Emerald Ash Borer

Agrilus planipennis

Lateral and dorsal views. Collected on Kalmia Ave., Boulder County, Colorado, U.S.A. on 10 July 2014.

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Celebrating 12 years at CSU!

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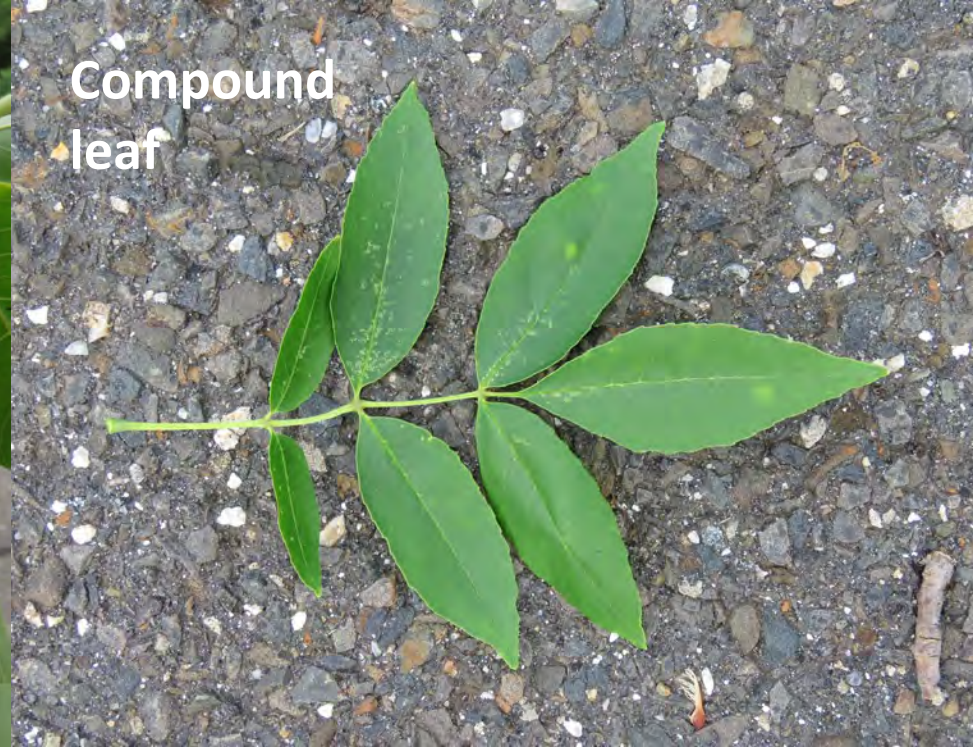
Ash ID



http://artsbayfieldalmanac.blogspot.com/2013/12/identifying-ash-trees-in-winter.html

Both green ash and white ash are dioecious.
Most all ash trees planted in Colorado are males.

Photos courtesy of T. Davis Sydnor, The Ohio State University, Bugwood.org

Female (seed bearing) green ash (left) and male (pollen producing) green ash (right)

Emerald Ash Borer:
Background & Overview of the Green Menace

NATHAN W. SIEGERT,
PH.D. FOREST
ENTOMOLOGIST

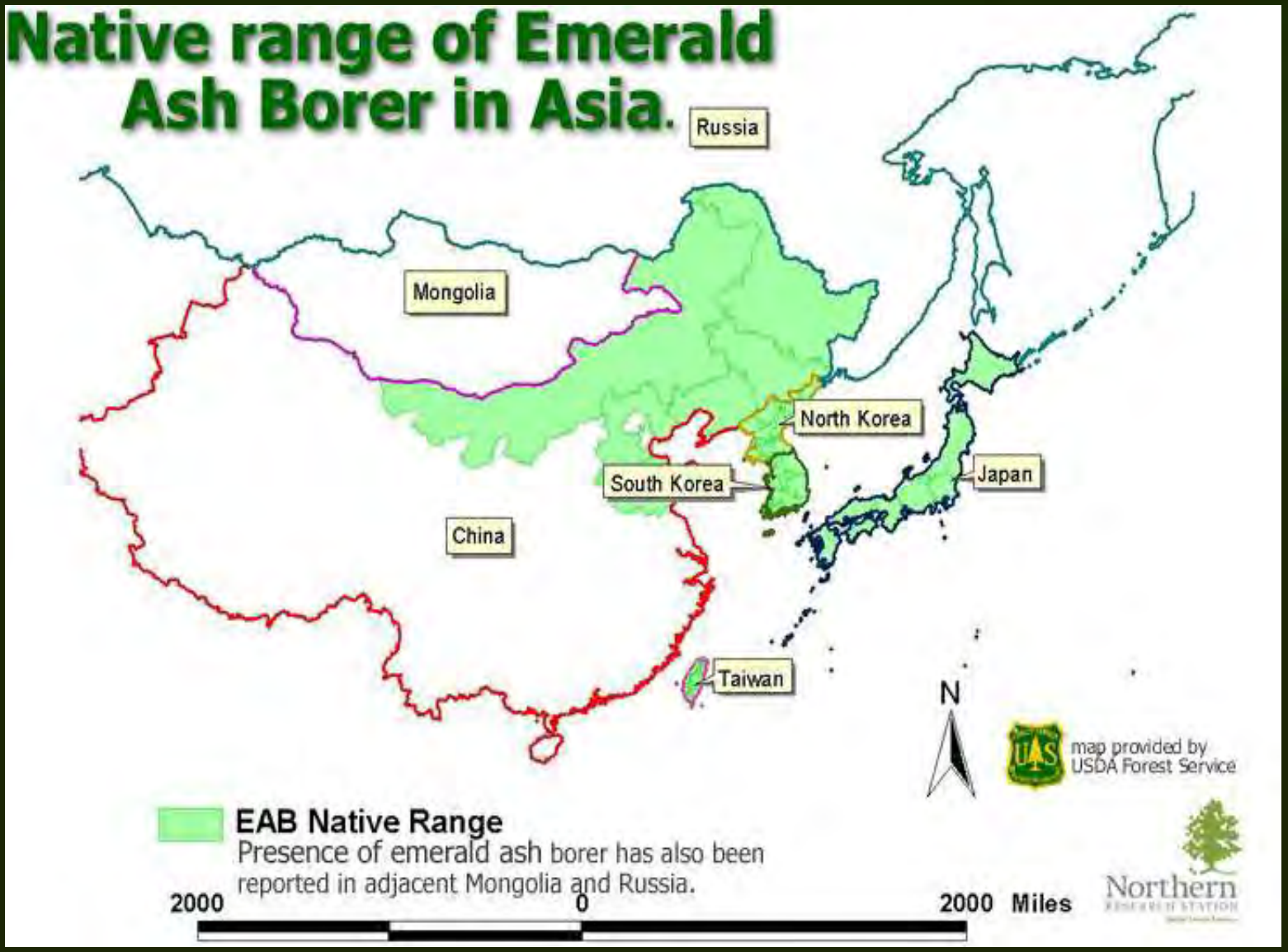
US FOREST SERVICE
NORTHEASTERN AREA
STATE & PRIVATE
FORESTRY
FOREST HEALTH
PROTECTION

Emerald Ash Borer

EAB is the most destructive forest insect in Eastern North America

EAB has killed millions of ash trees in North America.

Transported to new areas in infested firewood, timber and nursery stock.



Native Range of EAB

EAB is a destructive wood-boring beetle introduced from Asia.

It is rare in its native range with little known about EAB globally at the time of its detection in the US.

Host Susceptibility

Average survivorship of EAB is greater on North American ash species (63.3 ± 7.2%) compared to ash species with European (51.4 ± 17.0%) or Asian (26.6 ± 10.5%) origins.

Siegert et al. (2014) Susceptibility of Selected Asian, European, & North American Ash Species to Emerald Ash Borer: Preliminary Results of No-Choice Bioassays. *National EAB Research & Technology Development Meeting.*

EAB Biology & Life Cycle

- Adults are roughly a half inch long and dark metallic green.
- Life cycle generally takes one year to complete.
    - 2-yr development typical at newly established sites.
    - More rapid development at high EAB densities and/or in stressed trees.

EAB Biology & Life Cycle

Larvae begin feeding in July and most finish by Oct-Nov.

EAB Biology & Life Cycle

Extensive galleries under the bark disrupt translocation of water and nutrients in the tree.

Damage is done by the larvae that tunnel under the bark, girdling the cambium

Photo by Edward Czerwinski

Tree Decline & Mortality

Foliage becomes thin, ragged and yellow.

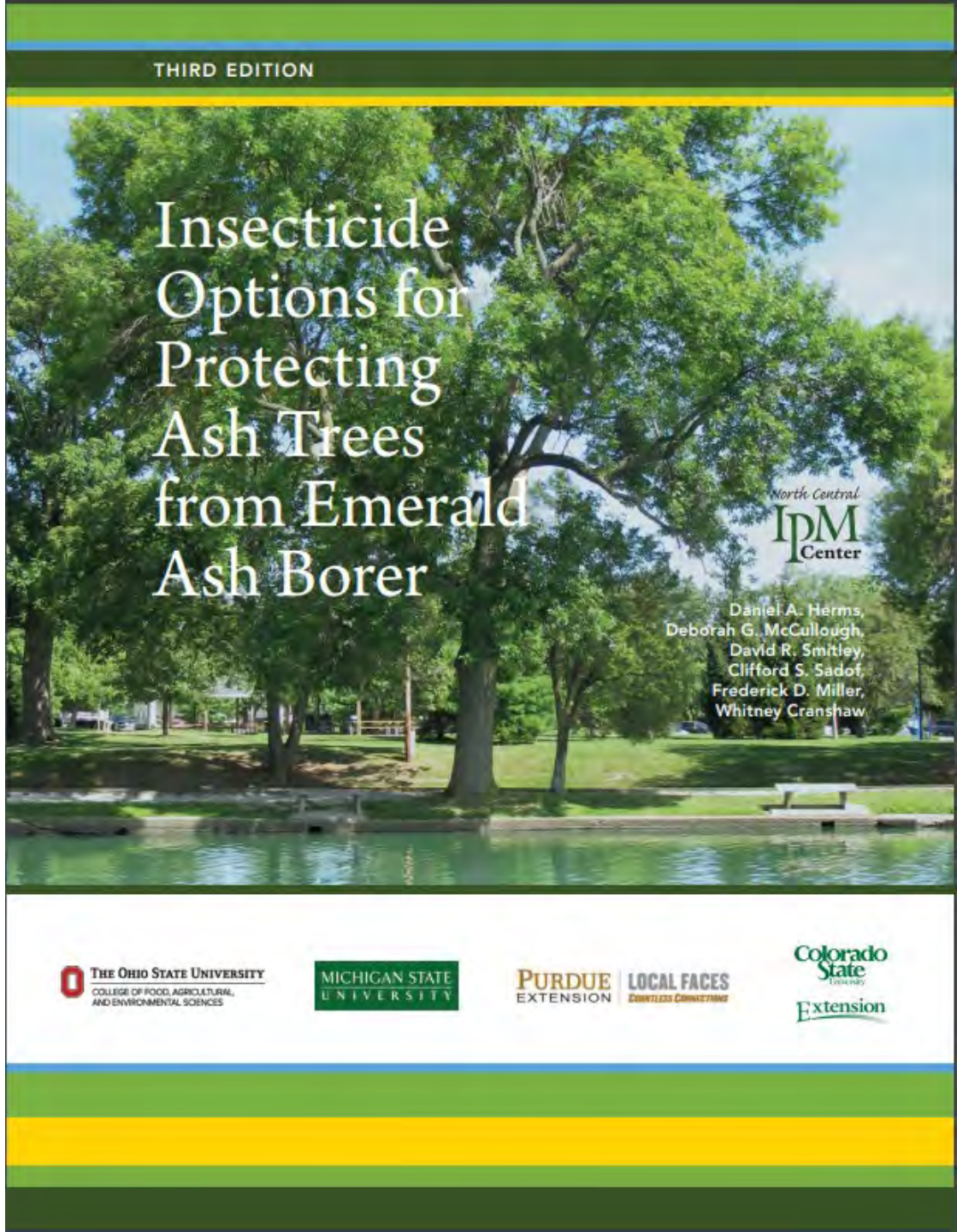
Canopy dieback progresses through the summer.

North American ash of all sizes typically die in 3-5 years.

EAB larval injuries progress to tree death, if the tree is not effectively treated with insecticides to control the insect

Treating for EAB

- Insecticide Options for Protecting Ash Trees from Emerald Ash Borer
- When property is within 30 miles of trees with noticeable EAB damage



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Insecticides Used to Control Emerald Ash Borer on Residential Shade Trees

Fact Sheet 5.626 Insect Series | Trees & Shrubs

By W.S. Cranshaw (5/20)*

insecticides	EAB Life Stages	Method of Application	Toxicity of Leaves to Adult	Required Treatment Frequency
imidacloprid	Adults, young larvae (L1,L2)	Soil	Sustained feeding	Annual
dinotefuran	Adults, young larvae (L1,L2)	Trunk spray/Soil dench/ injection possible	A few bites	Annual
emamectin benzoate	Adults, all larval stages	Trunk injection	One or two bites	Bi-annual
azadirachtin	Adults, all larval stages	Trunk injection	Not toxic; may suppress egg production	Annual; bi-annual when populations are low

Investigations into Potential Non-Target Effects from the Use of Emamectin Benzoate Trunk Injections for the Management of Emerald Ash Borer (Coleoptera: Buprestidae)

I. Early season pollen resources collected by honey bees (*Apis mellifera* L.) in urbanized areas of the Northern Front Range of Colorado, with emphasis on detecting use of pollen from ash (*Fraxinus*)

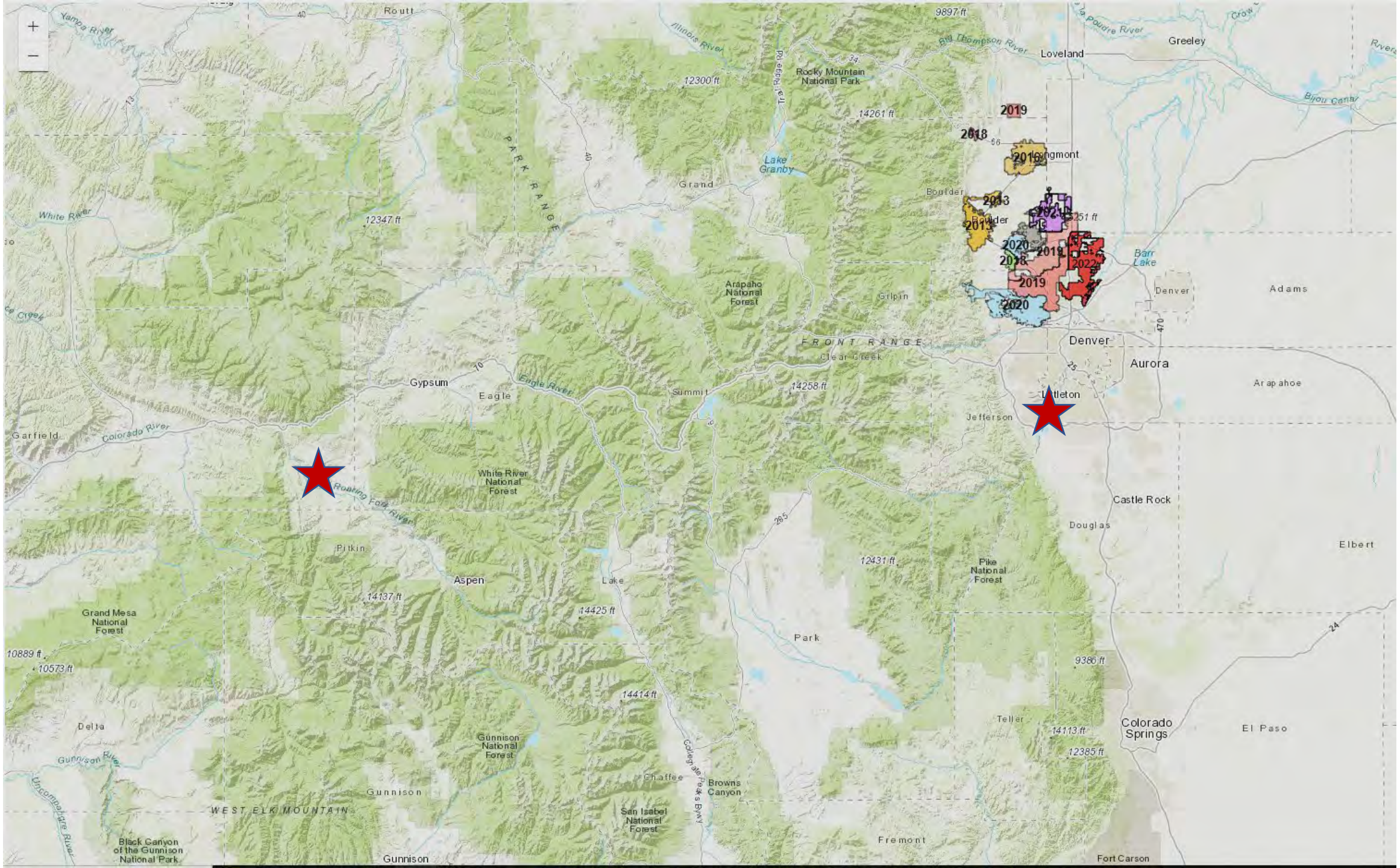
II. Investigation of leaf decomposition flowing use of trunk injected insecticides to control emerald ash borer

III. Assessment of emamectin benzoate residues present in senescent foliage, flowers and pollen following trunk injection treatment of ash trees

Dr. Rasha Al-akeel

Summary of pollen work

- Ash pollen was a minor source of pollen collected by honey bees
- Pollen from white ash was collected much less commonly than from green ash
- Reduction in collection of pollen from ash trees can be reduced by increasing use of alternative pollen sources during ash bloom
- No residues of emamectin benzoate (EB) were collected from ash pollen
- Effects of azadirachtin and EB treatment on degradation of fallen leaves was very minor, at most


Routt
Yampa River
Illinois River
Big Thompson River
Loveland
Greeley
Rocky Mountain National Park
Trail Ridge Rd
Lake Granby
Grand
PARK RANGE
White River
Longmont
Boulder
Arapaho National Forest
Gilpin
FRONT RANGE
Clear Creek
Barr Lake
Denver
Adams
Aurora
Arapahoe
Gypsum
Eagle
Eagle River
Summit
Littleton
Jefferson
Garfield
Colorado River
White River National Forest
Roaring Fork River
Castle Rock
Douglas
Elbert
Pitkin
Aspen
Lake
Pike National Forest
Grand Mesa National Forest
Park
Delta
Gunnison National Forest
Gunnison River
Uncompahgre River
Chaffee
Browns Canyon
Teller
Colorado Springs
El Paso
Gunnison
WEST ELK MOUNTAIN
San Isabel National Forest
Fremont
Black Canyon of the Gunnison National Park
Fort Carson
2019
2018
2016
2013
2021
2020
2019
2018
2022
2019
2020

2020 – EAB Federal Quarantine Removed

- No federal/state/county quarantine
- USDA APHIS investigating bio-controls, mainly on east coast.
- Promoting IPM in the landscape to “identify, manage and reduce the risks and impacts from pests.”

What to look for

How do I know if a tree has EAB?

“Blonding” from woodpeckers

Dave Cappaert, Bugwood.org.

Epicormic sprouts

Joseph OBrien, USDA Forest Service, Bugwood.org

Dieback

Daniel Herms, The Ohio State University, Bugwood.org

Bark Splits

Michigan Department of Agriculture , Bugwood.org

What do to do if you think you have EAB?

1. Attempt to get samples with a draw knife
2. Contact CSFS or CSU Extension with photos
3. Samples can be sent to me in Grand Junction
4. I am an official confirmer, but I would also likely send the sample to the C.P Gillette Museum of Arthropod Diversity on CSU's main campus for final confirmation

EMAIL ME TO SEND SAMPLES:

Melissa.Schreiner@colostate.edu

Emerald Ash Borer Look-A-Likes

- **There are other adult metallic wood boring beetles that look similar to EAB**
- **These below are associate with declinging and recently killed trees.**
- **Non- ash hosts**

Buprestis confluenta=
associated with cottonwoods/aspens

Buprestis aurulenta=
associated with conifers

Buprestis intricata=
associated with lodgepole pine

Agrilus quercicola=
associated with Gamble oak, other oak sp.

Colorado State Forest Service Website

COLORADO STATE FOREST SERVICE
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Emerald Ash Borer: A Green Menace

CSFS EAB Home | What Is EAB? | Ash Tree Identification | What We're Doing | What You Can Do | Management Resources | Additional Info

Emerald ash borer (*Agrilus planipennis*; EAB) is an insect native to Asia. It was introduced into North America sometime during the 1990s, probably via ash wood pallets or wood packing material.

Since its initial discovery in southeastern Michigan in 2002, this insect has killed millions of ash trees (*Fraxinus spp.*) throughout the central and northeastern United States and Canada. EAB is now considered the most destructive tree insect pest ever to be introduced into North America.

An infestation was first detected in Colorado in the City of Boulder in September 2013. Approximately 15 percent of the trees in Colorado's urban forests are ash, making this insect a major threat to urban forests statewide.

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