

***Melaleuca parvistaminea* (Myrtaceae) in South Africa: invasion risk and feasibility of eradication**

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Summary We document and assess management options for the first reported invasion of *Melaleuca parvistaminea* Byrnes (initially misidentified as *M. ericifolia* Sm.) anywhere in the world. Delimitation surveys so far indicate that the entire invasion is restricted to three sites between Tulbagh and Wolseley and populations are only associated with plantations (past or present). To estimate abundance, we surveyed 42% of the three and found ~26,000 plants over 1800 ha (condensed canopy area of 1.15 ha). At least 63% of recorded plants were seedlings or juveniles, mostly less than four years old, and most occur in seasonally inundated (but not waterlogged) habitats. *Melaleuca parvistaminea* creates monospecific stands that overtop the native shrubland vegetation (Breedee Shale Renosterveld) and is thus considered a potential transformer species. Species distribution modelling also revealed large areas of climatically suitable habitat in the Western Cape, pointing to substantial

invasion debt in South Africa. Cutting and fire trigger seed release from serotinous capsules, causing prolific recruitment after winter rains (up to ~18,000 seedlings m⁻²). Although the extent of invasion is large (potentially 9185 ha), eradication is considered achievable and desirable, since seeds are viable for about a year, seedlings achieve maturity after four years, and because the species is an obligate reseeder. We estimate that search and destroy operations could eradicate the species by 2021 at a cost of AUD 352,000. There are several other invasive melaleucas in South Africa and we therefore suggest further research focusing on a detailed assessment of dry-fruited Myrtaceae: assessing the factors that determine success at each stage of invasion at a global scale; evaluating which species are present in South Africa and the pathways these are associated with; and exploring the mechanisms underlying invasiveness in the ornamental genera *Melaleuca* and *Callistemon*.