

Emilie-Jane ENS, Kristine FRENCH

Institute of Conservation Biology, University of Wollongong, Australia



A CRUMBLING HEALTH SYSTEM: EXOTIC BITOU BUSH AFFECTS THE FITNESS AND HEALTH OF AUSTRALIAN COASTAL FLORA

During the 1960s and 1970s, *Chrysanthemoides monilifera* (L.) spp. *rotundata* (DC.) Norl. (South African bitou bush) was extensively planted on the east coast of Australia for dune stabilization following sand mining. Subsequently, bitou bush has naturalized and spread beyond initial plantings and into native ecosystems. This study sought to determine whether the health, fitness and survival strategies of a range of indigenous flora differed in bitou bush invaded sites compared to the relatively native condition. Number of inflorescences was employed as a surrogate of fitness. Plant health was analyzed by measurements of chlorophyll fluorescence. The ratio of reproductive buds to vegetative buds (output ratio) was adopted as an indicator of survival strategy based on the r-K selection continuum. Results suggested that species differed in their response to the pressure imposed by exotic species dominance. Lower fitness, health and a shift in *Monotoca elliptica* (medium sized Epacridaceous tree) survival strategy towards K-selection was indicated by a significantly lower output ratio and reproductive output. A shift towards persistence rather than reproduction and poorer health was also demonstrated by the shrub *Correa alba* (Rutaceae). Interestingly, bitou bush did not seem to affect the fitness, health or survival strategy of *Lomandra longifolia* (Lomandraceae). Therefore, the invasion of bitou bush has differential impacts on the survival and sustainability of different species. The decrease in health and shift in survival strategies found in two of the three species studied suggests that bitou bush poses a significant threat to the sustainability of coastal ecosystems. In these cases, more resources are likely to be directed to persistence of the mature individuals rather than promoting the development of seedbanks. Hence, the invasion of bitou bush is likely to have long-term impacts on the structure of these communities.

keywords: Bitou Bush, Australia, fitness, plant strategies, impact