



<p>WORKING PROJECT TITLE</p>	<p>Developing a dynamic species co-distribution model for invasion management of non-equilibrial and interacting alien and native assemblages</p>
<p>CORE TEAM MEMBERS</p>	<p>Cang Hui Dave Richardson</p>
<p>ACADEMIC LEVEL OF THE PROJECT</p>	<p>Postdoc, PhD</p>
<p>PROJECT BACKGROUND</p>	<p>Biological invasion has been regarded as one of the main drivers of global change. However, invasion management often faces conundrums that traditional ecological approaches struggle to handle. In particular, the invasion dynamics of alien species are often transient and at non-equilibrium in the invaded ecosystem; this means that species continuously need to negotiate environmental, dispersal and biotic barriers. A variety of mechanistic models have been proposed to simulate the invasive species spread (Hui and Richardson 2017), we still rely on the standard statistical tool of Species Distribution Model (SDM) to assess the potential distribution of alien species. SDMs first match the observed occurrences of a focal species with its realized environmental niches and then predict potential distributions in novel environments. However, alien species are not alone in the new environment, and the ensemble of alien species often strongly interacts with resident native species in the recipient community to negotiate their ecological niches</p>



	<p>(Latombe et al. 2018). As such, we need to devise approaches to handle the key features of invasion dynamics: being non-equilibrium and entangled in the recipient ecological network (Hui and Richardson 2019). This project thus aims to design a dynamic Species Co-Distribution Model (dSCDM) that can capture the spatial dynamics of multiple species of different guilds invading heterogeneous landscapes. The developed dSCDM will be implemented and tested using existing data on the distribution of major invasive guilds in the region and worldwide.</p>
<p>FURTHER READING</p>	<p>Hui C, Richardson DM (2017) <i>Invasion Dynamics</i>. Oxford University Press, Oxford</p> <p>Hui C, Richardson DM (2019) How to invade an ecological network. <i>Trends in Ecology and Evolution</i> 34:121-131</p> <p>Latombe G, Richardson DM, Pyšek P, Kučera T, Hui C (2018) Drivers of species turnover of native and alien plants with different residence times vary with species commonness. <i>Ecology</i> 99:2763-2775</p>
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