

Thomas Klak: Reintroducing Chestnut Trees to Improve Biodiversity
“The Academic Minute”
Originally Aired Dec. 23, 2022

Narrator:

On University of New England Week, how do we stir up more biodiversity in nature? I'm Dr. Lynn Pascarella, president of the American Association of Colleges and Universities, and today on “The Academic Minute,” Thomas Klak, professor in the School of Marine and Environmental Programs, explores one possibility.

Tom Klak:

We hear lots of bad news about biodiversity decline, including in our eastern U.S. forests. We regularly learn about and even witness devastation from introduced pests and pathogens, such as Dutch elm disease, the emerald ash borer, the brown-tailed moth, and many others.

American Chestnut trees were once among the most abundant and important forest trees in the U.S. but are now functionally extinct due to a fungal blight that wiped them out. The blight was accidentally introduced in the late 1800s and killed more than 3 billion trees. The chestnut that provided food for animals and people, tannin for hides, and rot-resistant lumber for just about everything, was seemingly gone.

For the past seven years, my research has focused on reintroducing a fungal-blight tolerant American chestnut to our eastern U.S. landscapes.

My team works with collaborators at the American Chestnut Foundation and SUNY's Environmental Science and Forestry College, who have inserted a wheat gene into the chestnut that provides fungal blight tolerance. We all work under federal permits, with hopes for federal deregulation soon.

We continue to rigorously test our blight-tolerant chestnut and to genetically diversify its population. Whereas in nature it takes four or more years for a chestnut tree to mature, my lab has developed techniques to advance the chestnut an entire generation within the same calendar year. A chestnut flower we pollinate in July becomes the pollen source for the next generation the following July.

In this way, we annually produce increasingly diverse chestnut seedlings with blight tolerance. We pollinate wild-type chestnut trees that have temporarily survived the blight, share blight-tolerant chestnut pollen and seeds with our collaborators, and outplant them in field trials. As we await the deregulation decision, each year we produce hundreds of genetically diverse American chestnut trees that have fungal-blight tolerance.

Narrator:

That was Thomas Klak of the University of New England. You can find this, other segments, and more information about the professors at academicminute.org.

Production support for “The Academic Minute” comes from AAC&U: advancing liberal learning and research for the public good.