ALERT: Emerald Ash Borer found in DFW Metroplex

As of December 2018, emerald ash borer (*Agrilus planipennis*) has been confirmed in Tarrant County and several counties in northeast Texas. The emerald ash borer beetle (EAB) is a destructive non-native wood-boring pest of ash trees (*Fraxinus* spp.). Native to Asia, EAB was unknown in North America until its discovery in southeast Michigan in 2002. Since then, this invasive pest has spread, killing millions of ash trees across the country.

EAB is a significant threat to urban, suburban, and rural forests as it kills both stressed and healthy ash trees. EAB is very aggressive and ash trees may die within two or three years after they become infested. Ash trees are widespread in the United States and all 16 native ash species are susceptible to attack.


Green ash


Adult EAB (1/2" long)

What to Look For

Host: Ash (all species)

Signs/Symptoms: ash trees with dying or dead branches in upper crown, shoots or suckering along the trunk, bark splits with winding galleries and white larvae beneath the bark; presence of the beetle itself; heavy feeding by woodpeckers; and "D"-shaped exit holes in bark.


Sprouts on Trunk


Dying Branches

What to Do Next

Preventative Management: Remove poor condition ash trees now before infestation occurs to reduce current and future risk. If EAB activity is confirmed within a few miles of your area, treat high value ash trees with systemic insecticide to reduce intensity of attack.

Therapeutic Management: Once infested, if more than 50% of crown remains, treat with systemic insecticide to slow attack; If less than 50% of crown remains, remove tree.


EAB larval galleries

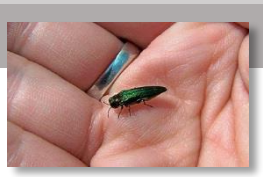

D-shaped exit hole

TFS Can Help

Guide for communities: http://tfsweb.tamu.edu/eab/
Hotline to Report: 1-866-322-4512

TEXAS A&M FOREST SERVICE

Regional Summary of Potential Impacts of Emerald Ash Borer



Dallas-Fort Worth Metroplex

Over seven million people live in the Dallas-Fort Worth-Arlington Metropolitan Statistical Area (DFW Metroplex). This 9,286 square mile area comprises thirteen counties and over two-hundred cities and towns, seventy of which are above 10,000 in population and fourteen above 100,000.

- Ash trees make up 5.5% of the Metroplex urban forest (derived from rapid assessments and city inventories)—an estimated **8.8 million trees** that provide $158 million annually in ecosystem services. Estimated removal costs for community ash trees in the region could exceed $2.2 billion ($250/tree) if communities and residents only practice reactive management.
- Debris processing costs of all community ash trees alone could total $52 million.
- The cost to replace all existing community ash trees is estimated at $2.6 billion ($300/tree).
- Treatment in lieu of removal and replacement is a viable option. If all community ash trees are treated, the cost to treat ash trees will be an estimated $440 million annually. Treatment costs per tree average $100 every 2 years and must be continued in perpetuity. This would exceed $8.8 billion in 20 years.

Likely Management Scenario

- It is probable that up to 25% of dead or dying ash trees will be either located in natural riparian areas or small enough diameter to not warrant removal.
- If 25% of trees are ignored due to size or location and 25% of trees are proactively treated once EAB is nearby (at a cost of $110 million annually), total removal costs would be closer to $1.1 billion.
- Not all trees removed will be replaced. Assuming a modest 50% replacement rate of non-treated trees, replanting costs would be approximately $661 million.
- This likely scenario results in a **$5.7 billion** cost to the region.

Table 2: Potential statewide costs of Emerald Ash Borer infestation in Texas communities (in millions of dollars)

	Maximum	**Likely Scenario**	
Applied Management	20-Year Cost If applied to all ash	Percent of total ash trees	20-Year Cost If applied to percent
Treatment	$8,818	25%	$2,204
Removals	$2,204	50%	$1,102
Debris Processing	$52	50%	$26
Replacement	$2,645	25%	$661
Lost Ecosystem Services	$3,174	75% trees lost, 25% replaced	$1,785
Total*	$8,818 *or* $6,490	**Total**	**$5,780**

*Treatment only, or remove & replace with ecosystem services beginning again 10 years after replacement

The percentage of ash in communities varies widely; some cities have as much as twenty percent of the community trees as ash species. Typically, thirty percent of community land area is owned by the municipality although the range can be as low as ten percent in some smaller communities to as high as sixty percent in others. Of the $5.7 billion likely cost to the Metroplex, at least $1.7 billion of that will be borne by municipalities.

EAB damage to trees tends to be slow initially with escalating mortality several years after initial infestation. This means that damage and mitigation needs may occur seemingly all at once. Proactive planning by communities, including identifying debris staging areas and outreach to residents, will help keep costs from escalating beyond what is likely.

Data Sources

Forest Ecosystem Values application, www.texasforestinfo.com
Urban Forest Inventory & Analysis, www.mycitystrees.com

Ash Tree Identification

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

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Caroll Guffey, Program Associate

The emerald ash borer, a tiny Asian insect responsible for the deaths of tens of millions of trees since its accidental introduction to the United States sometime prior to 2002, was confirmed in Southwest Arkansas in July, 2014. In North America, the emerald ash borer has only been found in ash trees. Ash species attacked by the beetle include green (*Fraxinus pennsylanica)*, white (*F. Americana*), Carolina (*F. caroliniana*), pumpkin (*F. profunda*) and blue (*F. quadrangulata*), as well as horticultural cultivars of these species. Green and white ash are the most commonly found ash species in Arkansas.

There are several trees and shrubs that resemble ash on first glance. Most of them can be distinguished from ash with a quick second look. Ash trees have leaves that are opposite and compound, a characteristic shared by few other trees in Arkansas' forests. We'll use those two characteristics to recognize a few look-alike trees and shrubs.

Definitions

Opposite leaves vs. alternate leaves. Leaves attach to twigs at a point called a node. In the case of alternate leaves, there will be one leaf at each node. Most of the time there is enough space between nodes to easily distinguish one node from the next. In the case of opposite leaves, there will be two leaves on opposite sides of the twig at each node. This characteristic is very consistent. A tree with opposite leaves will always have opposite leaves.

Simple leaves vs. compound leaves. Many trees have leaves that are divided into leaflets; that is, each leaf is divided into small leaf-like units. If you aren't sure whether you are looking at a leaf or a leaflet, look at the base of the leaf (or leaflet) stalk. Trees and shrubs will almost always have an easily identifiable bud at the base of the leaf stalk (it might be pretty small). No bud will be present at the base of a leaflet stalk.

What's in a name? While other woods plants, such as prickly ash, *Zanthoxylum americanum*, have "ash" in their name, they are not true ash or *Fraxinus* species. So far, only true ash are susceptible to attack by the emerald ash borer.

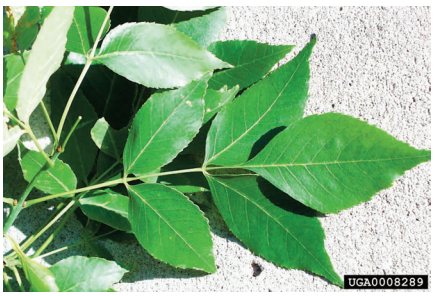
The properly identify ash trees, use the following criteria.

UGA5078096

Leaf Arrangement

Opposite

UGA5032094



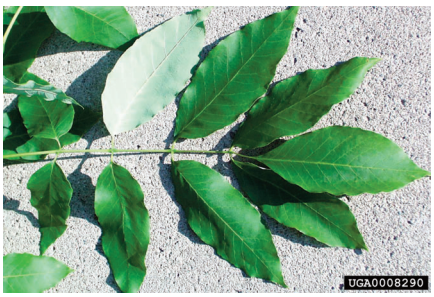
Paul Wray, Iowa State University, Bugwood.org

Green ash (5 leaflets)

Leaves

Leaves are compound.

Typically have 5-11 leaflets.



Paul Wray, Iowa State University, Bugwood.org

White ash (11 leaflets)

UGA0008014

Bark

On mature trees left), the bark is tight with a distinct pattern of diamond-shaped ridges.

On young trees (right), bark is relatively smooth.

UGA5468526

UGA0008168

Seeds

Dry, oar-shaped samaras.

Occur in clusters and typically hang on the tree until late fall or early winter.

Here are the trees and shrubs most often mistaken for ash.

Similar trees and shrubs with alternate leaves

Walnut

- Alternate leaves
- 11-23 leaflets
- Leaflets are toothed
- Fruit is a large nut

Hickories

- Alternate leaves
- 5-17 leaflets
- Leaflets are toothed
- Fruit small to large nut

Black Locust

- Alternate leaves
- 7-19 leaflets
- Thorns at nodes
- Fruit resembles a bean pod

Prickly Ash

- Alternate leaves
- 7-17 leaflets
- Leaflets are toothed
- Stem and leaves have prickles

UGA5444266

Sumacs

- Alternate leaves
- 5-30+ leaflets
- Leaflets are toothed
- Fruit is a cluster of hard berries

Similar trees and shrubs with opposite leaves

UGA1552121

Boxelder

- 3-5, sometimes 7 leaflets
- Leaflets are coarsely toothed, sometimes nearly lobed
- Fruits are a samara with a curved wing (contrasted to ash's straight wing)

UGA1553081

Elderberry

- 5-11 leaflets
- Leaflets have abundant teeth
- Large shrub

Printed by University of Arkansas Cooperative Extension Service Printing Services.

United States Department of Agriculture, University of Arkansas, and County Governments Cooperating

EMERGENCY RULES

Emergency Rules include new rules, amendments to existing rules, and the repeals of existing rules. A state agency may adopt an emergency rule without prior notice or hearing if the agency finds that an imminent peril to the public health, safety, or welfare, or a requirement of state or federal law, requires adoption of a rule on fewer than 30 days' notice. An emergency rule may be effective for not longer than 120 days and may be renewed once for not longer than 60 days (Government Code, §2001.034).

TITLE 4. AGRICULTURE

PART 1. TEXAS DEPARTMENT OF AGRICULTURE

CHAPTER 19. QUARANTINES AND NOXIOUS AND INVASIVE PLANTS

SUBCHAPTER Z. EMERALD ASH BORER QUARANTINE

4 TAC §§19.700 - 19.703

The Texas Department of Agriculture (the Department) adopts new Title 4, Chapter 19, Subchapter Z, Emerald Ash Borer Quarantine, §§19.700 - 19.703, concerning a quarantine for a dangerous plant pest, the emerald ash borer (EAB), *Agrilus planipennis* on an emergency basis. The new sections are adopted to establish requirements and restrictions necessary to address dangers posed by the potential spread of Emerald Ash Borer (EAB) infestations in Harrison County, and recently in Marion, Cass, and Tarrant Counties of Texas.

EAB is a highly destructive invasive wood-boring beetle native to China and other areas of East Asia that targets ash trees (*Fraxinus* spp.). Since its introduction into the United States in 2002, EAB has been detected in over 35 states. During the 2018 trapping season, EAB were intercepted at multiple sites in Harrison County, Jefferson County, and Cass County. On November 6, 2018, suspected EAB larvae were sampled from ash trees in the Eagle Mountain Lake area of Tarrant County and were subsequently confirmed as EAB by the United States Department of Agriculture (USDA).

Intrastate or interstate movement of ash nursery trees, hardwood firewood, and other ash products from quarantined areas present a risk for further spread of this invasive pest into uninfested areas. An EAB infestation could kill Texas ash trees, such as *F. albicans* (= *F. texensis*) (Texas ash), *F. americana* (American ash or white ash), *F. berlandieriana* (Berlandier ash, or Mexican ash), *F. caroliniana* (Carolina ash, Florida ash, pop ash, swamp ash, or water ash), *F. cuspidata* (fragrant ash), *F. greggii* (Gregg's ash), *F. papillosa* (Chihuahuan ash), *F. pennsylvanica* (green ash or red ash), *F. smallii* (Small's white ash), and *F. velutina* (Arizona ash, desert ash, or velvet ash). In the four affected counties, there are 999 licensed nursery floral operations, including 58 nursery plant growers, which are at risk due to EAB infestations. The infestation of susceptible plants could spread beyond the four affected counties, across Texas and nationwide, in the event a quarantine and requirements are not established to prevent the transportation of infested plants in accordance with the new emergency rules.

Recent EAB infestations jeopardize the health of ash trees in Texas forests, woodlands, landscapes, nurseries, and urban environments. These emergency regulations mitigate the risk of establishment and spread of this invasive insect pest, thereby protecting the vulnerable forest, landscape, nursery, and firewood industries of the state. The rules which are being adopted on an emergency basis are both necessary and appropriate in order to effectively combat and prevent the spread of EAB in Texas. In order to address the ongoing threat of EAB, the Department may propose adoption of the emergency rules on a permanent basis in a separate submission.

New §19.700 defines the quarantined pest. New §19.701 defines the quarantined area. New §19.702 defines the regulated articles subject to the quarantine. New §19.703 prescribes requirements and restrictions for movement of regulated articles from a quarantined area to a pest-free area.

The new sections are adopted on an emergency basis under the Texas Agriculture Code, §§71.001 and 71.002, which authorizes the Department to establish quarantines against in-state and out-of-state diseases and pests; §71.004, which authorizes the Department to establish emergency quarantines; §71.007, which authorizes the Department to adopt rules as necessary to protect agricultural and horticultural interests, including rules to provide for specific treatment of quarantined articles; and the Texas Government Code, §2001.034, which provides for the adoption of administrative rules on an emergency basis without notice and comment.

The code affected by the emergency adoption is the Texas Agriculture Code, Chapters 12 and 71.

§19.700. Quarantined Pest.

The quarantined pest is the emerald ash borer (EAB), *Agrilus planipennis,* in any life stage.

§19.701. Quarantined Areas.

(a) Quarantined areas in Texas include the following counties: Cass, Harrison, Marion, and Tarrant.

(b) Quarantined areas outside of Texas include all other states, districts, and areas within other states that are designated quarantined areas by 7 CFR §301.53-3.

§19.702. Regulated Articles Subject to the Quarantine.

(a) For purposes of this subchapter, a regulated article is a quarantined article defined under Texas Agriculture Code, §71.0092.

(b) The following are regulated articles:

(1) The emerald ash borer; firewood of all hardwood (non-coniferous) species; nursery stock, green lumber, and other material living, dead, cut, or fallen, including logs, stumps, roots, branches, and composted and uncomposted chips of the genus *Fraxinus.*

(2) Any other article, product, or means of conveyance not listed in paragraph (1) of this subsection may be designated as a regulated article if an inspector determines that it presents a risk of spreading EAB and notifies the person in possession of the article, product,

or means of conveyance that it is subject to the restrictions of the regulations.

§19.703. Restrictions.

(a) Interstate movement of regulated articles from quarantined areas is subject to 7 CFR §301.53-4.

(b) Intrastate movement of regulated articles from a quarantined area shall be done only under the following conditions:

(1) under a certificate, special permit or compliance agreement issued by the Department or USDA; or

(2) without a phytosanitary certificate, permit or compliance agreement, if:

(A) the regulated article is moved by the Department or the USDA for regulatory, experimental or scientific purposes; or

(B) the regulated article originates outside the quarantined area and is moved intrastate through the quarantined area under the following conditions:

(i) the points of origin and destination are indicated on a waybill accompanying the regulated article;

(ii) the regulated article, if moved through the quarantined area during the period May 1 through August 31, or when the ambient air temperature is 40° F or higher, is moved in an enclosed vehicle or is completely covered to prevent access by EAB;

(iii) the regulated article is moved directly through the quarantined area without stopping (except for refueling or for traffic conditions, such as traffic lights or stop signs), or has been stored, packed, or handled at locations approved by an inspector as not posing a risk of infestation by EAB; and

(iv) the regulated article has not been combined or commingled with other articles so as to lose its individual identity.

(c) A regulated article moved in violation of this subchapter shall be seized and may be destroyed by the Department, with all associated costs being the responsibility of the owner or the shipper of the regulated article.

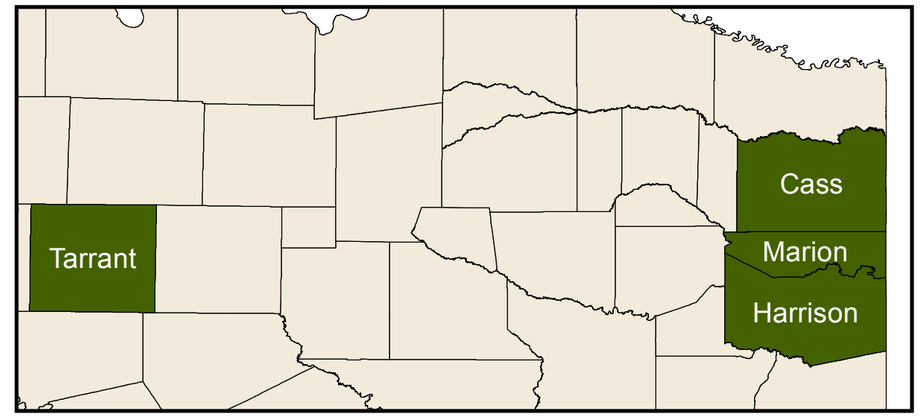
The agency certifies that legal counsel has reviewed the emergency adoption and found it to be a valid exercise of the agency's legal authority.

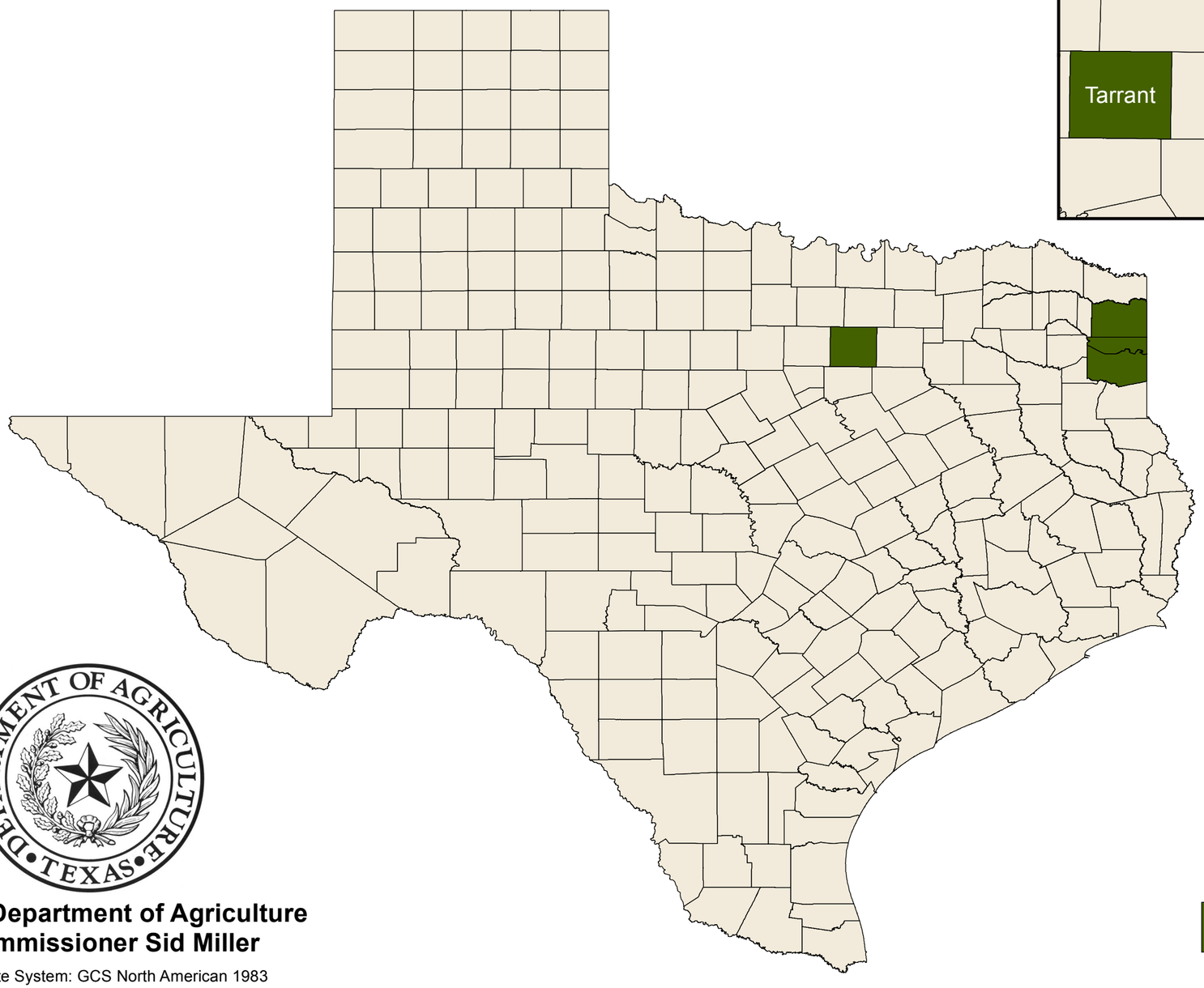
Filed with the Office of the Secretary of State on January 17, 2019.

TRD-201900138
Jessica Escobar
Assistant General Counsel
Texas Department of Agriculture
Effective date: January 17, 2019
Expiration date: May 18, 2019
For further information, please call: (512) 463-4075

Texas Emerald Ash Borer Quarantine

Texas Administrative Code Title 4, Chapter 19, Subchapter Z





Texas Counties Under Quarantine

Texas Department of Agriculture
Commissioner Sid Miller

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Date: 1/31/2019

LET'S GO ADVENTURING

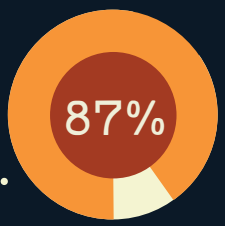
40% of the U.S. population participated in adventures like hunting, fishing and wildlife-watching in 2016.

35.8 million people in the U.S. went fishing in 2016, spending over $21.1 billion on equipment, including camping supplies.

11 MILLION

people in the U.S. go hunting each year.

All 2,235 National Forest and 695 U.S. Army Corps of Engineers reservable campgrounds advise using local or heat-treated firewood to reduce the risk of transporting forest pests.



of campers say having a campfire is extremely important.

YOU CAN HELP

BUY LOCAL FIREWOOD

44% of U.S. households camp at least once each year; and 81% of campers go 3 or more times.

200 MILES

the average distance from home to campsite.

BUY IT WHERE YOU BURN IT.

LEARN MORE AT DONTMOVEFIREWOOD.org.

For a complete list of sources, please visit dontmovefirewood.org/letsgoadventuring.

USDA-Approved Regulatory Mitigation and Treatment Measures for the Movement of EAB Regulated Articles from Quarantined Areas

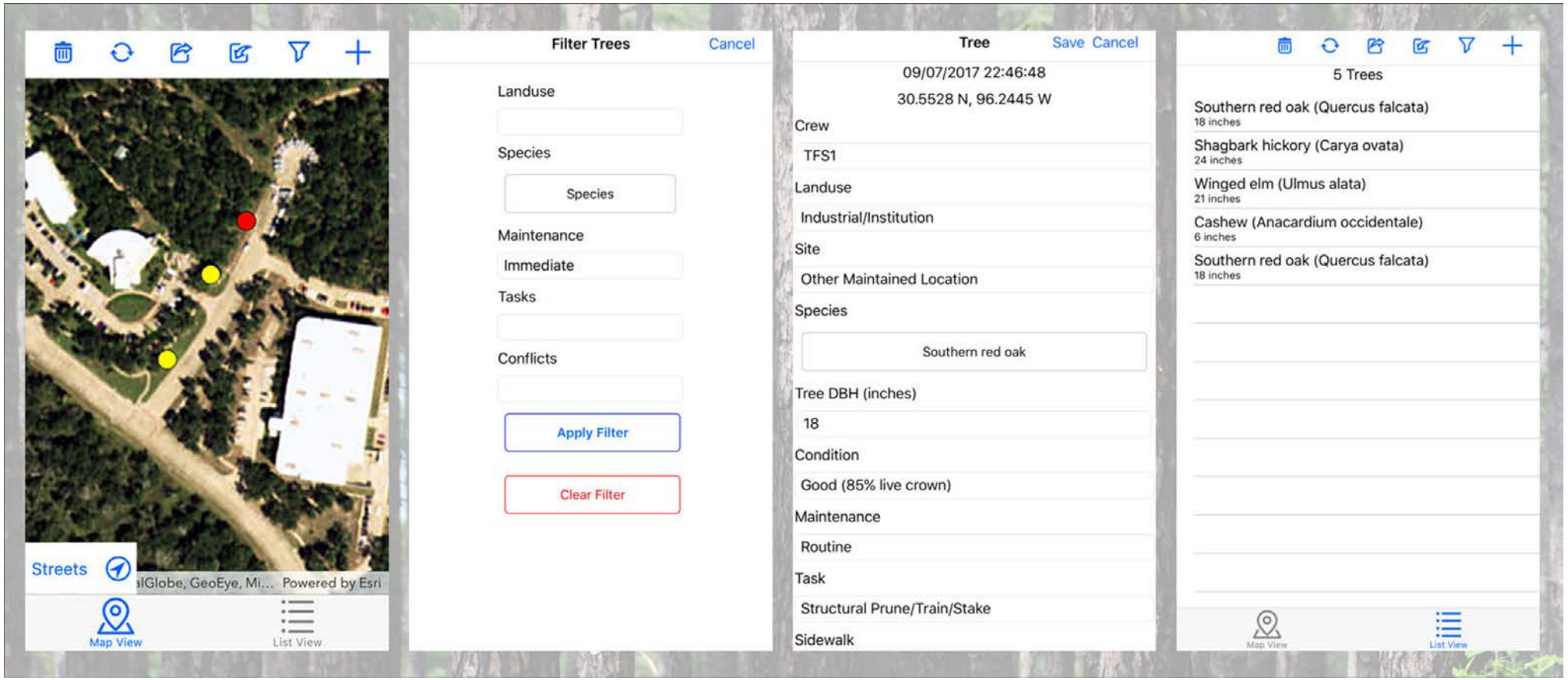
Regulated Article	Mitigation and Treatment Measures
Firewood of all hardwood species	• Remove bark and an additional ½ inch of wood[1] or • Kiln sterilization treatment (T404-b-4) or • Heat treatment (T314-a) in a heat treatment facility approved by APHIS or • Fumigate according to treatment schedule T404-b-1-1 (Methyl bromide fumigation at NAP-tarpaulin or chamber) or • Apply an APHIS approved method[2].
Chips and Mulch of all hardwood species	• Chip or mulch to less than one inch in at least two dimensions or • Follow an APHIS approved mulching or composting protocol or • Apply an APHIS approved method[2].
Nursery Stock of *Fraxinus* spp.	No treatment available. No compliance agreements. No certification. This article is not being moved at this time.
Green lumber of *Fraxinus* spp.	• Remove bark and an additional ½ inch of wood[1] or • Kiln sterilization treatment (T404-b-4) or • Fumigate according to treatment schedule (404-b-1-1 (Methyl bromide fumigation at NAP-tarpaulin or chamber) or • Apply an APHIS approved method[2].
Logs of *Fraxinus* spp.	• Remove bark and an additional ½ inch of wood[1] or • Kiln drying treatment for logs <3" dia.(T404-b-4) or • Heat treatment (T314-a) in a heat treatment facility approved by APHIS or • Fumigate according to treatment schedule T404-b-1-1 (Methyl bromide fumigation at NAP-tarpaulin or chamber) or • Apply an APHIS approved method[2].
Other material including wood waste, living, dead, cut or falling including stumps, roots, branches of *Fraxinus* spp.	• Chip or mulch to less than one inch in at least two dimensions or • Apply an APHIS approved method[2].
Wood Packing Material **containing regulated green lumber, including but not limited to**, dunnage, crating, pallets, packing blocks, drums, cases, and skids.	• ISPM accredited treatments or • Treatment/mitigations for green lumber of *Fraxinus* spp. itself as listed above or • Apply an APHIS approved method[2].

[1] The bark and wood removed will be regulated separately. If intended for interstate movement the removed bark and wood must be treated as described for chips and mulch. If produced at a mill located outside the quarantine area but approved to handle green ash logs or lumber from within the quarantine area, wood waste must be treated or destroyed prior to adult flight season.

[2] Consult Local USDA APHIS Official or State Plant Health Director.

Detailed specifications for treatments can be found in the current edition of the PPQ Treatment Manual online at: https://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf

TREES COUNT



- Trees Count is a mobile app for iOS and Android devices that allows users to inventory trees in communities.
- Trees are mapped and characterized with informative attributes.
- Inventories can be transferred across devices.
- The data is iTree compatible and can be exported to CSV files that can be opened in Excel or imported into the companion Access database application for printing reports.

TEXAS A&M FOREST SERVICE

GET THE APP

iTunes

https://itunes.apple.com/us/app/trees-count-tree-inventory/id1281104625?mt=8

Google Play

https://play.google.com/store/apps/details?id=edu.tfs.tamu.tfs_tree&hl=en

Texas A&M Forest Service