

# Introduction to Sawflies



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# Sawflies

- Three families in the order Hymenoptera:
  - Diprionidae (conifer sawflies)
  - Tenthredinidae (common sawflies)
  - Cimbicidae (elm sawfly)
- Larvae are caterpillar-like or slug-like.
- Larvae are defoliators.
- Caterpillars (top) have 2 to 5 pairs of prolegs; sawfly larvae (bottom) have more than 5.



# Sawflies

## Tenthredinid Sawflies:

- Birch leafminer, *Fenusa pusilla*
- Brownheaded ash sawfly, *Tomostethus multicinctus*
- Dogwood sawfly, *Macremphytus tarsatus*
- Dusky birch sawfly, *Croesus latitarsus*
- Mountain-ash sawfly, *Pristiphora geniculata*
- Pear sawfly, *Caliroa cerasi*
- Yellowheaded spruce sawfly, *Pikonema alaskensis*

# Sawflies

## Diprionid Sawflies:

- European pine sawfly, *Neodiprion sertifer*
- Redheaded pine sawfly, *Neodiprion lecontei*
- White pine sawfly, *Neodiprion pinetum*
- Introduced pine sawfly, *Diprion similis*



Parasitized cocoons:  
Top left with fly  
emergence hole,  
top right with wasp  
emergence hole

# Birch Leafminer

*Fenusa pusilla*

Family Tenthredinidae

Introduced pest

**Hosts:** Birch.

**Life History:** Larvae

pupate in spring, adults emerge in May. Eggs laid in slits in young leaves. Larvae mine in leaves. Two to four generations a year; second generation in June.

**Overwintering:** Mature larvae in soil.



# Birch Leafminer

**Damage:** Kidney-shaped mines and brown, irregular, wrinkled blotches; browning of leaves and trees.

**Monitoring:** Look for adults on new leaves. Sticky traps on terminals. Look for mines.



# Birch Leafminer

**Cultural Control:** Plant resistant species:  
*Betula davurica*,  
*B. schmitii*, *B. costata*,  
*B. maximowiczana*.

**Chemical Control:**  
Residual insecticides in  
May, systemic chemicals.

**Biological Control:**  
Ichneumonids *Lathrolestes*  
*nigricolis* and *Grypocentrus albipes*.



# Brownheaded Ash Sawfly

*Tomostethus  
multicinctus*

Family

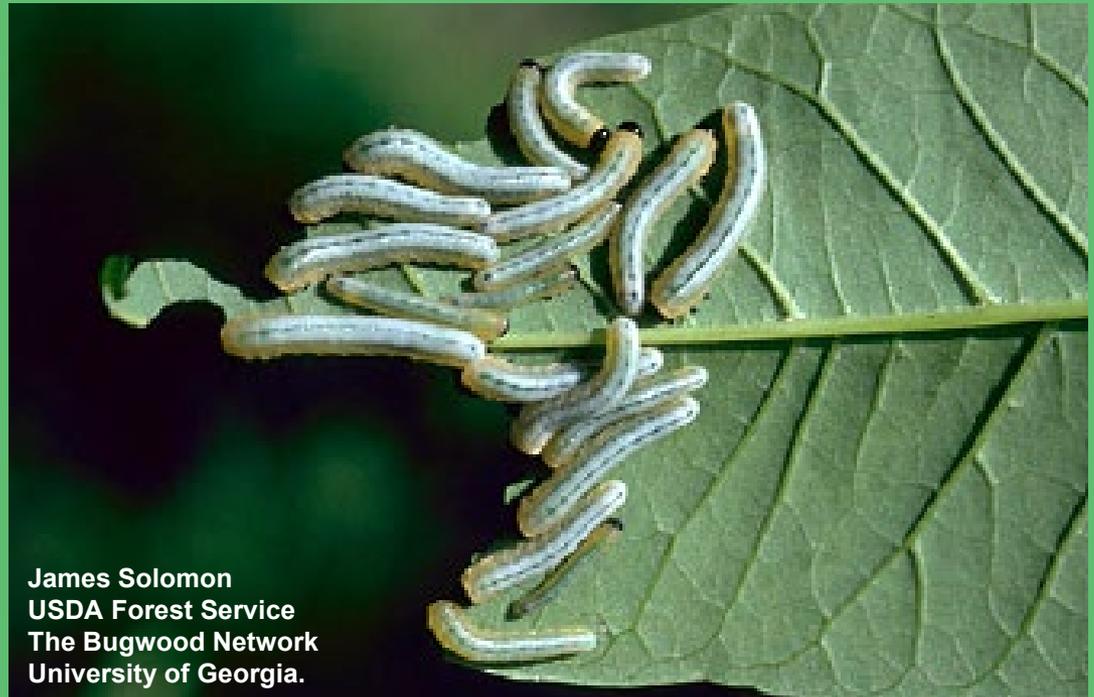
Tenthredinidae

Introduced pest

**Hosts:** Red and  
white ash.

**Life History:** Pupation in spring. New larvae in  
May and June. One generation a year.

**Overwintering:** Prepupae in topsoil.



# Brownheaded Ash Sawfly

**Damage:** Skeletonization and defoliation.

**Monitoring:** Look for larvae in May and June.  
Look for damage.



**Egg laying wound damage**

**Shot hole damage**

# Brownheaded Ash Sawfly

**Physical Control:** Prune small populations.

**Chemical Control:** For young larvae only.



Whitney Cranshaw



Whitney Cranshaw

# Dogwood Sawfly

*Macremphytus tarsatus*

Family Tenthredinidae

Native pest

**Hosts:** Dogwood, especially gray and red osier.



# Dogwood Sawfly

**Life History:** Adults emerge in May to July and lay eggs on undersides of leaves. Young larvae are gregarious. One generation a year.

**Overwintering:** Larvae inside prepared cells.

**Damage:** Larvae skeletonize leaves and then consume all but the mid-veins.

**Monitoring:** Look for groups of larvae, damage.

**Chemical Control:** Horticultural oils and soaps, chemical control for young larvae only.

**Biological Control:** A wasp parasitoid.

# Dusky Birch Sawfly

*Croesus latitarsus*

Family Tenthredinidae

Native pest

**Hosts:** Birch.

**Life History:** Larvae feed in groups on leaf edges. First generation in May to July, second may occur through September.

**Overwintering:** Prepupae in soil.



Dusky birch sawfly (top) and white pine sawfly (bottom)

# Dusky Birch Sawfly

**Damage:** Defoliation in small trees.

**Monitoring:** Look for larvae in July and September.

**Physical Control:** Remove and destroy small populations by hand.

**Chemical Control:** Horticultural oil for young larvae, other insecticides for larger larvae.

# Mountain-Ash Sawfly

*Pristiphora geniculata*  
Family Tenthredinidae  
Introduced pest

**Hosts:** American  
and European  
mountain-ashes.



**Life History:** Adults emerge in June. Two generations a year: June through August and August through September.

**Overwintering:** Prepupae in soil.

# Mountain-Ash Sawfly



**Damage:** Larvae consume all but the mid-veins.

**Monitoring:** Look for defoliation and larvae on leaf margins.

**Physical Control:** Prune out small populations.

**Chemical Control:** Horticultural oil sprays for young larvae.

# Pear Sawfly



Whitney Cranshaw



Whitney Cranshaw

*Caliroa cerasi*  
Family Tenthredinidae  
Introduced pest

**Hosts:** Cherry, pear, mountain-ash, plum, cotoneaster, hawthorn.

**Life History:** Eggs and larvae in June. Second generation in August.

**Overwintering:** Prepupae in soil.

# Pear Sawfly

**Damage:** Damage on upper leaf surfaces, scorched appearance and leaf drop.

**Monitoring:** Look for larvae, damage in June and August.



# Pear Sawfly

**Physical Control:** Remove small populations by hand.

**Chemical Control:** Horticultural oils and soaps.



# Yellowheaded Spruce Sawfly

*Pikonema alaskensis*

Family

Tenthredinidae

Native pest

**Hosts:** White, black, and blue spruces.

**Life History:** Females lay eggs in current year's needles and larvae feed in loose groups from May to June. Development is complete in July.

**Overwintering:** Prepupae in soil.



# Yellowheaded Spruce Sawfly

Steve Katovich  
USDA Forest Service



**Damage:** Defoliation, first of new needles, then of old needles.

**Monitoring:** Look for damage and groups of larvae from May to July.

# Yellowheaded Spruce Sawfly

**Physical Control:** Prune out small populations.

**Chemical Control:** Horticultural oil for young larvae, residual insecticides for aggregations of older larvae.

**Biological Control:** 32 hymenopteran and 9 dipteran parasitoids including the tachinid fly *Bessa harveyi*.

# European Pine Sawfly

*Neodiprion sertifer*  
Family Diprionidae  
Introduced pest

**Hosts:** Pines.

**Life History:** Larvae  
feed from May to

June and pupate in soil. Adults emerge in  
September through late fall. One generation a  
year.

**Overwintering:** Eggs in needles.



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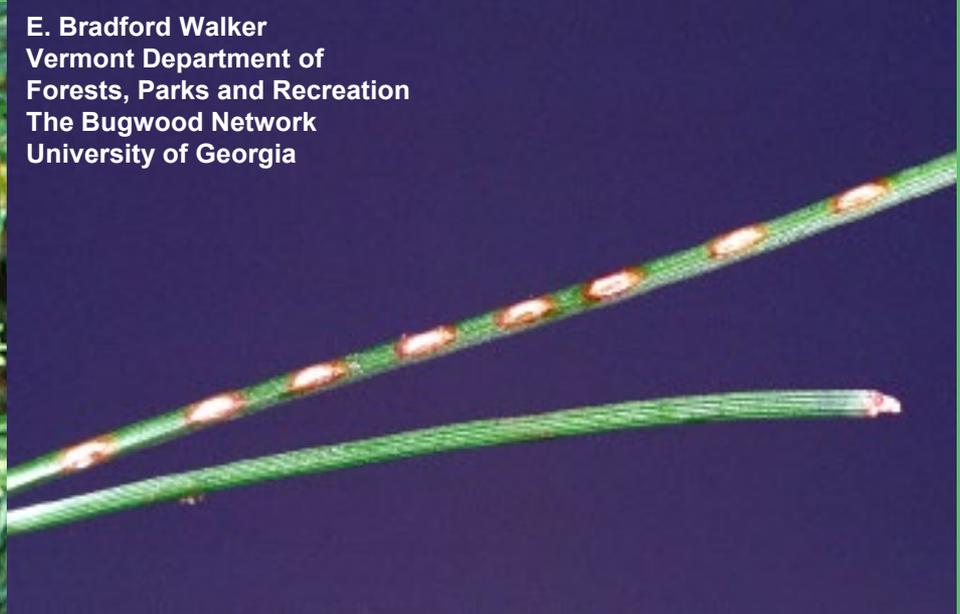
# European Pine Sawfly

**Damage:** Defoliation of previous year's needles.

**Monitoring:** Monitor newly plants and plants in poor health. Look for branches stripped of needles and for larvae.



Feeding damage



Eggs and oviposition damage

# European Pine Sawfly

**Physical Control:** Remove larvae by hand or dislodge with water spray.

**Chemical Control:** Insecticidal soap for young larvae.

**Biological Control:** Parasitoids, native birds, nuclear polyhedrosis virus, rodents.



Steve Katovich, USDA Forest Service

# Redheaded Pine Sawfly

*Neodiprion lecontei*  
Family Diprionidae  
Native pest

**Hosts:** Many pines including Mugo, red, jack and Scotch pines.



David Laughlin



Clemson University Cooperative Extension Service

# Redheaded Pine Sawfly

**Life History:** First generation in June and July, second in August and September.

**Overwintering:** Prepupae or pupae in soil or litter.



Female emerging from cocoon



Adult female (left) and male  
note difference in antennae

# Redheaded Pine Sawfly

**Damage:** Defoliation, brown spots from oviposition.

**Monitoring:** Look for damage and larvae, especially on terminals.



Oviposition damage

Feeding damage

# Redheaded Pine Sawfly

**Physical Control:** Prune out small populations.

**Chemical Control:** Horticultural oil for young larvae, residual insecticides for aggregations of older larvae.

**Biological Control:** 58 beneficial insects, NPV virus.



# White Pine Sawfly

*Neodiprion pinetum*  
Family Diprionidae  
Native pest

**Hosts:** Eastern  
white and red pines.

**Life History:** Adults  
lay eggs in needles in spring, larvae feed from  
June to August then drop to ground to pupate.  
One or two generations a year.

**Overwintering:** Prepupae in soil.



# White Pine Sawfly

**Damage:** Defoliation of old and new needles.

**Monitoring:** Look for groups of larvae and defoliation from June to August and cocoons under trees.

**Physical Control:** Prune out small populations or dislodge with a water spray.

**Chemical Control:** Horticultural oil for young larvae, residual insecticides for aggregations of older larvae.

# Introduced Pine Sawfly

*Diprion similis*  
Family Diprionidae  
Introduced pest

**Hosts:** White, Scotch, jack,  
and red pines.



John H. Ghent  
USDA Forest Service  
The Bugwood Network  
University of Georgia



Steve Katovich  
USDA Forest Service

**Above: Adult male**  
**Right: Larva**

# Introduced Pine Sawfly

**Life History:** First generation feeding from May to July. Second generation feed from July through September.

**Overwintering:** Prepupae in the soil.



Steve Katovich, USDA Forest Service

**Cocoon**



John H. Ghent  
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University of Georgia

**Adult female (left) and male**

# Introduced Pine Sawfly

**Damage:** First generation larvae eat previous year's needles. Second generation eat new and old needles.

**Monitoring:** Look for groups of larvae from May onwards and in late July.

The Bugwood Network  
University of Georgia

John H. Ghent  
USDA Forest Service



John H. Ghent  
USDA Forest Service  
The Bugwood Network  
University of Georgia

**Above: Defoliation  
on white pines  
Left: Eggs in  
needle slits**

# Introduced Pine Sawfly

**Physical Control:** Removed by hand in light infestations.

**Chemical Control:** Spray foliage when larvae are less than 1/2 full grown size.

**Biological Control:** Parasitoids *Exenterus amictorius*, *Monodontomerus dentipes*, and *Delomerista japonica*.

**Adult female**

John H. Ghent, USDA Forest Service  
The Bugwood Network  
University of Georgia



# Elm Sawfly



Photo: Stephanie Boucher

*Cimbex americana*  
Family Cimbicidae  
Native pest

**Hosts:** Elm, willow

**Above: Adult female**  
**Right: Larva**

Bugwood, USDA Forest Service  
The Bugwood Network  
University of Georgia



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# Elm Sawfly

**Life History:** Yellowish to white larvae are thick bodied and approach 1-1/2 in long when fully grown. They have yellowish heads and a black line running down middle of their backs with a row of black spots on each side. They are usually curled on a leaf when discovered. Adults are large, robust insects with clubbed antennae. Many species resemble bumble bees. bees. Unlike many Hymenoptera, the abdomen is broadly joined to the thorax. Eggs are laid in mid-June in leaf pockets on underside of leaves cut by females. Larvae feed until mid-August.

# Elm Sawfly

**Overwintering:** Tough, papery cocoons in the leaf litter.

**Damage:** Leaf defoliation.

**Monitoring:** Look for groups of larvae from June to August.



# Elm Sawfly

