# Leaf Beetles and Weevils


**Dr. Vera Krischik, Department of Entomology, University of Minnesota**

# Cottonwood Leaf Beetle

*Chrysomela scripta*
Family Chrysomelidae
Native Pest


**Hosts:** Cottonwood, other poplars and willows.

**Life History:** Adults emerge in spring. Females lay yellow, oval eggs in clusters under leaves. Young larvae are gregarious. Two to four generations a year.

**Overwintering:** Adults under bark or grass.

# Cottonwood Leaf Beetle

**Damage:** Shot holes (adults), skeletonization (young larvae), defoliation.

**Monitoring:** Look for beetles and damage in summer.

Vera Krischik

Whitney Cranshaw

# Cottonwood Leaf Beetle

**Cultural Control:** Pubescent varieties tend to offer some resistance.

**Chemical Control:** Spray in May or July before larval pupation. Avoid killing predators.


John Davidson


Whitney Cranshaw

# Cottonwood Leaf Beetle

**Biological Control: *Bacillus thuringiensis* var. *san diego.* Natural enemies include stink bugs, assassin bugs, ants, lacewings, lady beetles, spiders, wasps, and parasitic tachinid flies.**


Vera Krischik


Whitney Cranshaw

# Elm Leaf Beetle

*Pyrrhalta luteola*
Family Chrysomelidae
Introduced Pest


**Hosts:** Elms, zelkova.

**Life History:** Adults emerge in May and lay eggs in May and June. Larvae feed under leaves and pupate at base of trees. Two generations a year.

**Overwintering:** Adults in sheltered places.

# Elm Leaf Beetle

**Damage:** Shot holes (adults), skeletonization (young larvae), defoliation.

**Monitoring:** Look for adults in May and eggs, larvae, and pupae in June.


# Elm Leaf Beetle

**Cultural Cultural: Plant resistant species such as *Ulmus wilsoniana* and *Ulmus parvifolia.***


Larva and pupae


Eggs and emerging larvae

# Elm Leaf Beetle

**Chemical Control:** Spray pupae and larvae at the base of trees with carbaryl or methoxychlor. In severe infestations spray foliage with residual insecticides.

**Biological Control:** When young larvae appear spray with *Bacillus thuringiensis*. Two parasitoids are *Tetrastichus gallerucae* and *T. brevistigma* (Eulophidae). Predators include *Harmonia axyridis* (Asian lady beetle), staphylinid beetles, ants, and carabid beetles.

# Larger Elm Leaf Beetle


*Monocesta coryli*
Family Chrysomelidae
Native Pest

**Hosts:** Elm, river birch, pecan, hawthorn, hazel.

**Life History:** Overwintered larvae pupate in spring and adults appear in May. Larvae feed gregariously between the veins of leaves. One generation a year.

**Overwintering:** Larvae in cells under soil.

# Larger Elm Leaf Beetle

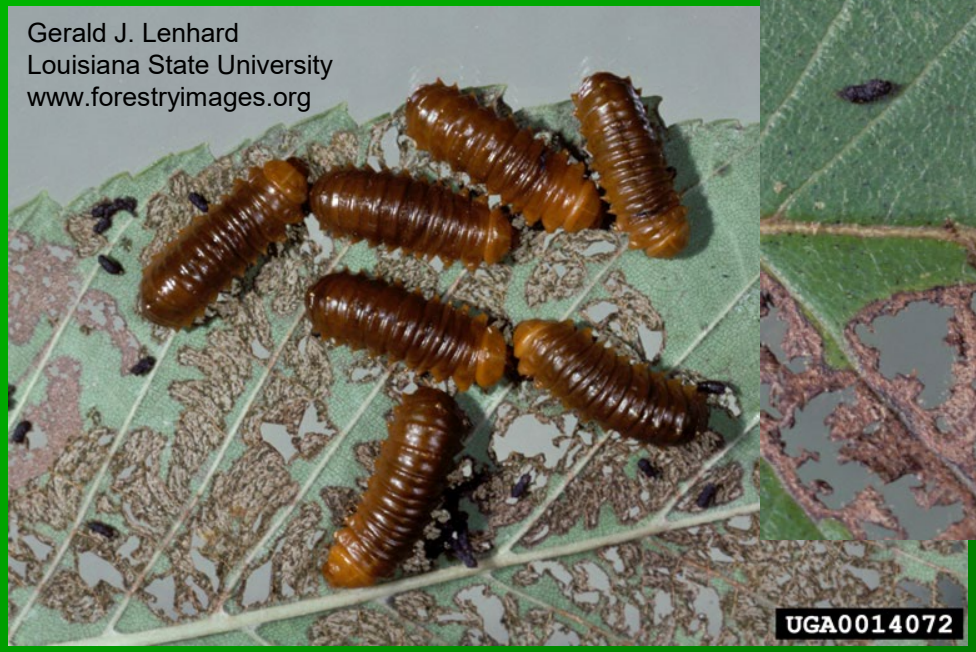

**Damage:** Skeletonization by larvae.

**Monitoring:** Look for skeletonization, adults, larvae, and eggs under leaves in May and June.

# Larger Elm Leaf Beetle

**Chemical Control:** Foliar sprays of residual insecticides for heavy infestations.

**Biological Control:** *Bacillus thuringiensis* for young larvae.




# Imported Willow Leaf Beetle

***Plagiodera versicolora***
**Family Chrysomelidae**
**Introduced Pest**

**Hosts:** **Willow, poplars, and cottonwood.**

**Life History:** **Two generations a year. The second is less damaging.**

**Overwintering:** **Adults in protected places.**

# Imported Willow Leaf Beetle

**Damage:** Shot holes and leaf notching (adults), skeletonization (larvae).

**Monitoring:** Look for damage, adults, and clusters of oval, yellow eggs beginning in May.


David Laughlin


John Davidson

# Imported Willow Leaf Beetle

**Cultural Control:** Pubescent varieties tend to be resistant.

**Chemical Control:** Summer sprays of oil or soap for larvae, residual insecticides for large numbers.

**Biological Control:** *Bacillus thuringiensis* for early instar larvae. *Harmonia axyridis,* the Asian lady beetle, feeds on eggs.

# Black Vine Weevil

*Otiorhynchus sulcatus*
Family Curculionidae
Introduced Pest


**Hosts:** Arborvitae, azaleas, hemlock, juniper, euonymous, rhododendron, yews, other evergreens.

**Life History:** Adults emerge in June. and lay eggs on soil in June and July. Newly hatched larvae move to plant roots where they remain feeding until the following spring. One generation a year.

# Black Vine Weevil

**Overwintering:** Immature larvae in soil.

**Damage:** Leaf margin notching and defoliation (adults), root crown girdling causing wilting and death (larvae).

**Monitoring:** Look for damage starting in June.


# Black Vine Weevil

**Cultural Control:** Select resistant varieties.

**Chemical Control:** Spray leaves and the base of the plants in June.

**Biological Control:** Entomopathogenic nematodes, fungi such as *Beauveria bassiana, Metarhizium anisopliae Paecilomyces farinosus*, and *Metarhizium anisopliae*.


Black vine weevil killed by *Beauveria*

# Strawberry Root Weevil

***Otiorhynchus ovatus***
**Family Curculionidae**
**Introduced Pest**

**Hosts: Arborvitae, dogwood, hemlock, white, red, Scots, and Swiss mountain pines, white cedar, juniper, Norway, white, and Colorado blue spruces.**


John Davidson


John Davidson

# Strawberry Root Weevil

**Life History:** Larvae pupate in soil in spring. New adults emerge in late spring to early summer. Adults, which do not fly, feed at night on foliage and bark and lay eggs in soil near hosts. Larvae feed on roots. One generation a year.

**Overwintering:** Larvae in soil, adults in sheltered places.

**Damage:** Notching of leaf margins, girdling of root crowns, wilting, death.

# Strawberry Root Weevil

**Monitoring:** Look for damage and insects on or under trees during summer. Pitfall traps may be used.

**Chemical Control:** Spray with chemical insecticides in July.

**Biological Control:** Entomopathogenic nematodes, fungi such as *Beauveria bassiana, Metarhizium anisopliae Paecilomyces farinosus, Metarhizium anisopliae*.

Whitney Cranshaw

# Pales Weevil


*Hylobius pales*
Family Curculionidae
Native Pest

**Hosts:** Loblolly, pitch, shortleaf, and white pines, Douglas-fir, fir, hemlock, juniper, larch, northern white cedar, spruce.

**Life History:** Adults emerge in spring and feed on bark, then fly to cut, dead, or dying pines to mate and lay eggs in roots. Larvae make tunnels under bark and pupate in sapwood. One generation a year.

# Pales Weevil


**Overwintering:** Adults in duff under conifers.

**Damage:** Small holes in the bark, which cover with white, crystallized resin. Large populations may girdle and kill trees or cause dieback and deformed limbs.

# Pales Weevil

**Monitoring:** Check for adults during the day in duff under trees. Monitor for adults by placing 5 to 15 cm pine discs under the trees. Adults will cling to undersides of discs. Look for chewing damage and dried resin on bark.

# Pales Weevil

**Cultural Control:** Delay replanting of trees for one to two years where trees have been cut. Remove stumps or treat with insecticides. Leave some live branches on stumps.

**Chemical Control:** Spray trees in April through June and again in August and September.

# Pine Root Collar Weevil

*Hylobius radicis*
Family Curculionidae
Native Pest

**Hosts:** Scotch, Austrian, red, and eastern white pines.

**Life History:** Adults feed on branch bark near ground in spring and lay eggs. They later move to and feed in upper crown branches. Eggs are laid all summer. One generation a year.

Jana Albers
Minnesota Department of Natural Resources
The Bugwood Network, University of Georgia

# Pine Root Collar Weevil

**Overwintering:** Adults in duff.

**Damage:** Girdling, weakening, retarded growth, yellow needles turning reddish brown, swollen trunk at ground line.

Jana Albers
Minnesota Department of Natural Resources
The Bugwood Network, University of Georgia

# Pine Root Collar Weevil

**Monitoring:** Monitor small trees and trees in poor soil. Look for white pitch flow on bark and into soil around the root collar. Look for adults in duff. Cut into the bark of infected root crowns to detect larvae.

**Physical Control:** Prune away lower branches and expose soil at base of trees.

**Cultural Control:** Select pines that are seldom attacked, such as pitch or white pines.

**Chemical Control:** Apply insecticides to trunks and surrounding soil in May and August.

# Poplar and Willow Borer


***Cryptorhynchus lapathi***
**Family Curculionidae**
**Introduced Pest**

**Hosts:** **All poplar and willow species except *Populus tremuloides*, alder, and birch.**

**Life History:** **Adults emerge in spring and feed on phloem of new shoots. In summer, females lay single eggs in holes they chew in bark. Larvae bore into the bark, then wood. New adults emerge in July and August. Two to three years to complete the life cycle.**

# Poplar and Willow Borer

**Overwintering:** Young larvae in tunnels, adults in duff.

**Damage:** Weakened stems, bushy trees, cracks and dead patches on bark, holes on lower part of stems. Young trees may die.

Whitney Cranshaw

# Poplar and Willow Borer


**Monitoring:** Look for adults on new shoots in spring. Look for holes in the lower part of stems with sawdust-like frass emerging. Look for damage on bark.

# Poplar and Willow Borer

**Physical Control:** Find, cut out, and destroy infected stems.

**Cultural Control:** Use appropriate cultural practices to reduce tree stress.

**Chemical Control:** Spray stem of host plants when adults are active.

# White Pine Weevil

*Pissodes strobi*
Family Curculionidae
Native Pest


John Davidson

**Hosts:** Eastern white pine, Norway spruce, and others.

**Life History:** Adult beetles are active in spring and late summer. Eggs are laid in feeding punctures. New adults emerge from July to September. One generation a year.

**Overwintering:** Adults in duff under trees.

# White Pine Weevil

**Damage: Forked or crooked growth pattern, "shepherd's crook" in new growth, girdling, browning, dieback, stunting, flagging, death.**


John Davidson


Whitney Cranshaw

# White Pine Weevil

**Monitoring:** Look for adults feeding and laying eggs close to terminal buds from April to May. Look for flagging terminals in June and open to look for larvae.


# White Pine Weevil

**Physical Control:** Prune out and destroy infested branches.

**Chemical Control:** Adults are most susceptible to insecticides in spring and late summer.



Pupa and chip cocoons

# Whitefringed Beetle

***Graphognathu* species**
**Family Curculionidae**
**Pest**

**Hosts: Blackjack oak, black tupelo, hawthorn, hackberry, pecan, yellow poplar, others.**

# Whitefringed Beetle

**Life History:** Adults emerge in July. Eggs are deposited and held together in a sticky gelatinous substance that hardens on drying. One generation a year.

**Overwintering:** Larvae.

**Damage:** Notched foliage, root feeding.

**Monitoring:** Look for eggs under hardened protective cover. Look for adult females after mid-July on foliage. Look for notched edges on leaves.

# Whitefringed Beetle

**Chemical Control:** Foliar insecticide sprays when adult damage is objectionable, beginning in mid-July.

**Biological Control:** Entomopathogenic nematodes for larvae.