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Background

Thousands of tree species have been moved around the world by humans in the past few centuries, and hundreds of these are now invasive in different parts of the world. Our understanding of what makes some species invasive is imperfect and much more work is needed to develop tools for the accurate screening of invasiveness in different groups. Recent research has resulted in major advances in understanding of the invasion ecology of key tree genera such as *Acacia*, *Eucalyptus*, *Pinus* and *Prosopis*. Information from this research has already been useful for management.

Much less work has been done on the ecology of fleshy-fruited invasive tree species in South Africa, several species of which are important invaders. Following on the approach taken in previous work on tree invasions, the plan is to identify other key groups for detailed study. One group with many species that are widely planted outside their native ranges and for which increasing problems with invasiveness are emerging is the group of fleshy-fruited species in the family Myrtaceae.

At least seven genera of fleshy-fruited Myrtaceae feature in the global list of invasive trees and shrubs: *Eugenia* (*E. brasiliensis*, *E. uniflora*); *Pimenta* (*P. dioica*); *Psidium* (*P. cattleianum*, *P. guajava*, *P. guineense*, and hybrids of last mentioned); *Rhodomyrtus* (*R. tomentosa*); *Syzygium* (*S. australe*, *S. cumini*, *S. jambos*, *S. malaccense*, *S. paniculatum*); *Ugni* (*U. molinae*) and *Waterhousea* (*W. floribunda*).

The proposed study will involve the following aspects:

- A review of the ecology of fleshy-fruited species in the family Myrtaceae;
- A global review of the movement of species in the group around the world, evidence for naturalization and invasiveness and impacts in invaded ecosystems, and control efforts;
- Detailed studies of the invasion ecology of selected species in South Africa (*Syzygium paniculatum* is a strong candidate for such a study);
- Development of a synthesis of the distribution of species in this group in South Africa and a strategy for their integrated management (including a framework for assessing the risk of invasiveness in the group).

Good opportunities exist for applying molecular techniques to explore facets of the ecology of selected taxa.

Key contacts

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Further Reading

Milton, S.J., Wilson, J.R.U., Richardson, D.M., Seymour, C.L., Dean, W.R.J., Iponga, D.M. & Procheş, Ş. (2007). Invasive alien plants infiltrate bird-mediated shrub nucleation processes in arid savanna. *Journal of Ecology* 95: 648-661.

Rejmánek, M. & Richardson, D.M. (2013). Trees and shrubs as invasive alien species – 2013 update of the global database. *Diversity and Distributions* 19: 1093-1094.

Richardson, D.M. & Rejmánek, M. (2011) Trees and shrubs as invasive alien species – a global review. *Diversity and Distributions* 17: 788-809.