellipsoid, slightly constricted at septum, wall at sides 3.2–5.5 μm thick, 5–7 μm thick over pores, chestnut-brown, echinulate with spines spaced 5–6 μm, pores apical in upper cell, next to pedicel in lower cell, each with a paler umbo; pedicel hyaline, thin-walled, mostly 60–90 μm long, with four or five conspicuous whorls of appendages with less-developed appendages below (Fig. 1).

The presence of two-celled teliospores with appendaged pedicels indicated the rust was a species of *Prospodium*. *Prospodium* is a neotropical genus of rust fungi containing about 70 species (Carvalho and Hennen 2010) that predominantly infect hosts in the Bignoniaceae (Cummins 1940; Hennen and Sotão 1996). A key for the six known species of *Prospodium* on *Tecoma* (Carvalho and Hennen 2010) showed that the rust was *P. appendiculatum* (Arthur 1907), further supported by descriptions in Cummins (1940),

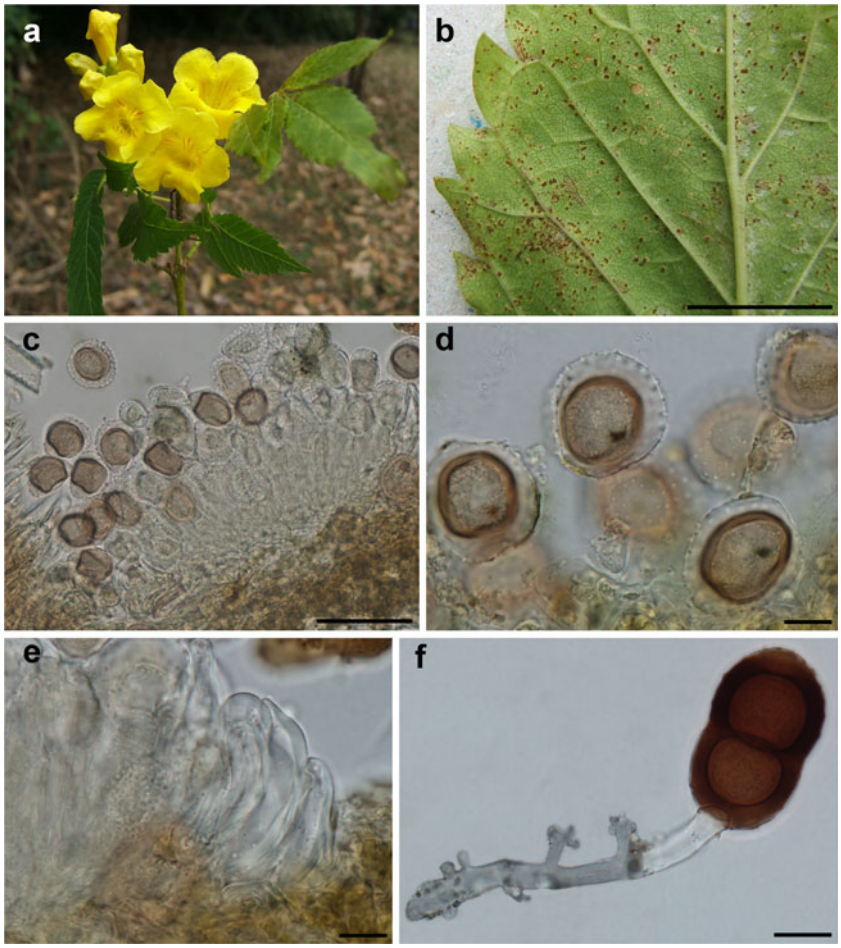

Fig. 1 *Prospodium appendiculatum*. (**a**) Host *Tecoma stans* in flower, (**b**) Uredinia and telia on the lower surface of leaf (bar=1 mm), (**c**) Urediniun in section (bar= 10 μm), (**d**) Urediniospores (bar=10 μm), (**e**) Paraphyses (bar=10 μm), (**f**) Teliospore (bar=10 μm)

Hernández and Hennen (2003) and Hennen et al. (2005). *Prospodium appendiculatum* has bilaminate urediniospore walls and teliospore pedicels with three or more appendages, which differentiates it from the other species (*P. abortivum*, *P. aculeatum*, *P. elegans*, *P. mexicanum*, *P. transformans*) that occur on *Tecoma* (Carvalho and Hennen 2010). *Prospodium appendiculatum* has been reported on *T. stans* in several American countries, from southern USA to Argentina (Hennen et al. 2005).

The Thai specimen lacked spermogonia and aecia, which are often found on leaves and on stem and fruit galls (Hernández and Hennen 2003). This specimen from Thailand appears to be the first record of this rust in Asia.

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