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Five Crazy Days for Chestnuts

Perkinsville Couple Rushes to Pollinate a Decimated Species

By Susan J. Boutwell
Valley News Staff Writer

Springfield, Vt. -- Most people drive back roads peering through trees in search of magnificent views. Not Grace and Randy Knight. The Perkinsville pair stops at the trees in pursuit of the rare species they are dedicated to restoring: the American chestnut.

Yesterday, the Knights pollinated two chestnut trees in Springfield, hoping to coax the blighted branches to produce nuts for another year or two before succumbing to the fungus that has decimated the once-plentiful hardwood. If the nuts grow, they will be used in a national campaign to revive the American chestnut.

"We live in a world where our trees are really under attack from foreign diseases," Grace Knight said.

The Knights are working quickly this week and next, pollinating seven trees during the chestnut's fertile period.

"We kind of go crazy five days a year," Grace Knight said.

In addition to the Springfield trees, they plan to pollinate trees in Colchester and Berlin in Vermont and in the New Hampshire towns of Newbury, Canaan, Washington and Derry.

The Newbury tree, at The Fells, a historic estate and gardens on Lake Sunapee, was a rare find, discovered by a member of the American Chestnut Foundation who was visiting the property.

The Knights, both 48, are foundation volunteers. They work on the trees because



Randy Knight of the Vermont and New Hampshire chapter of the American Chestnut Foundation pollinates a chestnut tree yesterday in Springfield, Vt., with pollen from a blight resistant variety of chestnut developed by the foundation. (Valley News — Jason Johns)

“it's a fun thing for us to do together,” Grace Knight said. She is president of the Twin States chapter of the foundation and a member of the national group's board of directors. The chapter has more than 200 members, Grace Knight said.

“They have been a great asset to our program,” foundation spokeswoman Meghan Jordan said of the couple. “They're so enthusiastic.”

Grace Knight is a recently retired Weathersfield school nurse who now raises sheep and chickens on their farm in the Weathersfield village of Perkinsville. Randy Knight is an emergency room physician at Valley Regional Hospital in Claremont, where he is also head of the medical staff.

He “loves the science of it,” said his wife. “I love the historical and cultural aspect.”

He said they do what they do to restore “a major component of our ecosystem.”

This is the third year the Knights have been pollinating trees. Before that, he had been a longtime member of the 26-year-old Asheville, N.C.-based foundation, but they hadn't been active. (The nonprofit group also maintains offices in Bennington, Vt., where its first chief executive lived and wanted to headquarter the group.)

Randy Knight grew up in Bath County, Va., chestnut country, where, generations ago, farmers fattened hogs on the sweet nuts.

Chestnuts were also a cash crop, shipped to big cities to be roasted at Christmastime. Lumber from chestnut trees made fences and railroad ties and furniture and musical instruments. In the forests, the tree produced food for birds, turkeys, deer and bears.

Chestnuts for sale in this country now come from Europe, said Jordan.

The trees have been decimated by a fungus, *Cryphonectria parasitica*, brought from Asia on Chinese chestnut trees and first discovered in New York City in 1904.

By the 1950s, the blight had wiped out 4 billion American chestnut trees leaving as few as 500 to 1,000 in the United States, said Jordan. The tree had once been so plentiful that one of every four hardwood trees from Maine to George was an American chestnut, she said.

The blight blisters the bark and discolors it, leaving orange speckles and cankers on the trunk. Blight spores, which live on oak trees, are spread by the wind and by animals, including squirrels, chipmunks and woodpeckers.

Grace said there is enough blight on the trees they worked on yesterday to kill them in a year or two.

Their work is not to save the trees. Instead, they want to capture the cold-resistant genes in the nuts the trees produce. Next spring they will plant the nuts in breeder farms -- they have one -- and inoculate them with blight in the hopes of eventually producing disease-resistant trees. But the process doesn't always take and when it fails, the young tree and its roots are destroyed.

The foundation doesn't yet sell disease-resistant seeds or trees, according to its Web site. It is still testing breeding lines “and their value needs to be proven” over the next decade or so, the site says.

The Arbor Day Foundation sells 2-foot Chinese chestnut trees, which its Web site

says are blight resistant, for \$9.

Randy Knight was doing the pollinating yesterday, standing in a bucket high atop a Davey Tree Co. truck. A Davey crew was in Springfield yesterday trimming trees for Central Vermont Public Service and the utility paid for the Davey workers to take some time out for the chestnut pollination.

"It's a good break" Davey truck driver Chris Stone said of the project. "I've learned quite a bit."

He said he and his co-workers are now keeping an eye out for chestnuts and won't cut them down.

Up in the bucket, Randy Knight had a small vial of pollen tied to a cord around his neck. The pollen was sent from the foundation's farm in Meadowview, Va. Also tied to the cord was a 3-inch-square of window glass, its sharp edges banded in tape.

Randy Knight ran the bucket controls to get into position next to brown bags tied onto the tree. The bags -- corn silk bags that farmers use when pollinating that vegetable -- each held a chestnut burr, the female part of the plant which the Knights, with help from the Davey crew, had covered in bags a week earlier to keep blighted pollen from the burrs.

Randy Knight unhooked the twist-tie and slipped off the bag. He blew on the glass and on the burr to put moisture on each so they would hold the pollen, a bit of which he tapped from the vial onto the glass. He dragged the burr through the yellow powder then put the bag back on the burr and repeated the process 32 times.

After the first tree was finished, Grace Knight sterilized the glass so her husband could use it for the second, smaller tree, where the 10 bagged burrs would be fertilized with a different pollen strain.

The trees also contained burrs in "control bags" which weren't pollinated. If the Knights find chestnuts in the control bags when they return to harvest the bagged crop between Sept. 15 and Oct. 1, they'll know the trees were pollinated before they got to them and they won't save the chestnuts.

The pollen they used is from a fungus-resistant tree developed at the foundation's farm, where biologists cross-bred American chestnuts with the Chinese variety immune to the blight.

After six generations of cross-breeding, the foundation has developed a tree that is 15/16ths American chestnut with enough genes from the Chinese variety to keep it blight free, said Jordan.

If this fall's crop of chestnuts grows from the foundation pollen, the Twin States chestnuts will be planted on breeder farms after the nuts winter-over, packed in peat moss and stored in a U.S. Forest Service refrigerator in South Burlington.

Their goal, Grace Knight said, is to make American chestnut trees as common as oak and maples in Vermont and New Hampshire.

"We want to take over the world with chestnuts," she said.

She figured they could end up with 200 chestnuts from the two trees.

This restoration project is different from other efforts to bring back trees because

the foundation is using native trees, rather than introducing hybrids or sterile clones, said Grace Knight.

“We’re breeding a genetically diverse tree that will be able to grow on its own,” she said.

Randy Knight had a quiet, studied approach as he went from branch to branch pollinating the trees yesterday. But his wife had a humorous take on their hobby.

“I’m like the chestnut madam of Vermont and New Hampshire,” she said. “You know some pretty little chestnut tree in the woods? I’ll arrange a date for it.”

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