

Identifying the building blocks of ecological networks

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Darwin's 'entangled bank' captured the principle that species in nature must manage complex interdependencies to successfully coexist in natural communities. Despite great advances in the study of intricate ecological networks, we still do not know what the entangled bank looks like, nor if evolutionary restrictions create pattern in the multidimensional niche structure of communities. Disentangling the bank requires building comprehensive ecological networks which synthesize all known species interaction types (e.g., predation, competition, facilitation) as well as developing statistical methods for discovering pattern in such multiplex systems. We studied connectivity in a comprehensive ecological network using novel network models. We show that the network exhibits clear patterns at different organizational levels and ultimately collapses into a small set of 'functional groups' that are taxonomically coherent. This suggests that the iconic complexity of ecosystems may simplify into fundamental building blocks of nature.

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