SANBI Team Member: John Wilson
Main University Supervisor: Sabrina Kumschick
Location: Centre for Invasion Biology, Stellenbosch University (www.sun.ac.za/cib)
Level of project: Postdoc
Working title: Developing and testing tools for analysing risks of biological invasions

Background

There have been major developments recently towards an international standard system for reporting the impacts of biological invasions, but these are yet to be implemented or integrated with risk analyses. We are looking for a productive and energetic post-doctoral fellow to join a growing team of researchers looking at various aspects of analysing the risk posed by biological invasions.

In particular, a framework for the listing of alien taxa under regulations has recently been developed for South Africa. Cut-off levels to determine if a taxon is of low and high risk need to be defined and the scheme calibrated and thoroughly tested to assure accuracy of conclusions drawn (Kumschick & Richardson 2013). Potentially, a user interface could be developed to facilitate the implementation of the framework.

The proposed risk analysis framework relies on impact scoring schemes like the Environmental Impact Classification of Alien Taxa EICAT (Blackburn et al. 2014; Hawkins et al. 2015) and its socioeconomic equivalent SEICAT (Bacher et al. 2017). But it is not yet clear how practical it is to implement EICAT and SEICAT for the reporting of status on biological invasions and facilitating their management. To do this, will likely require both substantial theoretical and practical developments.

Finally, while the majority of schemes in risk analysis have focussed on species (Kumschick & Richardson 2013), effective management of biological invasions should also consider pathways (Essl et al. 2015). There is a need both to develop the scientific basis for such risk analyses and also to directly influence policy and practice in South Africa.

Certain taxonomic groups and case studies will be used to explore these issues depending on the interest and background of the suitable candidate. Expertise in risk assessment is key, and knowledge about biological invasions will be helpful.

Key contacts

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Further Reading

Bacher S, *et al*. (accepted) Socio-economic impact classification of alien taxa (SEICAT). Methods in Ecology and Evolution. http://dx.doi.org/10.1111/2041-210X.12844

Blackburn TM, *et al.* (2014) A unified classification of alien species based on the magnitude of their environmental impacts. PLoS Biology 12(5): e1001850

Essl, F. *et al*. (2015) Crossing frontiers in tackling pathways of biological invasions. BioScience, 65, 769–782.

Hawkins CL, *et al*. (2015) Framework and guidelines for implementing the proposed IUCN Environmental Impact Classification for Alien Taxa (EICAT). Diversity and Distributions 21: 1360-1363

Kumschick S & Richardson DM (2013) Species-based risk assessments for biological invasions: Advances and challenges. Diversity and Distributions 19: 1095-1105