

Identifying barriers to effective management of widespread invasive alien trees: *Prosopis* species (mesquite) in South Africa as a case study

Ross T. Shackleton^{a,*}, David C. Le Maitre^b, Brian W. van Wilgen^a, David M. Richardson^a

^a Centre for Invasion Biology, Department of Botany and Zoology, Stellenbosch University, Matieland 7602, South Africa

^b Centre for Invasion Biology, Natural Resources and the Environment, CSIR, P.O. Box 320, Stellenbosch 7599, South Africa

Abstract

Biological invasions are a major driver of ecological and social change globally. The negative effects of these invasions have led to the initiation of programs to manage these invasions across the world. Management aims to reduce impacts and in some cases improve the benefits that some invasive species can provide. This study assesses the barriers that hinder the effective management of widespread tree invasions, drawing insights from a case study of invasions of *Prosopis* species (mesquite) in South Africa. We used questionnaire surveys and focused workshops to identify barriers and adaptation responses in four key stakeholder groups involved in different stages of management. More than 100 barriers were identified, most of them relating to social issues. Key barriers related to limited knowledge, insufficient funds, conflicts of interest, the ecology of the genus and the nature of the invaded land, as well as poor planning, co-ordination and co-operation, and a lack of prioritisation. There were marked differences in how stakeholders perceived the importance of some barriers. Most Farmers (>80%) placed high importance on a lack of planning, and poor management as important barriers, while few Managers (<20%) regarded these as important; this reflects different views about the context in which management projects operate. Workshops identified more barriers and, overall, provided greater insights into the dimensions of barriers. The questionnaires were, however, useful for providing quantitative data which helped to rank the importance of barriers amongst stakeholders. Although adaptation responses were identified, not all barriers are conducive to simple solutions. Among the most intractable barriers were the lack of adequate funds and factors relating to the ecology of *Prosopis* species. Problems such as adopting new clearing methods and strategic planning need to be overcome to improve the effectiveness of control with the available funds.