Is South African bitou bush (*Chrysanthemoides monilifera* ssp. *rotundata*) allelopathic in Australia?

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Summary Understanding the mechanisms driving the success of exotic species can facilitate the amelioration of threats to biodiversity, assist restoration efforts and contribute to a wider knowledge of ecosystem dynamics. With regard to plants, the direct interference between, and in some cases replacement of individuals can occur through either competition for resources or allelopathy. To date, research has shown that competition for resources may partially explain the success of bitou bush. However despite substantial anecdotal evidence the allelopathic potential has not received adequate scientific attention. Therefore, the aim of this study was to investigate whether bitou bush produced and released phytotoxins which affected the regeneration of native plants, and hence promoted the formation of bitou bush monocultures. The roots, shoots, stem, and soil of bitou bush plants of various ages were analysed to identify areas of possible allelopathic activity. Activity was identified through bioassays of germination, and seedling root and shoot growth of native species and a commonly used test species lettuce (*Lactuca sativa*). Extracts of the mature bitou bush root and shoot were found to most significantly inhibit the germination of the test species and a range of coastal native flora. Extracts of all plant parts affected root growth, and more significantly shoot growth. Increasing concentrations (1–10%) of the extracts elicited a corresponding increase in the bioassay response, hence demonstrating clear evidence for allelopathy between bitou bush and Australian native flora. Future research will attempt to identify specific bitou bush allelochemicals, their field presence and ways of minimising their effect.

Keywords Bitou bush, *Chrysanthemoides monilifera* ssp. *rotundata*, invasive species, weeds, allelopathy, interspecific interference.