

## Joint Conference

International Conference on

## ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&amp;

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## ECOLOGY AND ECOSYSTEMS

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**Niche, neutrality or niche-neutrality continuum?****Rafi Kent**

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Niche theory is a cornerstone of community ecology. A major goal of ecological research is to understand how the requirements for resources of different species could explain the composition and dynamics of communities. Such work has had some substantial successes, allowing, for instance, a mechanistic understanding of temperate forest compositions based on species' adaptations. Niche theory has been invoked to explain many of the properties of ecological communities, including species abundance distributions and species-area curves. In contrast, Hubbell's neutral theory of ecology and biogeography is based on an explicit assumption that all species have identical properties, so that community composition is determined by demographic random walks and dispersal limitation rather than species adaptations to the environment. The debate between niche and neutral approaches to ecological communities has been heated at times, leading to polarization within the research community. A synthetic approach was then proposed, attempting to reconcile these competing ideas, and proposing that niche and neutral communities are at the two ends of a continuum. Accordingly, communities are structured both by species' environmental requirements (ala' niche theory) and by dispersal limitation (ala' neutral theory). As with many debates in ecology, it seems likely that the relative importance of niche-based and neutral processes shift with context. The next challenge is then to elucidate the situations conducive to highly niche structured or nearly neutral communities. Several modelling studies have proposed that species richness may be a major axis for the so-called 'niche-neutrality continuum'. This is corroborated by experience; some of the best worked examples of niche-structured communities come from relatively species-poor north-temperate forests, whereas species-rich tropical forests provide classical examples of nearly-neutral communities. Here I will demonstrate the NNC using empirical approaches with bird assemblages in the USA and Australia, as well as some theoretical advances.

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**Notes:**