The Forest for the Trees

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Putney embarks on a long-term scientific study on wildlife population dynamics and the chestnut tree

This story begins in three distinct moments in time (at least).

1 IT BEGINS IN THE 1800s, when every wolf and mountain lion in the state of Vermont was hunted and killed to protect a burgeoning agricultural economy.

2 IT BEGINS AGAIN IN THE EARLY 1900s, when a fungal blight introduced to the American chestnut tree decimated the species and altered the landscape of the eastern seaboard forever.

3 And, for our purposes here, IT ALSO BEGINS IN THE AUTUMN OF 2021, when science teacher Dawn Zweig and Henry Stephenson-Ryan '23 began siting a location in Putney's forest which would seek to understand how the ecosystem would respond without the pressure of deer.

WE ARE, RIGHT NOW—perhaps always—at the crossroads of ecological consequences.

The virtual extinction of Vermont's top predators has allowed deer populations to explode. Attempts to reintroduce scientifically engineered chestnut trees into the forested landscape have failed because, when given the choice, this army of deer prefers the chestnut saplings to the other canopy trees. What this means for the ecological system as a whole is still still not fully understood.

But Putney gets to contribute to the scientific exploration, and, potentially, restitution.

Left to right: 1. Henry Stephenson-Ryan and Michael Sardinas, data systems manager, auger a hole for the exclosure posts. 2. Henry Stephenson-Ryan collects data. 3. Sam Benjamin '22 and Dawn Zweig at work on the exclosure. 4. Hilary Menegaz Weitzner '22 carries a fence post. 5. The chestnut saplings awaiting planting in the greenhouse.

AS THE SCHOOL'S TEN-YEAR FORESTRY PLAN was scheduled to expire in 2022, Zweig convened all the stakeholders to talk about the stewardship of the 500 acres that surround the main campus.

Zweig is one of those stakeholders—her class studies Putney's forest every year. She teaches them how to study the canopy, how to identify different species, and think about species diversity.

"That's where we started talking about deer, which I already knew was an issue," said Zweig. "But Andy Sheere, who's our forester, was the one who said, 'Oh, it would be really cool to look into deer exclosure.'"

An "exclosure" is a simple but powerful tool—a fenced area that keeps the deer out and demonstrates to science how the woods would grow undisturbed by them.

Through knowledge of other similar studies, Zweig wondered if they couldn't also add chestnut trees as part of the puzzle.

Henry Stephenson-Ryan, now a senior, spent the better part of his spring

in the forest, augering holes for the locust fence posts and erecting an exclosure and, later, planting dozens and dozens of chestnut saplings.

One section of the exclosure is an untouched piece of the forest, with the plant species left as they were found. The other part has had all the beech trees (the other predominant canopy species) removed and chestnuts planted in their place. There is a control space, in which the deer are allowed to forage. Students and the conservation crew will collect three layers of data from these plots—canopy (larger tree species that gives a sense of the forest type), woody stem regeneration (which gives a sense of smaller shrubs and growing trees), and herbaceous layer.

As for the chestnuts they planted, these are not replicas of the American chestnuts that were ravaged by the blight. They are hybrids which the American Chestnut Tree Foundation has been painstakingly engineering for decades, as their work is only as fast as the growth, maturity, and reproduction of trees.

Henry Stephenson-Ryan is gentle and grounded day student from nearby Montague, Massachusetts, where he caught his first fish on the Sawmill River at the age of two. An avid fisher and hunter, his heart is in the outdoors, and, now, so is his intellectual curiosity. Through Project Weeks, he created work that was based in the forest, and explored the balance of ecology and wildlife population dynamics. This self-directed learning and enthusiasm caught Zweig's attention.

"He is a hunter and a conservationist. He has a whole, interesting, and multi-layered understanding of and reverence for the natural world," said Zweig.

And now, he is a scientist. This work, and this study, is far beyond a high school lesson, or even an undergraduate experiment.

"I was not even doing work like this in graduate school," said Zweig. It is a long-term scientific study that Zweig estimates to be twenty years of data collection and patience.

Stephenson-Ryan is already making plans to stay connected to the study. He's applied to Bennington College (among others), which has a "field work term" component to its program, enabling off-campus studies like this one.

"I'm intent on seeing it through," he said. "I really want to come back and see how it changes and get a sense of it with my own eyes."

What will this tiny piece of forest look like in 2042? That is fully unknown.

"Hopefully somebody will try to make sure that there's things in place if I'm not still out there in the woods twenty years from now," said Zweig.

In the meantime, as another spring wakes up the world, Zweig and Stephenson-Ryan are out there, greeting the baby chestnuts. ■

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