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How Pollinators Sculpt Flowers

For the past 10 years, José María Gómez and Francisco Perfectti of the University of Granada have used complex geometric analysis to study how insect pollinators influence the evolution of flower shape.

Through a series of experiments, the researchers found that different pollinators have preferences for distinct variations in flower shape in *E. mediohispanicum*, a wild herb common in mountainous regions of Spain. For example, large bees preferred flowers with narrow petals; small bees had a preference for wider flowers; bee flies had a preference for rounded flowers. In the wild, flower shapes in different populations of *E. mediohispanicum* were found to differ significantly according to which type of pollinators were more common in the area. The result is a “geographic mosaic of selection on different [flower] shapes,” the researchers write.

Why would insects prefer specific flower shapes? Gómez and Perfectti’s research indicates that, in *E. Medio-*

hispanicum, flower shape is an honest signal of a pollinator’s reward. Flowers with shapes preferred by pollinators tend to have higher output of nectar and pollen. The research provides valuable insight into the evolution of a complex trait in flowering plants -- a topic Darwin once described as an “abominable mystery.”

The research is published in the November/December issue of the *International Journal of Plant Sciences*.

José María Gómez, Francisco Perfectti. Evolution of Complex Traits: The Case of *Erysimum* Corolla Shape. *International Journal of Plant Sciences*, 2010; 171 (9): 987 DOI: 10.1086/656475