

SANBI Team Member: John Wilson / Thulisile Jaca

Main University Supervisor: John Wilson

Location: Stellenbosch University

Level of project: MSc / PhD

Working title: Where are they now? Developing a protocol for declaring alien species absent from South Africa

Background

Lists of alien species should ideally be based on field observations with a physical specimen that is curated in a collection and whose identity has been confirmed both morphologically and through molecular methods (Magona et al. 2018). However, this is often not achieved, and there are numerous errors in such lists—the presence of an alien species on a list does not guarantee it is present in the country (McGeoch et al. 2012). Such errors can inflate species numbers, create confusion, and lead to wasted management effort. But if a species were removed from a list prematurely (e.g. as it is simply not widespread enough to be readily detected), declaring it absent would mean the opportunity for nation-wide eradication is lost (Wilson et al. 2017). Therefore a clear protocol for declaring a species absent is needed.

This project seeks both to address a practical issue, and look into the mechanisms behind alien species introduction dynamics. Was there simply a taxonomic mistake (see Pyšek et al. 2013)? Was the species present but due to changes in the population dynamics or environmental context populations have disappeared (Mabin et al. 2015; Simberloff & Gibbons 2004)? Or might efforts at detection be insufficient (Wilson et al. 2017)? The project will involve both developing the overall logic and protocols and working with colleagues on various current field examples.

Key contacts

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Further Reading

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- Mabin, C. A., Wilson, J. R. U. & Robinson, T. B. (2015) The Chilean black urchin, *Tetrapyrgus niger* (Molina, 1782) in South Africa: gone but not forgotten. *BioInvasions Records*, **4**, 261–264.
- Magona, N., Richardson, D. M., Le Roux, J. J., Kritzing-Klopper, S. & Wilson, J. R. U. (2018) Even well-studied groups of alien species might be poorly inventoried: Australian *Acacia* species in South Africa as a case study. *NeoBiota*, **39**, 1–29.
- McGeoch, M. A., Spear, D., Kleynhans, E. J. & Marais, E. (2012) Uncertainty in invasive alien species listing. *Ecological Applications*, **22**, 959–971.
- Simberloff, D. & Gibbons, L. (2004) Now you see them, now you don't - population crashes of established introduced species. *Biological Invasions*, **6**, 161-172.
- Pyšek, P., Hulme, P. E., Meyerson, L. A., Smith, G. F., Boatwright, J. S., Crouch, N. R., . . . Wilson, J. R. U. (2013) Hitting the right target: taxonomic challenges for, and of, plant invasions. *AoB Plants*, **5**, plt042, doi:10.1093/aobpla/plt042.
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