Placidiopsis parva (lichened Ascomycota, Verrucariaceae), a new species from siliceous rocks in the Australian Capital Territory

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Abstract
Placidiopsis parva P.M.McCarty (Verrucariaceae) is described from siliceous rocks in the Australian Capital Territory. It is characterized by a blackish, corticate, microsquamulose thallus, a concolorous, hyphal hypothallus, very small but prominent, simple perithecia (0.07–0.12) mm diam., and 1-septate ascosporae measuring (13–)17–21 × (5.5–)7–(8.5) µm.

Introduction
Placidiopsis Beltr., a predominantly Northern Hemisphere genus of 14 species, is known from soil and rock at temperate to boreal latitudes and in arid and semi-arid regions (Breuss 1996; Prieto et al. 2010a). Closely related to Cataprycénium Flotow, it is characterized by the combination of a small- to minutely squamulose thallus attached by loose rhizohyphae or a more prominent hypothallus, verrucarioid perithecia (with or without an involucrum, and lacking paraphyses but with periphyses) and 1-septate ascospores (Breuss 1996; Prieto et al. 2010a, b).

In this paper, a new species of Placidiopsis is documented from siliceous rocks in the A.C.T., the genus itself being reported for the first time from Australia.

Methods
Observations and measurements of thallus and ascomatal anatomy, ascus and ascospore were made on hand-cut sections mounted in water and dilute KOH (K). Asci were also observed in Lugol’s Iodine (I), with and without pretreatment in K.

Placidiopsis parva P.M.McCarty, sp. nov. Fig. 1

MycoBank No.: MB 830821

Similar to P. hypothallina Aptroot in having a dark, microsquamulose thallus on a hypothallus of blackish hyphae, and diminutive perithecia, but differs in having superficial rather than perithecia and comparatively large ascospores. Thus, comparing it with other species of Placidiopsis Placidiopsis, the Brazilian P. porinoides Aptroot from China (Aptroot & Seaward 1999) has immersed perithecia up to 0.1 mm in diameter and ascospores 8–13 µm long, while P. minor R.C.Harris, from eastern U.S.A. and Greenland, has a pruinose thallus and ascospores of 8–10 × 4–5 µm (Harris 1979; Alstrup 1991; Breuss 1996). Furthermore, P. cavicola Servit from Spain and P. cavicola Elix & Brito from Spain have perithecia of broadly similar size to the Australian lichen, the former having perithecia with an apical involucrum (Servit 1953; Clauzade & Roux 1985), while P. cavicola has a hyaline exculpum and ascospores of 13–17 × 6–7 µm (Etayo & Breuss 1994).

Incidentally, when describing the pseudosquamulose Thelidium robustum P.M.McCarty & Kantvilas from limestone in South Australia, the authors speculated that the lichen might actually be referable to Placidiopsis, given the combination of thallus morphology, simple perithecia and 1-septate ascospores (McCarthy & Kantvilas 2016). However, the outwardly squamulose morphology of T. robustum at maturity is derived from crustose thallus initials, and the medulla and algal layer are impregnated with minute rock fragments and crystals, a feature typical of hemimelidic Verrucariaceae (such as Thelidium) and not of taxa in which squamules develop on the substratum (e.g. Placidiopsis).

The new species is known from comparatively soft to much harder siliceous rocks in dry Eucalyptus woodland in the Australian Capital Territory. It appears to be a primary colonizer of freshly exposed surfaces, later forming part of a diverse lichen community that can include various Caloplaca and Xanthoparmelia species, Acarospora citrina (Taylor) Zahlbr. ex Rech., Aspicilia spp., Buellia amandinaformis Elix & Kantvilas, B. santonensis Elix & A.Knight, Candelariella vitellina (Hoffm.) Müll.Arg., Diplochistes eugeneus (A.Massal.) J.Stener, D. sticticus (Körb.) Müll.Arg., Lecanora pseudistera Nyl., Lecidea terrae Nyl., Lepra erubescentis (Hook. & Taylor) A.W.Anderson & Elix, Monerolechia badia (Fr.) Kalb, Myriogramma naviculata (Wahlenb.) Nägeli ex Uolt, Pertusaria liochora Körb., Rhizocarpon geographicum (L.) DC., R. reductum Th.Fr., Trapelia coarctata (Sm.) M.Choisy and Verrucaria aff. nigrescens Pers.

ADDITIONAL SPECIMENS EXAMINED
Australian Capital Territory: Woodstock Nature Reserve, Shepherds Lookout Walk, 20 km WNW of Canberra, 35°14′34″S, 148°58′38″E, 555 m alt., on porphyry rocks in open

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Eucalyptus-Callitris woodland, P.M. McCarthy 4778, 4797, 5.xii.2018 (CANB); • loc. id., P.M. McCarthy 4809, 4810, 17.vii.2018 (CANB); • Mount Ainslie, Canberra, W-facing slope below summit, 35°16’10”S, 149°09’32”E, 846 m alt., on siliceous rock outcrop in dry Eucalyptus woodland, P.M. McCarthy 4812, 4815, 4818, 4819, 2.1.2019 (CANB); • Mount Ainslie, Canberra, E-facing slope below summit, 35°15’59”S, 149°09’43”E, 780 m alt., on siliceous rock outcrop in dry Eucalyptus woodland, P.M. McCarthy 4821, 4823, 2.1.2019 (CANB); • Kowen Road, Kowen Forest, 11.7 km E of Canberra, 35°15’59”S, 149°15’07”E, 700 m alt., on sandstone outcrops on old road bank bordering dry Eucalyptus woodland, P.M. McCarthy 4829, 4838, 4839, 4842, 9.1.2019 (CANB).

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Figure 1. Placidiopsis parva (holotype). A, Habit of fertile thallus, the squamules linked by dark hypothalline hyphae; B, Vertical section of an ascoma (semi-schematic); C, Immature (left) and mature ascii; D, Ascospores; E, Hypothalline hyphae. Scales: A = 0.5 mm; B = 0.1 mm; C, D = 20 µm, E = 10 µm.