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**Antonio J Golubski, John H Vandermeer and Erik E Westlund\***  
(ewestlun@kennesaw.edu). *Hypergraphs in Ecological Network Analysis.*

In the field of ecology, unraveling the tremendous complexity of ecological systems is crucial for understanding their structure and function, despite challenges it poses. Ecologists have gained much insight in recent decades from studying the topologies of ecological networks: patterns of interactions between species. Almost universally, however, this work has involved networks modeled by traditional (di)graphs. That approach is ill-suited for considering many ecologically important phenomena, which are fundamentally properties of more than two species. Hypergraphs are a natural generalization capable of considering interactions between sets of three or more vertices (species), and have recently proven extremely valuable for the study of biomolecular networks. Here, we discuss the potential value of using hypergraphs and corresponding tools from network analysis to study the topology of ecological networks, as well as challenges associated with doing so. We demonstrate the approach using a real-world complex coffee agroecosystem. (Received September 16, 2015)