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Region: Stellenbosch
Level of project: MSc / PhD
Working title: Do alien species lead to extinctions?

Background

Biological invasions are frequently cited as one of the leading causes of global change and one of the greatest threats to biodiversity. However, defining and calculating the impact of biological invasions in ways that can feed into policy and management has been challenging. This has led to heated debates about the impact of invasive species on extinction rates (Hulme *et al.* 2015; Thomas & Palmer 2015).

The science and processes behind scoring the impacts of biological invasions have been developing rapidly recently (Blackburn *et al.* 2014) in particular through the IUCN Environmental Impact Classification of Alien Taxa (EICAT Scheme, <https://www.iucn.org/theme/species/our-work/invasive-species/eicat>). Similarly, the use of the IUCN Red List has been proposed as an indicator for assessing biodiversity (Butchart 2008).

The aim of this project would be to compare how taxa are listed under EICAT versus the Red List Indices, and develop a conceptual frame-work linking the impact of individual alien species to the conservation status of individual native species. This will provide the necessary processes to be able to track the impact of invasions through time, and how successful interventions are in leading to conservation outcomes. The specific case studies are still to be finalised, but might include invasive and native plants and native amphibians.

Key contacts

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Further Reading

- Blackburn, T.M., Essl, F., Evans, T., Hulme, P.E., Jeschke, J.M., Kühn, I., Kumschick, S., Marková, Z., Mrugała, A., Nentwig, W., Pergl, J., Pyšek, P., Rabitsch, W., Ricciardi, A., Richardson, D.M., Sendek, A., Vilá, M., Wilson, J.R.U., Winter, M., Genovesi, P. & Bacher, S. (2014) A unified classification of alien species based on the magnitude of their environmental impacts. *Plos Biology*, **12**, e1001850, doi:1001810.1001371/journal.pbio.1001850.
- Butchart, S.H.M. (2008) Red List Indices to measure the sustainability of species use and impacts of invasive alien species. *Bird Conservation International*, **18**, S245-S262.
- Hulme, P.E., Pauchard, A., Pysek, P., Vila, M., Alba, C., Blackburn, T.M., Bullock, J.M., Chytrý, M., Dawson, W., Dunn, A.M., Essl, F., Genovesi, P., Maskell, L.C., Meyerson, L.A., Nunez, M.A., Pergl, J., Pescott, O.L., Pocock, M.J.O., Richardson, D.M., Roy, H.E., Smart, S.M., Stajero, K., Stohlgren, T., van Kleunen, M. & Winter, M. (2015) Challenging the view that invasive non-native plants are not a significant threat to the floristic diversity of Great Britain. *Proceedings of the National Academy of Sciences of the United States of America*, **112**, E2988-E2989.
- Thomas, C.D. & Palmer, G. (2015) Non-native plants add to the British flora without negative consequences for native diversity. *Proceedings of the National Academy of Sciences of the United States of America*, **112**, 4387-4392.