Major Insect Pests in Trees:

Front Range and West Slope

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Agenda

Objectives:

1. Learn identification of major insect pests in trees
2. Learn to diagnose the signs and symptoms affecting the tree
3. Learn the control options to manage the pests

Stressed Ash, Grand Junction, photo by Tom Ziola

Ash Trees

- Ash tree needs- low heat, mildly drought tolerant
- Avoid planting in parking lots
- Highly overplanted (avoid monocultures)
- Drip does not correctly water mature trees
- Stress equals decline, insects, disease
- Structurally prune
- To cover today-
  - Ash Bark Beetles
  - Emerald Ash Borer
  - Lilac Ash Borer
  - Aphids
  - Flatheaded apple tree borer
  - Scale + sooty mold

Stressed Ash, Grand Junction, photo by Tom Ziola

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Ash Tree Insects

Western ash bark beetle (T. H. Atkinson, Barkbeetles.info)

- Ash Bark Beetle, Coleoptera
  - Once just hit very stressed trees (2018 GJ)
  - Native, Tiny 1/6", Overwinter as adult
  - No study on generations (1-3)
  - Dangerous to prune
  - Cultural- right place, planting, irrigation…
  - Chemical Control- similar to EAB
    - Pyrethroids, Emamectin benzoate

Ash bark beetle galleries (Swiss Federal Institute for Forest, Snow, and Landscape Research, Bugwood.org)

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Ash Tree Insects

Emerald Ash Borer

- Invasive beetle, most devasting tree pest
- Discovered in Boulder County Colorado in 2013
- CURRENT confirmed locations: unincorporated Larimer County and in the cities of Arvada, Boulder, Gunbarrel, Longmont, Lafayette, Lyons, Superior, Broomfield, Westminster and Erie
- Look for D-shaped exit holes, and more
- Recommendations:
    - MAKE A PLAN for your ash trees NOW
        - •Is the tree worth saving? (e.g. good health, around 15 inches in DBG or larger, etc.)
            - •If yes, plan to start treatment when EAB is near your location (remember some treatments are effective AFTER the tree has been infested with EAB, as long as canopy loss isn't greater than 30%)
            - •If no, plan for eventual removal of tree, consider replacements
        - •See fact sheets for more information on insecticide treatments, signs and symptoms

Debbie Miller, USFS

Debbie Miller, USFS

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Ash Tree Insects

Flatheaded Apple Tree Borer- Metallic Wood Borer

- Native, hardwood trees: oak, maple, ash, and apple.
- Emerges May-June, large D exit hole
- Eggs laid on bark, burrow leaving sawdust frass
- Will see with EAB and other insects- Severe stress, dead or dying trees
- Prevent- Drought, defoliation, use tree wrap, Imidacloprid, Permethrin by April

USU Image

CSU Ext. Image

Ash Tree Insects

Comparisons- Both Metallic Wood Borers

Flatheaded Appletree Borer | **Emerald Ash Borer**

Ash Tree Insects

- Lilac Ash Borer- Clear winged borer
  - Native, Lepidoptera
  - Especially goes for young, stressed trees
- Bores into heartwood. Enters trunk and branches.
- Spray preventative on trunk, branches- spring
- Permethrin 38, Acelypryn
- Imidacloprid NOT recommended.
- Prevent stress- Right place, proper planting, water…

'Wood" photos from CSU Extension factsheet

https://extension.colostate.edu/docs/pubs/insect/05614.pdf

Ash Tree Insects

ID Tip – Cornicles or projections from abdomen

Whitney Cranshaw, CSU

- Leafcurl ash aphids, a type of woolly aphid, cause the leaves to curl
- Feed by sucking sap from plants, common on many plants (over 350 species)
- Aphids in large numbers can cause wilting/dieback, but not always
- Excrete honeydew – a sticky substance that covers anything beneath the plant
- Recommendations:
  - Biological control: beneficial insects (honeydew attracts them)
  - Physical/cultural control: Use a forceful jet of water on affected plants
  - Chemical control:
    - Horticultural oils work on many species that overwinter as eggs, but NOT leafcurling aphids
    - Non-persistent contact insecticide sprays (insecticidal soaps and pyrethrins) will provide control of insects that are covered during sprays. Minimal hazard to beneficial insects

Whitney Cranshaw, CSU

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Elm Trees

- Full sun
- Well drained soils
- Tolerant of alkaline soils, clay soils, road salt, dry conditions
- But even Siberian Elm are having prolonged drought issues
- Covering today:
  - Elm Leaf Beetles
  - Elm Bark Beetles – Banded Elm Bark Beetles and European Elm Bark Beetles
  - Elm Leafminers
  - Elm Seed Beetles

Elm with cold damage, Susan Carter

Elm Tree Insects

Elm Leaf Beetles

- Larvae feed on leaf surface creating a skeletonizing pattern; adults chew holes in leaves
- Adults enter homes in the winter; harmless in home, but a nuisance
- Recommendations:
  - Few natural predators
  - Spring freeze may kill large numbers
  - Insecticide options include:
    - systemic soil drenches/injections in spring
    - sprays on leaves after eggs are laid / before significant leaf damage, typically May or June
    - trunk banding/spraying in early summer when first generation larvae finish feeding
  - Beetles in homes: seal up points of entry with caulking, replace screens, etc.
    - •Spot insecticide treatment may help in addition to sealing up entry points

All photos: Whitney Cranshaw, CSU

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Elm Tree Insects

Elm Bark Beetles - Banded Elm Bark Beetles and European Elm Bark Beetles

- Just like Ash, on the Western Slope seeing dieback from these even in Siberian
- Weather and drought events
- Tiny insects, Emerge in April, May
- Native and Non-native
- Small galleries-larval
- Large galleries- main adult egg laying
- DED in American Elms- both vectors

Banded elm bark beetle *Scolytus schevyrewi* (Pest and Diseases Image Library, Bugwood.org)

Elm bark beetle wood galleries (USDA Forest Service, Bugwood.org)

Elm Tree Insects

Elm Bark Beetles - Banded Elm Bark Beetles *Scolytus schevyrewi* **and European Elm Bark Beetles** *Scolytus multistriatus*

S. multistriatus photo by Pest & Diseases Image Library, Bugwood.org

- 2-3 generations / yr. both species
- Many Elm species, R. Olive, willows, pea family woody plants and *Prunus sp*. Susceptible
- Plant resistant varieties
- Monitor, sanitation, removal & debarking
- Active ingredients labeled for foliar applications on ornamental trees for “bark beetles”: : azadirachtin, bifenthrin, carbaryl, permethrin- rotate controls

Umass Ext. Flagging DED

Elm Tree Insects

Elm Leafminers - a sawfly (Tenthredinidae family)

- Feed within a leaf producing large blotches (other species create tunnels)
- Aesthetic damage only -- plant injury has minimal to no impact on the plant's health
- Many species of leafminers include: larvae of moths, beetles, sawflies, and flies
- Recommendations, if treatment is needed:
  - Apply sprays to leaves to coincide with periods when egg laying – shortly after leaves have expanded in spring.
    - Persisting contact insecticides are most effective (e.g. various pyrethroids)
  - Systemic insecticides may provide some effectiveness depending on type of application

Steven Katovich, Bugwood.org

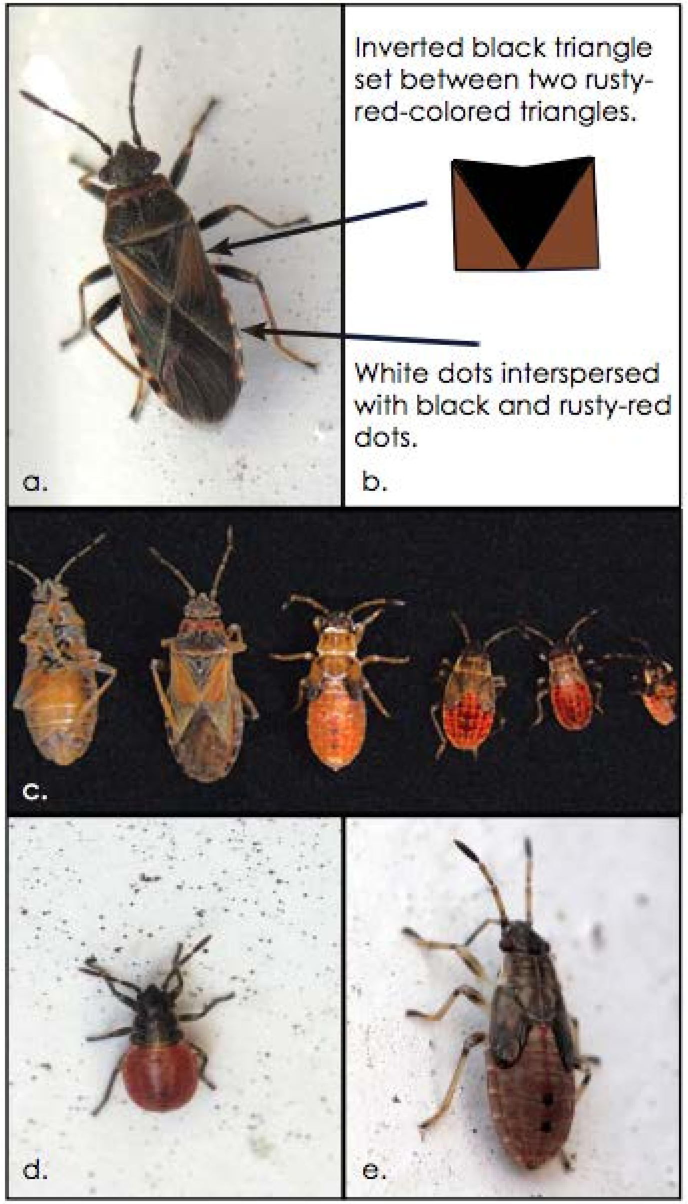
Whitney Cranshaw, CSU

Elm Tree Insects

Elm Seed Bugs - only on West Slope People will lose their minds when you get these!

- They are just a NUISANCE, in 100s.
- One generation / year. Fly great distances.
- Eats mainly seeds and some leaves.
- Comes indoors when hot and cold.

- Controls: Seed cleanup
- Perimeter pyrethroid spray
- Seal doors and windows, caulk!!!
- Shop vac indoors (fras)



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Honeylocust Tree Insects

- Honeylocusts are cold hardy, soil tolerant and drought resistant. Somewhat overused. Susceptible to sunscald.

- Covering today:
  - Honeylocust leafhoppers
  - Honeylocust plant bug and pod midge
  - Honeylocust borer

Honeylocust Photo by Susan Carter, Delta County CO

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Honeylocust
Tree Insects

Leafhopper images, Whitney Cranshaw, CSU, Bugwood.org

Honeylocust leafhoppers

- Bright green, approximately 3/16 inch; don'tconfused with honeylocust plant bug
- Eggs hatch in April, Spring
- Piercing sucking damage, speckled discolorations on the leaves
- Sticky honeydew may be present
- Apply controls prior to adults
- Many chemicals labelled for leafhoppers
- Several systemics are effective

https://apps.extension.umn.edu/garden/diagnose/plant/images/honeylocust/insects/hopper1_600px.jpg

Honeylocust
Tree Insects

Honeylocust plant bug and pod midge

- Infestations of **plant bug** occur in spring
- Injury is brown or yellow spotting
- Injury of new growth can limit podgall
- Control when spring growth threatened:
- Carbaryl, permethrin, bifenthrin, cyhalothrin) and imidacloprid

- Podgall damage caused by larvae of a small fly
- Controls are moderately affective
- Galls will drop causing the tree to look bare
- Severe weather and parasites control
- With either trees can releaf

USU Image

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Honeylocust Tree Insects

Honeylocust borer - *Agrilus difficilis*

- A secondary pest – the tree was already stressed out and declining for other reasons
- D-shaped exit holes
- Recommendations:
  - Improve overall tree health (e.g. drought stress, root damage)
  - Supplemental insecticidal controls include maintaining a protectant insecticide on the tree trunk during the egg-laying and hatching (begins early summer)
    - •Permethrin (Astro) is used for control of related borers attacking other shade trees.
    - •Complete control may be difficult: long egg-laying period, and smooth bark
  - Not recommended: systemic, soil drenches may not be effective if tree is severely stressed; be aware of flower bloom time and effects on pollinators

Ted C. MacRae, U. of Kentucky

Utah State Extension

Other Tree Insects

Poplar Borers and cottonwood borer -
(Aspen, cottonwood, poplar, willow)

- Don’t confuse with Cytospora canker- hole, fras, limb breakage
- Don’t plant aspen at low altitudes
- Proper planting, placement, maintenance
- Larvae feed on sapwood & hardwood
- Spray *Steinernema* nematodes into active larval galleries.
- Apply a pyrethroid insecticide on bark, early June.
- Remove and chip/burn heavily infested trees.

Whitney Cranshaw, CSU, Bugwood.org

CSFS

Poplar borer damage (Minnesota Department of Natural Resources, Bugwood.org)

Other Insects

Sooty mold from aphids and soft scales

- A fungus that grows on the honeydew excreted from aphids, soft scales, etc.
- Black fungal growth detracts from plant appearance
- Reduce photosynthesizing area on leaves
- Very severe cases: may lead to stunted growth or early leaf drop
- Recommendations:
  - Manage tree for overall health
  - Manage aphids with strong jets of water
  - Use IPM recommendations for other phloem-feeding insects

Joseph O'Brien, USFS

Whitney Cranshaw, CSU

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Other Insects

Scale

- Hard/armored scales feed on cell contents like cambium, and soft scales feed on phloem
- Scales produce protective covering to hide body
- Many species in Colorado; two examples include:
    - Armored scale includes oystershell scale found on hardwood trees like ash
    - Soft scales includes European elm scale found on elms
- Recommendations:
    - Manage tree for overall health; beneficial insects provide little control
    - Oystershell scale – hand removal on small trees by scrubbing bark with a soft, plastic pad; prune heavily infested branches
    - Insecticide treatment depends on the scale and timing of lifecycle
        - Apply horticulture oils during dormant/overwintering egg phase before budbreak; supplement with other treatments during heavy infestations
        - Spray options may be effective during spring crawler stage usually in June (carefully look at tree to determine when crawling); insecticides that persist on tree are more effective
        - Other options available; see fact sheets

Photos: Colorado State University

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Other Insects

Japanese Beetles - Only on Front Range

- Adults impact over 300 types of plants, larvae impact turf
- Affected trees include: Linden and some crabapple varieties, Norway and Japanese maples, some fruit trees, and more.

- Recommendations for adults:
  - Maintain tree health – a healthier tree can better tolerate feeding
  - Hand-picking when applicable
  - Traps are NOT effective
  - Insecticides – a lot of variability in persistence, effectiveness, and feasibility; many are hazardous to pollinators on flowering plants
  - *Bacillus thuringiensis* var. *galleriae* (beetleJUS, beetleGONE!) and chlorantraniliprole (Acelepryn) are safe for pollinators

- Recommendations for turf:
  - Maintain turf health (mow higher)
  - Allow top few inches of turf to dry in between waterings to prevent grub survival in July and August
  - Determine presence of grubs before treatment – many lawn issues have similar appearances
  - Grub control options: *Bacillus thuringiensis* var. *galleriae*, parasitic nematodes, and insecticides
  - See fact sheet for tables on all available products and considerations

David Cappaert

Steven Katovich

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Questions

- Lisa Mason
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- Susan Carter
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- Or contact your local Agent at:
    - https://extension.colostate.edu/

Cold damage and thousand cankers in Walnut, Susan Carter

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