

How Did Cactuses Evolve

May 15 2006



In a groundbreaking new study in the June issue of *American Naturalist*, Erika J. Edwards (Yale University and University of California, Santa Barbara) and Michael J. Donoghue (Yale University) explore how leafy, "normal" plants evolved into the leafless succulent cactus.

"The cactus form is often heralded as a striking example of the tight relationship between form and function in plants," write the authors. "A succulent, long-lived photosynthetic system allows cacti to survive periods of extreme drought while maintaining well-hydrated tissues."

Recent molecular phylogenetic work has confirmed that *Pereskia*, a genus that consists of 17 species of leafy shrubs and trees, is where the earliest cactus lineages began. Using field studies and environmental modeling, Edwards and Donoghue found that the *Pereskia* species already showed water use patterns that are similar to the leafless, stem-succulent cacti.

"[Our] analyses suggest that several key elements of cactus ecological function were established prior to the evolution of the cactus life form," explain the authors. "Such a sequence may be common in evolution, but it has rarely been documented as few studies have incorporated physiological, ecological, anatomical, and phylogenetic data."

Copyright 2006 by Space Daily, Distributed United Press International

Citation: How Did Cactuses Evolve (2006, May 15) retrieved 23 April 2024 from <https://phys.org/news/2006-05-cactuses-evolve.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.