

How to share a bat

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New research shows how different species of plants evolve unique floral adaptations in order to transfer pollen on different regions of bats' bodies, thus allowing multiple plant species to share bats as pollinators.

The study, titled “Character displacement among bat-pollinated flowers of the genus *Burmeistera*: analysis of the mechanism, process and pattern”, was published in this week’s journal *Proceedings of the Royal Society B*. A pattern of character displacement has only rarely been shown for plants, and this is the first study to examine the competitive mechanism and process driving this pattern.

When multiple plant species occur in the same habitat and share the same pollinator, large amounts of pollen may be transferred between different species. This form of plant-plant competition can reduce the fitness of all species by interfering with successful pollination.

Dr. Nathan Muchhala, a post-doctorate researcher, and Dr. Matthew D. Potts, assistant professor in the University of Miami Department of Biology, studied such competition in remote cloud forests of the Ecuadorian Andes. They found that co-occurring bat-pollinated species of the genus *Burmeistera* reduce competition by evolving differences in flower shape.

This serves to place pollen in different regions of the bats bodies, and thus greatly reduces “incorrect” (between-species) pollen transfer. Experiments with bats and flowers showed that greater differences in flower shape between two species decreases “incorrect” pollen transfer

and thus maximizes successful pollination.

“This research study clearly demonstrates that these plants are competing and the competition is strong enough for them to evolve unique characteristics in order to reduce competition for pollination,” says Nathan Muchhala, Ph.D., researcher in the University of Miami Department of Biology.

Along with the experimental work, the research team also analyzed *Burmeistera* in 18 field sites, and found that differences in flower morphology between co-occurring species were much greater than what would be expected by chance.

Source: University of Miami Rosenstiel School of Marine & Atmospheric Science

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