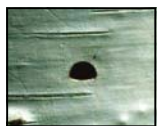


## Bronze birch borer



### Identification

- On paper birch or other birch with white bark.
- Tree begins dying from the top.
- Swellings may appear in the stems.
- D-shaped holes about 1/8-inch across appear in the bark of dead stems.

### Control

- Spray trunk and branches with permethrin or bifenthrin in late May and repeat in 3 weeks or treat soil with imidacloprid in March (has 60-day delay). Can trunk inject for emergency treatments with imidacloprid.\*
- Improve tree health by mulching and watering about 1 inch per week. Avoid overwatering.

## Lilac borer/ash borer



### Identification

- On ash and lilac.
- Round holes about 3/16-inch in diameter appear on the trunk and branches.
- May have sawdust-like material in rough areas of the bark.

### Control

- Spray the trunk and large branches with permethrin or bifenthrin\* around May 10 and repeat in 3 weeks.

## Carpenterworm



### Identification

- On ash, cottonwood and other broadleaf trees.
- Round holes up to about 1/2-inch in diameter appear in the bark of the trunk and branches.
- Sawdust-like material appears on the bark and at the base of the tree.

### Control

- Improve tree health by mulching and watering about 1 inch per week. Avoid overwatering.
- Chemical controls are typically not very effective, but an application of parasitic nematodes sometimes provides good control.

### \* Always follow pesticide label instructions.

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Nebraska Forest Service, University of Nebraska

More information: [www.nfs.unl.edu/FH.htm](http://www.nfs.unl.edu/FH.htm)

Photo credits: Spider mites 1 & 2: Whitney Cranshaw, Colo. St. Univ.



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# Insect Pests of Broadleaf Trees

## Caterpillars



### Identification

- On many broadleaf trees.
- Foliage is missing, stripped or partially chewed.
- Insects are present.

### Control

- Caterpillars almost never cause permanent harm to broadleaf trees. Damage is temporary, so a control is rarely needed.
- For a small tree, knock the insects off the tree.
- For larger trees, if a control is desired, spray with *Bacillus thuringiensis*, permethrin, spinosad or carbaryl\* when larvae appear.

## Fall webworm



### Identification

- Mostly on cottonwood but can be on many trees.
- Web nests are present near the ends of branches in mid to late summer with caterpillars inside.

### Control

- Usually not needed for the health of the tree.
- Spray with Bacillus thuringiensis, spinosad, permethrin\* or other product labeled for caterpillars when webs appear (mid summer).

## Mimosa webworm



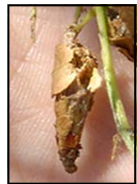
### Identification

- On honeylocust.
- Dead leaves are webbed together with a caterpillar inside.

### Control

- Spray with Bacillus thuringiensis, spinosad, permethrin\* or other product labeled for caterpillars when webs appear (June & August).

## Bagworm



### Identification

- On many broadleaf trees.
- Bags made of dead leaves hang from branches and have a caterpillar inside.

### Control

- Spray with Bacillus thuringiensis, spinosad, permethrin\* or other product labeled for caterpillars when bags appear (early June).
- On a small tree, hand pick and destroy bags.

## Elm leaf beetle



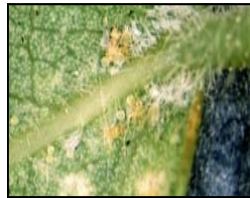
### Identification

- On Siberian and American elm.
- Blackish larvae are present.
- Leaves have holes or the bottom layer eaten with just the top layer and veins remaining.
- Leaves turn brown and drop from the tree.

### Control

- Usually not needed for the health of the tree.
- Spray with imidacloprid, spinosad, permethrin, deltamethrin or carbaryl when larvae appear, or treat soil with imidacloprid\* (60-day delay).

## Spider mites



### Identification

- Mostly on honeylocust.
- Leaves develop small yellow spots, especially near the base of the leaflet or leaf, then turn mostly yellow or brown.
- Many tiny mites and mite eggs can be seen with a magnifying glass.

### Control

- Spray when mites are present (as early as April, but mostly June through August). Make a second application 7 to 10 days later with a different or same product. (A different product will reduce the development of resistance.)
- Products available include horticultural oil/growing season oil, insecticidal soap, bifenazate, spiromesifen, abamectin and acephate+fenbutatin-oxide.\*

## Lace bugs



### Identification

- Mostly on hackberry, linden, oak and sycamore.
- Leaves have yellow spots and brown areas.
- Leaves may turn yellow or brown.
- Small black spots are present on the leaves.
- Small lacy insects are present.

### Control

- Spray with insecticidal soap, horticultural oil/growing season oil, permethrin, deltamethrin, imidacloprid, acephate or malathion\* when yellow spots and insects appear (June).

## Plant bugs



### Identification

- Mostly on honeylocust and ash.
- Leaves are twisted or do not emerge (honeylocust), or have yellow spots in the spring (ash).

### Control

- Usually no control is needed.
- If needed on honeylocust, spray with insecticidal soap or horticultural oil/growing season oil\* when leaves fail to appear after budbreak.

## Oystershell scale



### Identification

- Mostly on ash and maple.
- Branches die and hold leaves later into the fall.
- Scales are present on the stems.

### Control

- Spray trees when eggs hatch and yellow crawlers appear (late May). Repeat as directed.
- Products include horticultural oil/growing season oil (NOT for some maples), insecticidal soap (NOT for some maples), acephate (NOT for some maples) and malathion.\*