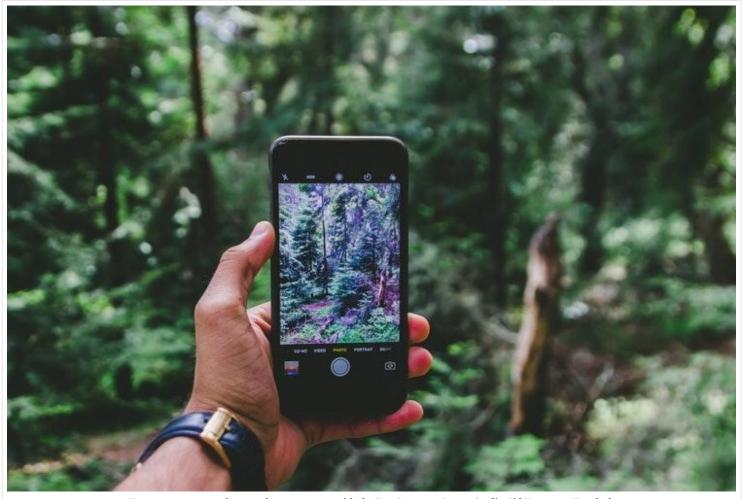# 🔍 Citizen Science Salon

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Survivors in the Forest: Help Scientists by Identifying Resilient Trees

By Julia Travers | April 26, 2019 3:10 pm

Calling all tree lovers! This Arbor Day, help scientists study trees near you with TreeSnap, an easy-to-use app.

You can use a smartphone to document trees with the TreeSnap app. Image Credit: Sid Verma on Unsplash

Are you a tree lover with a smartphone? If so, you can help out scientists who are trying to breed stronger trees. Like all living beings, trees face a variety of challenges and illnesses. In addition to threats like climate change, pollution, and loss of habitat, they also can be attacked by bugs or fall ill. Luckily, many scientists and community members are working together to better understand trees' survival and help trees flourish — and you are invited to join them!

Sometimes, within a group of sick trees, a few healthy specimens linger, and these are the focus of the TreeSnap app. It's a simple mobile tree documentation program that connects public data to ongoing research projects that focus on breeding resilient trees.

"Most of our partners want help from citizen scientists to find trees that are able to resist invasive insects and diseases lethal to other trees," said Dr. Ellen V. Crocker, the University of Kentucky Forest Health Extension Assistant Professor and the TreeSnap Extension and Outreach Specialist. TreeSnap currently has 11 partners, most of which are tree-focused scientific organizations.

There are specific "pests" and sicknesses, such as the emerald ash borer or Dutch elm disease, that take over and afflict certain trees. Sometimes, a non-native or "invasive" species has widespread effects on an ecosystem. For example, the emerald ash borer is an insect from Asia that is believed to have reached the U.S. on cargo ships in 2002. It is now found in 35 states and several Canadian provinces, and it has killed hundreds of millions of ash trees in North America. The USDA Forest Service Northern Research Station, one of TreeSnap's scientific partners, collects information on ash trees from the public through the app. Among other goals, this organization plans to use this data to find trees resistant to the emerald ash borer.

Other scientific partners, like the Forest Health Research and Education Center (FHC), take a proactive approach to fend off future tree threats. FHC uses TreeSnap data on white oaks to inform their breeding program, aiming to be prepared in case invasive pests target these trees in the future. The FHC also participated in the development of TreeSnap. Dr. C. Dana Nelson, FHC project leader and research geneticist, told SciStarter that the app is "easy to use and fairly quick at inputting data."`

The scientists who use TreeSnap are interested in both ill and healthy trees. If you're not sure which is which, you can still use the app. TreeSnap simply asks for a picture of the tree and a description of its appearance. Once you make an account, the main page shows you trees currently being focused on by scientists (but you can still make your own observations about other kinds of trees). While initial tree-identification steps are not currently offered, the app provides photos of common trees and their features, which are helpful to reference when crafting your identification. And if you would like to brush-up your tree-ID skills, the Arbor Day Foundation has you covered with an illustrated online guide

Once you select a tree, you are asked to upload image(s) and answer questions about what you see, describing the habitat of the tree, the condition of the tree, and the neighboring trees. You can also indicate whether the specimen is flowering. Again, there are helpful image guides for signs of pests. To protect the privacy of the app users, all tree location data are randomly altered within a 5-mile radius on the TreeSnap app, so only the original tree-finder and authorized researchers know just where a tree grows. The trees that can survive disease or insect infestation are especially interesting to tree-breeding programs.

"The hope is that these trees will have something special about them genetically that could then be used to restore species that have been decimated by these threats," Crocker explained. She also said that new pathogens and bugs arrive constantly and that "restoration tree breeding is crucial for ensuring that impacted species can bounce back."

Since TreeSnap launched in 2017, more than 2,175 people have set up accounts and made close to 3,000 observations. Washington State University's Puyallup Ornamental Plant Pathology Program is TreeSnap's newest partner. It is focusing on the Pacific madrone and has already observed over 150 trees. It offered workshops throughout early 2019, focusing on tree identification, forest ecology, pathogens, conservation, restoration efforts, and TreeSnap demos. In addition to engaging with citizen science groups and research institutions directly with workshops, TreeSnap offers online training videos.

"We are always looking for new partners and excited to hear about how the app is working and how we can improve it," Crocker said.

What's next for TreeSnap? TreeSnap is now starting to be used more outside the U.S. and the development team is making it multilingual.

"In the future, we hope scientists will increase their engagement of citizen scientists in their work, through TreeSnap and other avenues," Crocker told us. Tree lovers, what are you waiting for?

Want more citizen science? Check out SciStarter's Project Finder! *With citizen science projects spanning every field of research, task and age group, there's something for everyone!*

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