HEALTHY TREES · HEALTHY CITIES

Conserving Trees, Protecting People

Healthy Trees, Healthy Cities is an urban tree health monitoring initiative coordinated by The Nature Conservancy and the USDA Forest Service, which supports researchers, managers and citizen scientists in the maintenance and protection of city trees and forests, nationwide.

The nation's trees and forests are one of our greatest assets – especially in cities where they provide myriad benefits for people and nature. Accordingly, urban forest managers must maintain a healthy urban tree canopy to ensure those benefits (often called "ecosystem services") are experienced by communities well into the future.

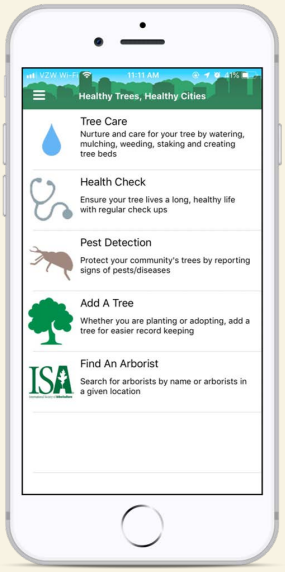
Healthy trees, Healthy Cities (HTHC) offers urban forest managers and tree stewards critical tools to monitor and prioritize stewardship and management of trees in the urban landscape. The data gathered through these efforts has both local and national implications: Locally, managers and stewards use the data to prioritize the care of stressed trees, and intervene to restore health. Nationally, USFS researchers study the effects of the urban environment on trees, and the impact healthy trees have on communities.

The specific components of HTHC include:

1. **Non-stressor specific tree health evaluation and pest detection protocols**
   The tree health evaluation yields a stress index score for an individual tree which urban forestry professionals can use to prioritize management efforts for those trees that need it most. The pest detection protocol is a checklist which provides valuable data that can help managers further identify what issues may be impacting their trees.
2. **Mobile device application ("app") that serves as a data collector, education and management tool**
   Available for both iOS and Android devices, and free to download, the app offers the following: basic inventory feature, tree health monitoring and pest signs/symptoms data collection form, stewardship activity documentation capability, and numerous educational tools and resources related to tree health, stewardship and inventory.
3. **Web-based project management platform ("dashboard")**
   Urban forestry professionals can track the evaluation and management of their trees through the dashboard, which includes the following features and capabilities: search and sort trees by stress index, view tree-specific data on an interactive map, assign monitoring and stewardship tasks to individuals, and download data.
4. **Training materials, in-person training support and remote support for data collection and analysis**
   HTHC provides support to groups in cities across the country by creating educational materials, providing in-person training support, and technical guidance.

Healthy Trees, Healthy Cities Mobile App

The HTHC mobile app is an educational, research, and stewardship resource. The HTHC app contains 4 modules which are tools for managing key aspects of tree stewardship:



- **Tree Care**: Record stewardship activities like pruning, watering, and more, enabling stewards to ensure a tree receives the proper care it needs
- **Health Check:** Assess a tree based on visual signs of stress to acquire insights into the stress level of an individual tree
- **Pest Detection**: Check for serious forest insects or pathogens, relying on a checklist that guides users through common signs and symptoms of known and unknown pests
- **Add a Tree***: Add individual trees to the HTHC database by inventorying them, providing basic information like species, DBH, and location.

*Existing inventories can be added to the HTHC database by contacting HTHC staff.

The HTHC app simplifies data collection, is easy to use, seamlessly works with a web-based project management dashboard, and data is compatible with i-Tree. The data collected have also been used as complementary to tree inventories using commercial software, and HTHC data can be cross-walked to commercial tree inventory software databases.

The Nature Conservancy

The mobile app is available for free at the Apple App Store and on Google Play.

Visual Tree Health Metrics

HTHC uses a system of visual estimates of tree crown health to create stress index values. Gathering data requires no special tools or experience with tree health – just the mobile app and the user's vision.

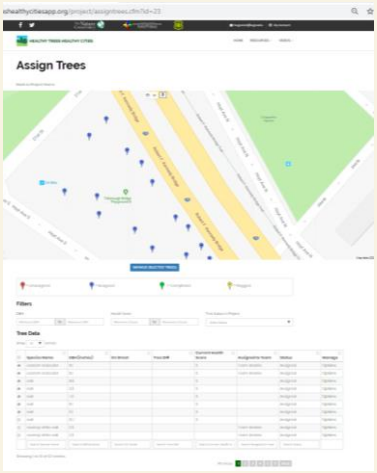
The data collected on each individual tree is compared to all other trees of the same species in the HTHC database, indicating how stressed observed trees are compared to nationwide averages.

The stress index is non-stressor specific – meaning it does not focus on one particular known or anticipated cause of stress, enabling early detection of decline prior to the establishment of a known cause, which often comes too late to respond to a tree's needs.

Photo credit: Ben Mertz, TNC

HTHC's visual health metrics focus on visible signs of stress, like the fine twig dieback circled on this park tree.

Web-based Project Management Dashboard



The HTHC web-based project management dashboard hosts tools for managing projects that use the HTHC app, from assigning trees to participants to tracking progress, and for data analysis and access. The HTHC web-based dashboard has been designed to be easy-to-use and serves as a perfect companion to the HTHC mobile app.

- Upload existing tree inventory data
- Create a project to address particular management or research needs: health checks, pest checks, and/or tracking tree care
- Add participants to the project: field staff, volunteers, anyone with an HTHC account
- Assign specific trees for participants to visit, which are then sent directly to their mobile device
- View Stress Index scores for trees in the project
- Download data for trees in the project, including the history of all recorded visits to a specific tree
- Track progress on the dashboard with near-instantaneous updates from the field

Pest Detection

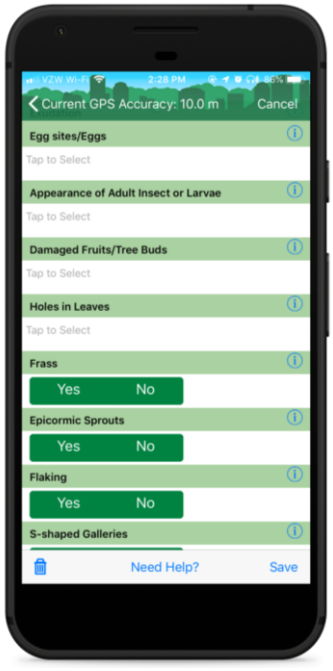
Early detection of forest pests is key to protecting city trees and forests – as well as rural trees and forests. Indeed, trees impacted by insects and pathogens are often spotted first in cities, especially coastal cities, due to the linkage between pests and international trade, as well as the movement of firewood and nursery stock.

While these pests represent a significant threat to urban and rural forests across the country, regular checks for the signs/ symptoms of infestations or infections can lead to a rapid response before these pests become unmanageable.

HTHC's Pest Check module simplifies the process for checking for the signs and symptoms associated with our nation's worst insects and pathogens. Through simple lists and info pages, this module guides users to search for symptoms of pests yet to be identified.

While this check cannot diagnose an issue, the data collected can help tree stewards direct follow-up efforts for their trees, and report sightings to local authorities.

To further educate members of the public on their respective roles in identifying the signs of pests, HTHC staff offer trainings and materials for several important threats to urban forests nationwide, like emerald ash borer and sudden oak death.



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HTHC staff are happy to assist by providing trainings and helping you set up a local project.

Contact: Rachel Holmes, rholmes@tnc.org