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The eco-evolutionary dynamics of mutualistic networks: from pattern of emergence to stability

Mutualistic networks such as pollination networks are assembled in well-organised patterns. The study aims at understanding ecological and evolutionary mechanisms that contribute to the emergence of these patterns and the overall ecological and evolutionary stability of mutualistic communities. The candidate developed a mathematical and simulation model of the ecological dynamics of population densities and the evolutionary dynamics of functional traits of a mutualistic community. It was found that specific structures of mutualistic networks emerge when interactions are trait-dependent. Moreover, mutualism plays a determinant role in sustaining evolutionary stability and the productivity of the community. In the face of biological invasion, the stability of a mutualistic community primarily depends on invader characteristics relative to those of native species.

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