

## WHY PROTECT BIG TREES?

### Why protect big trees? And why do big tree registries exist?

By *Corey Bassett*

If you ask any practitioner in my field of urban forestry why we need trees in urban areas, they're sure to enumerate a litany of benefits ranging from environmental to economic to human health and well-being. Science has made much progress in quantifying these benefits to human society through advances in ecosystem service research; today we can even ascribe monetary values to these services. Using its tool i-Tree Eco, the USDA Forest Service estimates the annual functional value of Philadelphia's urban forest to include \$3.6 million/year from carbon sequestration, \$19.0 million/year from pollution removal, and \$6.9 million/year from reduced energy costs.

But what do arguments like this mean for the exceptional specimens in big tree registries? Do we search for, track down, and preserve the hundreds of champion trees because we need them specifically for their carbon sequestration services? In urban forestry, a common narrative

is the "large tree argument" - that larger trees should be preserved because they provide not just proportionally more, but exponentially more benefits per tree than smaller individuals of the same species. In my master's capstone at the University of Pennsylvania, I conducted an i-Tree Eco analysis of the environmental benefits of the core campus trees on Penn's campus using the i-Tree Eco tool and found just that. Six mature London planetrees that had been preserved during a construction project were found to store 86% of the amount of carbon stored by the 1,316 trees of 1-4in DSH (Diameter at Standard Height - 54") on campus. Similarly, the locally famous Penn Treaty Elm, situated in the most iconic and historic part of Penn's campus and the largest elm on campus, exponentially surpassed its smaller counterparts in environmental benefits.

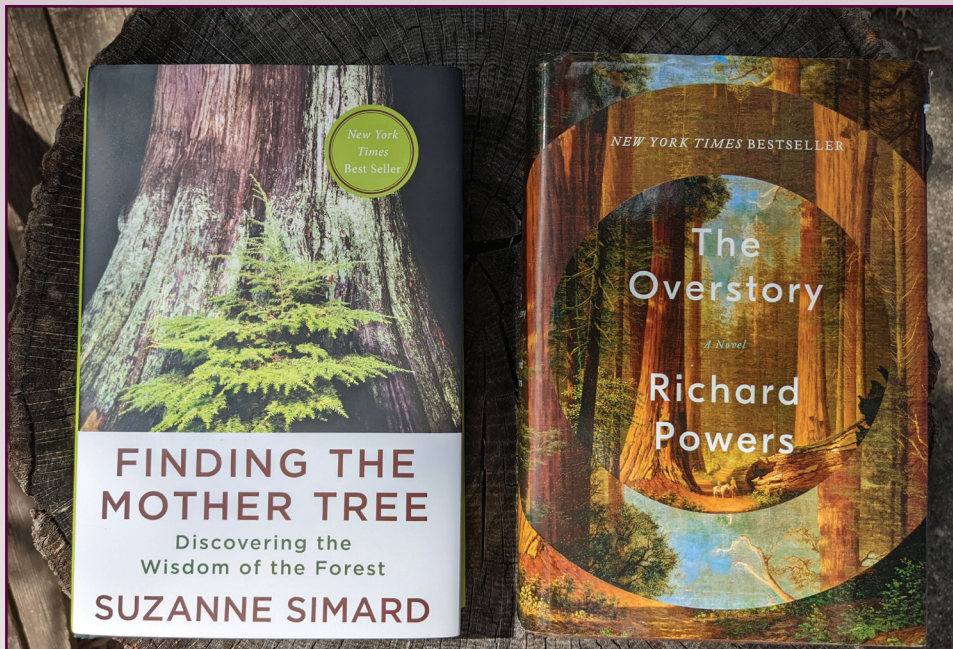
Nonetheless, was the Penn Treaty Elm going to be cut down without this data?

Probably not. Despite our reliance on the environmental benefits of trees, there are many cases where decisions are made for values which defy our attempts to quantify them.

Since the onset of the field of research of ecosystem services, a prominent criticism has been that reducing the reason to preserve nature down to the services they provide to humans treats ecosystems as solely instruments to accomplish a task. This fact can sometimes be weak and make ecosystems, trees included, vulnerable to replaceability arguments. In urban forestry, where I work, the logic can sometimes be harsh: Trying to preserve trees to cool your home? Can they beat buying an air conditioner? Or, want to support wildlife habitat? How about preserving a forest across town, not here. Focusing the argument for preservation on instrumental services can lend itself to the counterargument that that function could just be

The author with the Hitachi Tree, an *Albizia saman* (monkeypod tree), in Moanalua Gardens, Honolulu, Hawaii. The State of Hawaii has an Exceptional Tree program in lieu of a champion or big tree registry, which includes trees with special historical and cultural value or other qualities in addition to size.





Best-selling books "Finding the Mother Tree" by Suzanne Simard and "The Overstory" by Richard Powers both place relational values humans have for trees at center stage.

performed by another entity. Bringing this argument to champion trees, when compared to the number of trees in Pennsylvania, how significant would the loss of ecosystem services from PA's champion trees really be to the residents of Pennsylvania?

Dr. Suzanne Simard's book *Finding the Mother Tree* tells the story of her career spent uncovering the relationships between trees and fungi in the forests of British Columbia. The "Mother Trees" that she has described are true giants, not only in size and stature, but in work they do in their forest ecosystems. Dr. Simard weaves together empirical

science and storytelling narrative that have captured not just the attention of other researchers, but of fiction authors like Richard Powers, who wrote the bestselling book *The Overstory*, and of the filmmakers of *Avatar*. These powerful, captivating stories do show the important environmental services of trees through their roles in ecosystems, but at center stage are the deep relationships between people and trees which drive people to act and preserve them.

A fundamental aspect of relationships (such as friend-friend, or parent-child) is that they are unique and cannot be replaced. Relational values are a

separate type of value, different from instrumental values and intrinsic values. Applying relational values and relational thinking to conservation is a relatively new and growing area of research on people and nature. Capitalizing on these widely held values can be an important way to advocate for preservation of trees like those on big tree registries. Additionally, almost everyone has a relationship with a tree.

Trees like those on the big tree registry cannot be captured by our ecosystem services metrics. When practitioners and scientists rely solely on measuring the ecosystem services of big trees to advocate for their conservation, we are missing out on some of the fundamental reasons that can spur humans preserve trees. As my PhD co-supervisor, Dr. Cecil Konijnendijk, once said to me: "People don't chain themselves to trees because of ecosystem services."

So, why save big trees? Why save each of Pennsylvania's big trees? Old trees capture our imaginations, our attention, and our spirits not just because of their roles within ecosystems, but because of the relationships we form with them.

The trees on the Pennsylvania Champion Tree registry, and all champion tree registries, provide incredible ecosystem services that human society relies on. Some are measurable, and some are not. However, to be blunt, these services are not always the most compelling reasons to preserve these individuals. They should be preserved because they are irreplaceable.

#### Relevant reading:

Chan, K. M. A., et al. (2016). Opinion: Why protect nature? Rethinking values and the environment. *Proceedings of the National Academy of Sciences*, 113(6), 1462–1465. <https://doi.org/10.1073/pnas.1525002113>

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