

Addressing complexity of biological interactions in natural systems with community genetics (Biological Interactions in Arable Land-Grassland-Forest Continuums and their Impact on the Ecosystem Functions, 7th International Symposium on Integrated Field Science)

著者	LAU M. K.
journal or publication title	Journal of Integrated Field Science
volume	7
page range	100-100
year	2010-03
URL	<a href="http://hdl.handle.net/10097/48846">http://hdl.handle.net/10097/48846</a>

# **Addressing complexity of biological interactions in natural systems with community genetics**

**M. K. LAU**

**Department of Biological Sciences Northern Arizona University**

Ecological communities play an integral role in determining ecosystem functions. However, communities, their dynamics and functional consequences, are complex because they are typically comprised of many interacting components and influenced by stochastic processes, such as weather and fire. Because of this, pairwise reductionist investigations of interactions among species will not yield reliable information for building answers to higher-level questions. Here, I present results from studies looking at the structure and functioning of whole communities associated with foundation species, which are species that modulate resources and create stable conditions for a large number of other community members.

The results of these studies suggest that a large proportion of the variation in communities can be explained by genetic variation in foundation species; and, therefore, we can potentially address community complexity and increase our power for predicting community dynamics and function by putting communities in an evolutionary context. The integration of this kind of information from intensive ecological and genetics studies is the focus of the new field of community genetics.

I will present current research into the mechanisms behind community genetics, showing evidence for self-organization of associated communities beyond the influence of the foundation species, and discuss future research directions.