

## After 60 million years apart, two fern genera form hybrid in the mountains of France

March 9 2015

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*Cystocarpium roskamianum* is a recently formed hybrid between two parents that last shared a common ancestor approximately 60 million years ago. Credit: Harry C. Roskam

In an article published in the March 2015 issue of *The American Naturalist*, a team of researchers report on a fern from the French Pyrenees that is a recently formed intergeneric hybrid between parental lineages that diverged from each other approximately 60 million years

ago.

The hybrid [fern](#)—*Cystocarpium roskamianum*—was found growing wild in the mountains of France and is sterile, but can reproduce itself vegetatively and grows well in cultivation.

Rothfels et al.'s finding that two fern lineages are still able to hybridize after nearly 60 million years of divergence is surprising evidence for an extraordinarily deep hybridization event—one that is roughly akin to an elephant hybridizing with a manatee, or a human with a lemur.

As populations become separate, their members are thought to lose the ability to interbreed relatively quickly, usually within a few million years. This process—the evolution of reproductive isolation—is critical for the formation of [new species](#), and understanding the rate at which it evolves is of great interest.

That a species of oak fern (*Gymnocarpium*) could cross with a fragile fern (*Cystopteris*) to produce a viable hybrid after such a long time apart suggests that ferns may evolve reproductive incompatibilities much more slowly than most animals or flowering plants. If a slower "speciation clock" for ferns is true, it might explain why there are only around 10,000 fern species on Earth today, compared with around 300,000 species of flowering plants, without any need to invoke competitive advantages of [flowering plants](#) per se.

**More information:** Carl J. Rothfels, Anne K. Johnson, Peter H. Hovenkamp, David L. Swofford, Harry C. Roskam, Christopher R. Fraser-Jenkins, Michael D. Windham, and Kathleen M. Pryer, "Natural Hybridization between Genera That Diverged from Each Other Approximately 60 Million Years Ago." *The American Naturalist* Vol. 185, No. 3 (March 2015), pp. 433–442.

[www.jstor.org/stable/10.1086/679662](http://www.jstor.org/stable/10.1086/679662)

Provided by University of Chicago

Citation: After 60 million years apart, two fern genera form hybrid in the mountains of France (2015, March 9) retrieved 24 April 2024 from <https://phys.org/news/2015-03-million-years-fern-genera-hybrid.html>

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