

FOREST Pest LEAFLET

Pacific Forestry Centre

Common Insects Damaging Junipers, Cedars¹ and Cypresses² in British Columbia

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Introduction

Basic descriptions and life histories are provided to aid in the recognition and control of insects commonly found damaging the following cupressaceous trees: junipers (*Juniperus* spp.), cedars (*Thuja* spp.)³, and cypresses (*Chamaecyparis* spp., *Cupressus* spp.).

Three moths, a scale insect, a bark beetle and a weevil are described:

The Cypress Tip Moth,	1
<i>Argyresthia cupressella</i> Walsingham,	
The Juniper Webworm,	3
<i>Dichomeris marginella</i> (Denis and Schifferrmueller),	
The Cypress Leaftier,	4
<i>Epinotia subviridis</i> Heinrich,	
The Juniper Scale,	4
<i>Carulaspis juniperi</i> (Bouche),	
The Redwood Bark Beetle,	5
<i>Phloeosinus sequoiae</i> Hopkins,	
The Arbor-Vitae Weevil,	6
<i>Phyllobius intrusus</i> Kono.	

Feeding damage caused by these insects occurs most frequently on trees in urban areas and includes twig and foliage mining, defoliation, twig pruning, root pruning, cambium-boring, and sap sucking resulting in chlorosis of foliage.

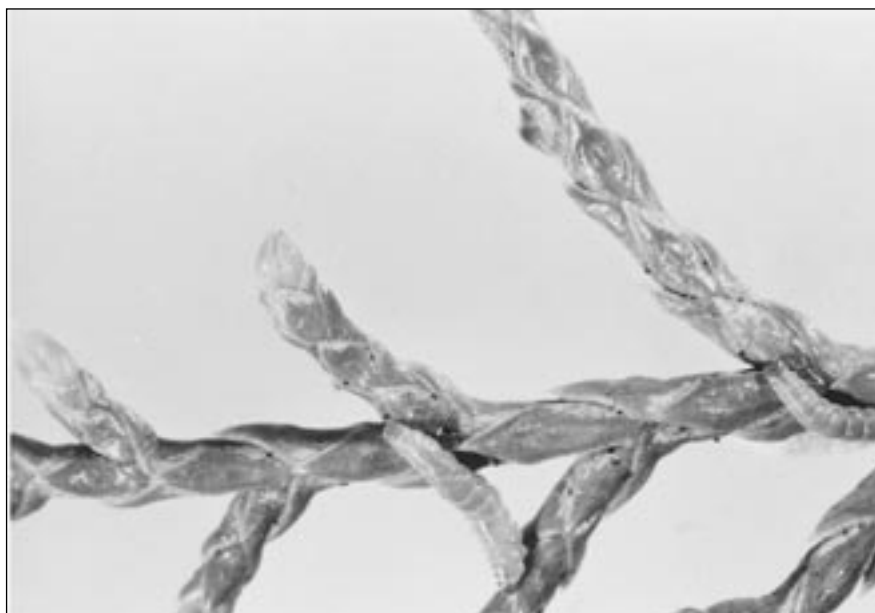


Fig. 1. Mature cypress tip moth larvae.

Cypress Tip Moth

Hosts and distribution

The cypress tip moth feeds on a wide variety of cupressaceous trees but most notably on Lawson cypress, Leyland cypress, Monterey cypress, Italian cypress, Oriental cedar, and some species of juniper having scale-like leaves.

This insect is native to western North America and is distributed from southwest British Columbia to southern California.

Description

Egg: Oblong-oval, about 0.32 mm long and 0.25 mm wide, light yellow.

Larva: 1.4 to 1.7 mm long when newly hatched and 5.2 and 7.0 mm long when mature. Larva (Fig. 1) is

¹ Usage in this pest leaflet does not include *Cedrus* or *Calocedrus* spp.

² Usage in this publication does not include *Taxodium* or *Fitzroya* spp

³ Also known as Arbor-vitae.



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Fig. 2. Cypress tip moth adult and cocoon.



Fig. 3. Dieback of tip (light-colored area of branchlet).

pale greenish yellow when young, turning to light green near maturity. The head and prothoracic shield are light brown.

Pupa: Cylindrical, 3.4 to 4.0 mm long and 0.78 to 0.88 mm in diameter, green, with darker head and appendages. The pupa is enclosed in a papery, white, spindle-shaped cocoon 5.0 to 5.5 mm long and 2.0 to 2.5 mm wide (Fig. 2).

Adult: 8.0 to 9.2 mm wingspan. The head is white, the thorax golden brown, and the abdomen greyish white. The forewings are mottled golden brown and creamy white; hind wings are pale grey (Fig. 2).

Life history and habits

The cypress tip moth flies during May and June. After mating, the female moth lays about 20 eggs singly in

crevices between the scale leaves or in twig crotches. Eggs hatch in about three weeks and the larvae bore into nearby scale leaves to feed. After hollowing out a scale leaf, a larva may move directly into an adjacent scale leaf or crawl to a more distant scale. Each larva injures 9 to 12 scale leaves by autumn; however, this damage is seldom noticed. The larvae normally overwinter in the fourth stage, and feed only during mild weather. Active larval feeding resumes in early spring when each larva bores into a twig 0.3 to 2.0 cm from the tip and tunnels 0.5 to 2.5 cm down a twig or into a lateral branchlet (Fig. 3). A larva may attack four to six twigs, causing each to die beyond the point of injury. In April or May, after completing six larval stages, the mature larva leaves its tunnel, crawls out on the foliage, and spins a cocoon. The pupal stage lasts about two weeks.

Damage and detection

Light feeding damage occurs in summer and fall when larvae hollow out and kill individual scale leaves, more severe damage occurs during early spring when entire twigs and branchlets are mined. Repeated heavy infestations may eliminate any apparent growth. Heavily infested trees suffer considerable dieback, imparting a scorched appearance to the foliage. Trees are seldom killed but their attractiveness is marred.

Control

Infestations can be controlled by thoroughly spraying the trees in early spring (late March) before serious damage occurs and following up with a repeat application two weeks later. A systemic insecticide should be used.

Future damage may be prevented by planting less susceptible cupressaceous species such as native western red cedar, *Thuja plicata*.

Juniper Webworm

Hosts and distribution

The juniper webworm feeds on junipers having needle-like leaves, including common juniper, Chinese juniper, eastern red cedar, and creeping juniper. This insect was introduced from Europe and has since spread over much of North America. Its range in British Columbia includes the south coast and the southern interior valleys.

Description

Egg: Subcylindrical with rounded ends, 0.5 by 0.3 mm, white when laid, changing through yellow and orange to red just before hatching.

Larva: 0.5 to 1.0 mm long and yellowish to buff when newly hatched. A mature larva is about 12 mm long, light yellowish red with three dark reddish brown dorsal lines (Fig. 4). The head, thoracic shield and legs are black.

Pupa: 6 mm long, dark brown; usually enclosed by a soft, white silken cocoon (Fig. 5).



Fig. 4. Juniper webworm larva.

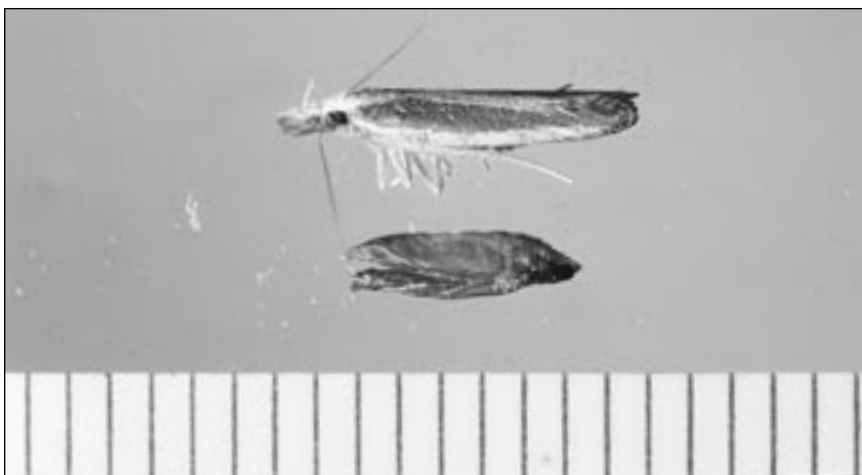


Fig. 5. Juniper webworm — adult (top), pupa (bottom)

Adult: A wingspan of approximately 16 mm. The forewings are copper brown with conspicuous white margins; the hind wings are grey and heavily fringed. The head and upper side of the thorax are covered with stiff, white scales (Fig. 5).

Life history and habits

Adults emerge during May and June. After mating, the female lays an average of 45 eggs, usually singly in leaf axils on new growth or in bark crevices. Eggs hatch in 10 to 14 days. A young larva initially mines needles causing them to turn brown and die. As the larva grows, it constructs a silken tube to nearby needles where it feeds externally.

As the feeding area increases, adjacent feeding sites overlap and by fall it is common to find three to five larvae in a single large webbed area. Larvae overwinter at various stages of maturity ranging from fifth to eighth instar. Following this period of relative inactivity, the larvae then feed extensively in April and early May before pupating. The pupal period lasts about two weeks.

Damage and detection

The juniper webworm can cause severe defoliation. Heavily infested trees may turn completely brown. On less heavily infested trees, communal nests made up of dead needles, twigs and webbing contrast sharply with the surrounding green foliage. Early signs of infestation often go unnoticed because larvae tend to inhabit the dense, inner parts of the tree.

Control

This insect can be controlled by spraying the tree with a systemic insecticide.

Several species of hymenopterous parasites attack the juniper webworm but do not seem to provide effective control.

Cypress Leaf-tier

Hosts and distribution

The cypress leaf-tier feeds on a broad range of cupressaceous trees including cedars, cypresses and junipers. It is distributed on the west coast from southern British Columbia to California.

Description

Egg: Disklike and translucent white.

Larva: Creamy brown changing to greenish brown when mature; a full size larva is about 10 mm long.

Pupa: Brownish pink and about 8 mm long. Pupation occurs in a tubular silk-lined cocoon attached to a twiglet.

Adult: A 16 to 20 mm wingspan. The forewings are checkered with alternating light and dark rectangular areas; the hind wings are light grey.

Life history and habitats

Moths emerge from May through July. After mating, eggs are laid singly on the scale leaves and hatch soon after. Newly emerged larvae first bore into a twig, after which the larvae emerge and complete most of the larval stage as external feeders on foliage and twiglets. The larvae construct silken feeding shelters tying together twigs and incorporating frass and gnawed leaves (Fig. 6). Larvae may construct several feeding shelters as they move to new feeding sites. Most larval feeding occurs in early spring from March to April after a winter quiescent period. Pupation occurs in a feeding shelter during May and June and lasts about two weeks.



Fig. 6. Cypress leaf-tier larva and feeding-shelter on Chinese juniper.

Damage and detection

The larvae feed near the tips of the branches, killing branchlets beyond the feeding site. Extensive feeding gives the tree a scorched appearance. Feeding shelters are easily seen on infested foliage.

Control

Thorough spraying of affected trees from mid-March to early April using a systemic insecticide will provide good control.

Juniper Scale

Hosts and distribution

The juniper scale has been recorded on several species within the cypress family (Cupressaceae) including: Rocky Mountain juniper, common juniper, Chinese juniper, eastern red cedar, eastern white cedar, Oriental cedar, yellow cypress, Lawson cypress, white cypress, and various *Cupressus* spp.

This European introduction is distributed throughout much of North America including British Columbia.

Description

Egg: Pink to yellow.

Nymph: A pink to yellow crawler.

Adult: The white scale covering the female is round and convex, about 1.5 mm in diameter. The scale covering the male is white, elongate with parallel sides and somewhat smaller, averaging about 1.0 mm in length (Fig. 7).

Life history and habits

The juniper scale overwinters as a fertilized female. Up to 40 eggs are laid during May under the body of the female scale. Eggs hatch in about two weeks and the newly emerged yellowish crawlers seek new sites on the same host plant or may be wind blown to other hosts. Once feeding begins, no further movement occurs. There is one annual generation.



Fig. 7. Juniper scale on Rocky Mountain juniper twig.

Damage and detection

Damage is first noticeable as off-color foliage. As the infestation progresses, new foliage fails to develop and the foliage of individual branches yellows and dies.

Scales can be easily seen on infested foliage.

Control

Control can best be obtained by spraying during the nymph stage. A systemic insecticide should be applied in June and repeated in July to provide control.

Redwood Bark Beetle

Hosts and distribution

The redwood bark beetle is frequently found breeding in western red cedar, eastern white cedar, Leyland cypress and Lawson cypress in British Columbia. This beetle is distributed in coastal locations from southern Alaska to southern California. Other closely related species of *Phloeosinus* can also be found on cedars, junipers or cypresses throughout British Columbia.

Egg: No information is available.

Larva: A white, legless grub with a pale brown head.

Pupa: White, no cocoon.

Adult: 3.2 to 4.5 mm long, 1.8 to 2.2 mm wide; dark mahogany brown to black, with the posterior section of the wing covers bearing two longitudinal rows of toothlike projections (Fig. 8).



Fig. 8. Adult redwood bark beetle beside boring hole.



Fig. 9. Redwood bark beetle egg galleries in inner bark.

Life history and habits

The female beetle initiates attack, selecting a weakened, dying or recently dead tree. After boring into the inner bark (Fig. 9), the female excavates an egg gallery of variable length, averaging about 14 cm. The gallery runs parallel to the grain and has a short spur at the lower end. About 50 eggs are deposited in egg

niches crowded close together on both sides of the gallery. Newly emerged larvae feed in the sapwood and phloem, excavating larval galleries at right angles to the egg gallery. The larval galleries later run upwards or diverge to various degrees (Fig. 10). Pupal cells are usually



Fig. 10. Redwood bark beetle larval galleries.

constructed in the sapwood but in thick-barked areas they may be in the inner bark. Brood development is somewhat extended with some beetles overwintering as adults, others as larvae; overwintering teneral adults emerge from March through May. Overwintering parent adults extend their galleries and oviposit from March to May and the brood from these emerges in August or September. Overwintering mature larvae complete their development and the teneral adults emerge in June or July. There is usually one annual generation and a partial second generation.

Emerged adults frequently feed on small branches of cedars and cypresses, causing breakage and flagging of twigs on affected trees.

Damage and detection

Most damage is restricted to trees planted as ornamentals. The beetle



Fig. 11. Cankered Lawson cypress showing boring holes.

seldom attacks healthy trees, but prefers weakened, dying or dead trees. Infested trees frequently have been weakened by drought, poor site or various diseases such as *Phytophthora* root rot and *Coryneum* stem canker (Fig. 11).

Numerous 1.5-mm to 2.0-mm round holes in the bark indicate the beetle's presence. Emerging adults may cause twig pruning damage.

Control

Maintain trees in vigorous and healthy condition to reduce chance of attack.

Arbor-vitae Weevil

Hosts and distribution

In British Columbia the arbor-vitae weevil has been observed feeding on western red cedar and eastern white cedar. Feeding trials have shown that yellow cypress is also vulnerable. Elsewhere, numerous species of cedar, cypress and juniper have been recorded as hosts.

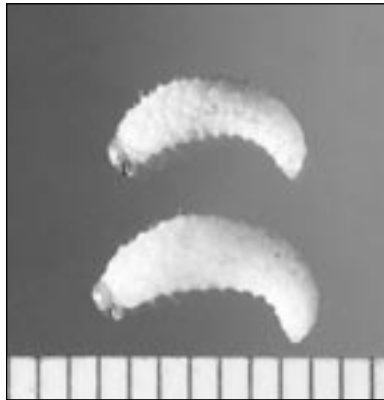


Fig. 12. Arbor-vitae weevil larvae (scale in mm).



Fig. 13. Arbor-vitae weevil adult.

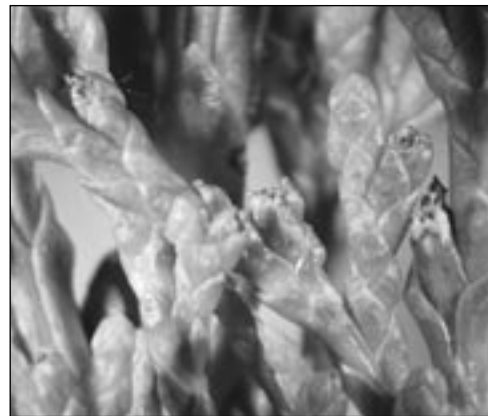


Fig. 14. Shoot tips of eastern white cedar gnawed by arbor-vitae weevil.



Fig. 15. Cambium feeding by arbor-vitae weevil on roots of western red cedar.

This Asian species is known only from the lower Fraser Valley in western North America. It is also generally distributed throughout the northeastern United States and southern Quebec.

Description

Egg: Cylindrical, about 0.6 mm long and 0.4 mm wide, light brown.

Larva: 0.8 mm in length when newly hatched and 5.8 to 7.0 mm long when mature. Larva is white with pinkish hue when young, becoming creamy white at maturity (Fig. 12). The head capsule is yellowish brown.

Pupa: 4.1 to 5.7 mm in length, white with black eyes.

Adult: Female 5.9 to 6.3 mm long and 1.9 to 2 mm wide, male 5.1 to 5.6 mm long and 1.6 to 1.8 mm wide, metallic light green (Fig. 13).

Life history and habits

The arbor-vitae weevil overwinters as a mature larva in soil near the roots of the host plant. Pupation occurs in April and adults emerge in May. Adults feed on the tips of the new flush and can be found on the foliage from May to July. After mating, the females lay eggs in small groups, eight eggs on average, in soil near host trees. Eggs hatch in about 15 days. Larvae burrow into the soil where they feed on host roots, completing seven instars before maturing in late fall.

Damage and detection

Damage is first noticeable in May-July as light scorching of shoot tips. On closer examination of the shoot tips irregular shaped areas chewed out of the shoot tips by feeding adults are visible (Fig. 14). Larvae at first feed

on fine roots and later on the cambium of larger roots. Damage is indicated by gnawed bark on the roots (Fig. 15).

Control

This insect can best be controlled by spraying the tree with an insecticide effective against weevils in early May and repeating a month later during the period of active adult feeding.

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Distinguishing Characteristics

Insect	Description of Damaging Stage	Recognition of Injury
Cypress tip moth	Light green larva	Mines foliage and branchlets imparting a scorched appearance to the host tree.
Juniper webworm	Creamy brown larva with three prominent dark reddish brown dorsal lines	Defoliator; forms communal nests webbing together branches, dead needles, etc.
Cypress leaftier	Creamy brown larva	Defoliator; forms solitary silken feeding shelters webbing together branches, dead foliage, etc.
Juniper scale	Small white scale	Numerous scales on chlorotic foliage.
Redwood bark beetle	White grubs numerous in galleries under bark	Numerous round holes, 1.5 mm to 2.0 mm in diameter, evident on the main stem.
Arbor-vitae weevil	Metallic light green weevil on foliage	Gnawed, scorched shoot tips.

Additional Information

Additional copies of this and other leaflets in this Forest Pest Leaflets series are available by writing to:

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