

# The Forest Solutions

*By John Benson*

*January 2025*

## 1. Introduction

This short post is mostly a review of “Treekeepers,” reference 1 below.<sup>1</sup> However it is something more. One thing that the author of this book does very effectively is presenting the complexities of trees, reforestation and afforestation lands where this is possible and desirable. By the way, reforestation is planting trees and otherwise developing forests where there once were forests within humans’ memories, and afforestation is planting trees and developing forests where there were no forests within humans’ memories.

One misconception that reference 1’s author sets straight is that creating a forest is just a matter of planting tree-saplings. Unless this is done in an environment where Mother Nature happens to provide everything the sapling needs to thrive and grow into a mature tree, humans must provide (at least some of) these services. Furthermore, a forest is much more than a grove of one type / species of tree, it is a complex living landscape that may be composed of many tens, hundreds or even thousands of different species of trees, bushes, vines, animals, insects, fungi, etc. In a mature natural forest these organisms have coevolved to mutually support each other, and they continue to evolve.

A large part of this book deals with trees potential to sequester carbon dioxide to mitigate climate change, and the attendant buying and selling of carbon offsets / credits. The money derived from the latter frequently provides a large part of the incentive for reforestation and/or afforestation. Thus, these are important for both forestation and mitigating climate change. However, forestation provides many other services in addition to sequestering carbon. These include:

- Timber for construction of a large number of products, from toothpicks to medium-to large buildings
- Reduction of the ambient temperature within forests
- Increased biodiversity within forests
- Unique crops can be grown in the understory of forests, including:
  - Medicinal herbs: Ginseng, goldenseal, black cohosh, bloodroot, passionflower, and mayapple.
  - Mushrooms: Shiitake and oyster mushrooms.
  - Fruit: Pawpaws, currants, elderberries, lowbush blueberries and passion fruit
  - Nuts: Black walnuts, hazelnuts, hickory nuts, and beechnuts.
  - Coffee
  - Cacao
- Support of unique wildlife in forests

---

<sup>1</sup>Lauren E, Oakes, “Treekeepers, The Race for a Forested Solution,” Basic Books, 2024. Link to Amazon site for this book: <https://www.amazon.com/Treekeepers-Forested-Future-Lauren-Oakes/dp/1541603346>

## 2. Style

Reference 1 tells a really complex story with many characters. However, as you read this from cover to cover, this is best digested as many small stories with much larger (and more important) overarching themes. Also the book has an excellent Index to help you keep track of the many characters that play major roles.

## 3. Participants in, and Excerpts from Treekeepers

“Treekeepers” is a non-fiction, so all of the stories told in this book really happened. Also, they involved the author in some way, so we will start with her.

**Lauren E. Oakes:** *is a conservation scientist and science writer. She has held various appointments at Stanford University over many years as a researcher, lecturer, and adjunct assistant professor in the Department of Earth System Science. Author of Treekeepers, she now lives in Bozeman, Montana.*

The following excerpts are as told by Ms. Oakes:

**Tom Crowther:** *was a postdoctoral fellow at Yale...*

*Tom was studying fungi and didn't know a lot about working with satellite data at the time. His housemate was trying to learn how many trees still existed but couldn't find any reliable estimates. The search piqued Tom's interest.*

*“I thought it sounded like a fun challenge,” Tom told me “So, I went for it. I thought, why can't I study the global forest system?”*

*In 2015, their result of three trillion trees made headlines, of course. In the analysis, Tom and the other scientists used nearly half a million tree-density measurements collected on the ground and across every continent except Antarctica. Yet so much that transpired in forest monitoring since Virginia's scanner<sup>2</sup> first launched had also made the tree count possible. Four years later, when Tom (by then a world-renowned ecologist), along with Jean-François (see next page) and their colleagues, revealed how many more trees the Earth could support. They also offered another number that many people would fill with hope: how much carbon those trees could sequester.*

Backing up a page to find Felix, who Tom (above) met in Germany:

*Felix Finkbeiner was nine years old and living in Bavaria when a school assignment on Wangari Maathai touched him, Maathai was the first African woman to be awarded the Nobel Peace Prize. Among many other pursuits and accomplishments, she'd started a movement in Kenya to counter deforestation, to plant, and to restore. Felix challenged his classmates to plant trees, and then he went after a bigger vision. He wanted every country to plant a million trees. He founded Plant-for-the-Planet, an organization that would help them do so.*

*Years later with his rimless glasses and emphatic tone, like the climate activist Greta Thunberg, he was speaking before the United Nations at age thirteen advocating for a trillion trees. That was in 2011, long before the analysis for “The Global Tree Restoration Potential” study was even an idea.*

---

<sup>2</sup> A satellite forest-monitoring system.

*Somewhere along his journey, Felix must have seen forests as more than pixels of green in a global portrait' He wanted to know how many trees there are on Earth; not just where "forest" is.*

*Jean-François Bastin had very politely declined to speak with me (Ms. Oakes, the author of this book) when I'd initially contacted him about the famous Global Potential study...*

*"I've always found maps quite beautiful," Jean-François told me during my first conversation with him. I'd promised him that I wasn't looking for flashy headlines or a brief quote for an 800-word news clip; I wanted to hear his story. He agreed to talk and then spent hours with me.*

*As graduate students eager to learn remote sensing, we had both studied under Eric Lambin, a Belgian geographer who, along with scientist and author Jared Diamond, won the Blue Planet Prize in 2019 for his life's work on land use and the many factors that drive people to clear forests or to plant them again. Jean-François had worked with Eric in Belgium, so we never overlapped in person. He'd been trained as a forest engineer, applying engineering principles to maintain trees, soil, water, and other natural resources within forest ecosystems. Using satellite data for mapping became another attractive tool for him...*

*"The Global Tree Restoration Potential" was published in Science on July 5, 2019. Jean-François told me his original title was "The Tree-Carrying Capacity of the Planet," an ode to what forests might be without us...*

*The researchers found "room for an extra 0.9 billion hectares of canopy cover" on Earth, a total area about the size of the continental United States. They calculated that such an increase in canopy could store about 200 gigatonnes of carbon, roughly equivalent to two-thirds of the total "carbon burden" in the atmosphere as a result of human activity.<sup>3</sup>*

## **4. Final Author's Comments**

As you can tell from my comments in section 2, this book is not an easy read, but an extremely interesting one, since it tells true stories. It required several weeks for me to read this, since I needed to read each "small story" with frequent research to make sure I understood the story, the participants and how the story contributed to that main theme. Normally I go through a similar-size book in less than a week.

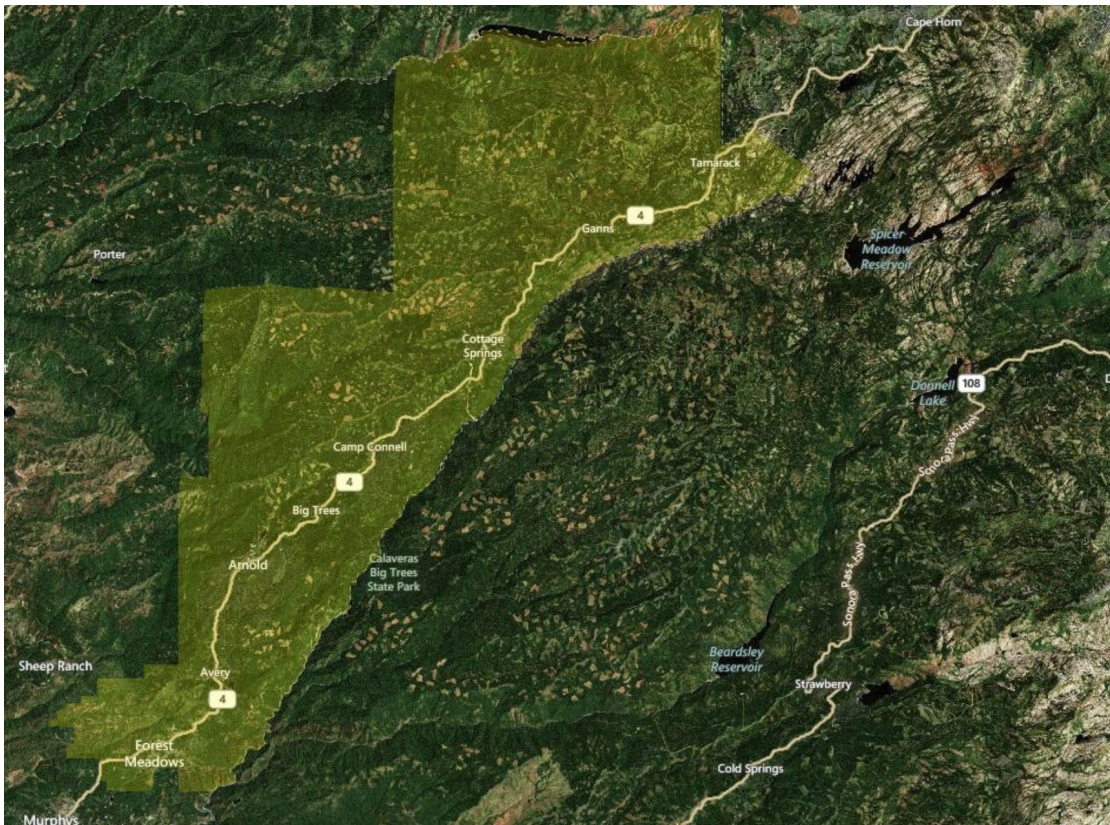
This is also an important book, because it clearly describes the roles of trees at all scales in mitigating climate change and providing other services mentioned in the Intro.

Also, I am a treekeeper, albeit at a very small scale. I have two homes, one in Livermore, CA, and one in Arnold, CA. The former has a normal size lot for the SF Bay Area (about 1/5 acre), and it had three large trees in the front yard and it has two large trees and two small (citrus) trees in the back yard. After completing Treekeepers, I performed a yearly task of calling a tree-service, and making an appointment to have its owner come out and inspect and give me a quote to remediate (prune, etc.) my Livermore micro-forest. Unfortunately, my tree-service business-owner needed to tell me that two of my large front-yard trees needed to be taken out due to rot and termite infestation. These have now been removed.

---

<sup>3</sup> A gigatonne is 1 billion tonnes (metric tons).

My Arnold lot is in the middle of a national forest, and is larger (I would guess a quarter acre). About a dozen mature Jeffery Pine and Incense Cedar trees, and one very large Black Oak grow on my lot in Arnold. We've owned our Arnold Home for 25-years, and so far, we haven't needed a tree-service, just a yearly visit from a lot-cleaning service to remove all of the needles, cones and leaves. All home-owners in our area (Eastern Calaveras County) are required to do this every spring by the Ebbetts Pass Fire District (EPFD).<sup>4</sup> This Fire District has four fire stations in, or near Arnold,<sup>5</sup> one about a mile from my house. The map below shows the area covered by EPFD.



---

<sup>4</sup> <https://www.epfd.org/>

<sup>5</sup> <https://www.epfd.org/fire-station-locations> , click on each station for a map.