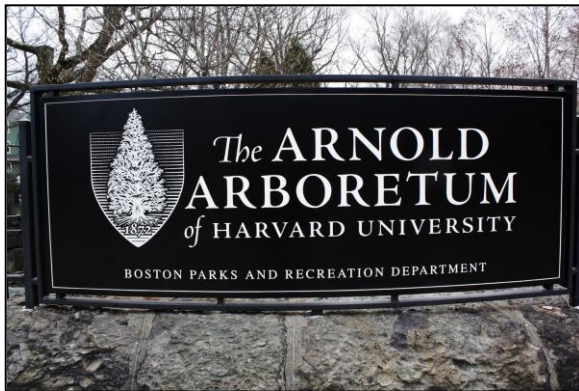


## Botanists at Arnold Arboretum Discover New Hemlock Species

By [AMY L. JIA](#) and [SANJANA L. NARAYANAN](#), CRIMSON STAFF WRITERS, Feb 6, 2018



*The Arnold Arboretum, a Harvard-funded botanical garden and research center where botanists discovered a new species of Eastern Asian hemlock tree.*

Botanists at Harvard’s Arnold Arboretum discovered a new species of Eastern Asian hemlock tree with a natural resistance to a notorious invasive insect, according to a study published in Dec. 2017.

The Ulleungdo hemlock is native to an island off the coast of South Korea and is so rare that it is already being considered for an endangered species listing. Senior Research Scientist Emeritus Peter Del Tredici, a member of the team that discovered the tree, said the process leading up to the discovery actually began at the Arnold Arboretum—a botanical garden and research center funded by Harvard—several years before.

The first temperate conifer species to be discovered in over 10 years, the Ulleungdo hemlock is valuable to scientific study because of its observed resistance to the hemlock woolly adelgid—an invasive insect that kills trees by sucking out their sap—which has devastated native hemlock populations in the eastern United States.

“You could take this species and hybridize it with another species—say the Chinese hemlock, which is also resistant to the hemlock adelgid—and you could begin the process of breeding a new species of hemlock or a new variety of hemlock that’s resistant to the adelgid,” Del Tredici said.

Del Tredici credits the initial observation of the tree to Nathan P. Havill, a former graduate student at Yale, who studied the hemlock woolly adelgid at the Arboretum in the early 2000s.

“There was one of these hemlock trees that when [Havill] looked at the DNA analysis on it, he said, ‘You know, I’ve looked at a lot of hemlock trees, and this one says it’s this Japanese species, *Tsuga sieboldii*, but the genetics don’t line up with the other *Tsuga sieboldii*s. There’s something a little bit different from it,’” Del Tredici said.

About three years later, Del Tredici and a colleague traveled to the Korean island from which they had received the tree’s seeds in 1980 and collected samplings from 30 trees for analysis.

Garth Holman, then a PhD student at the University of Maine, analyzed the DNA from these specimens, compared them to their Japanese and Chinese counterparts, and confirmed that the Ulleungdo hemlock was indeed a unique species. The research team published a paper on their findings in December.

“Finally, we came to the conclusion that this species that grew on this one island off the coast of Korea—that’s the only place it grows—was probably a remnant of a much bigger hemlock

population that used to be on the Korean peninsula,” Del Tredici said. “Because it was warmer, this one species managed to survive out on the island when it was completely wiped out from the mainland.”

Del Tredici said the Ulleungdo hemlock could have far-reaching implications for other rare and endangered species.

“What’s really important here is that this island off the coast of Korea is not just a refuge for hemlocks, but there are about 20 or 30 other species that are only found on this one island,” Del Tredici said. “It’s a little bit like a Galapagos-type situation, where evolution has sort of proceeded on its own because it’s isolated from the mainland.”

“It’s really important from a conservation point of view that this island be rigorously protected,” he added.

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