

Ecology and evolution of negative and positive interactions in Cactaceae:

Lessons and pending tasks

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Background: The Cactaceae is a diverse and conspicuous Neotropical family that has evolved a wide variety of adaptations during co-evolution with their interacting species. Recent research has indicated complex ecological and evolutionary interactions involving cacti and other organisms. **Aims:** We reviewed four studies involving cacti that have important implications for our understanding of the evolution of life traits and maintenance of cactus diversity. Also, these studies illustrate how the modern theoretical background of the ecology and evolution of species interactions is influencing the research in Cactaceae. **Methods:** The studies showed here are (1) the evolutionary ecology of a mistletoe-cactus parasitism in central Chile, (2) the effect of an exotic grass on the demography of a threatened cactus in Puerto Rico, (3) the herpetochory in a tropical genus of cacti in Venezuela, and (4) the role of abiotic and biotic factors on the floral morphology in globose cacti species in northe