

Know your pests:
Life cycles of insects and mites

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**Beautiful photos courtesy JHC
(Jillian Holly Cowles)**

Entomology basics

How an insect feeds influences the damage caused and the appropriate methods for control

Characteristics of insects

- One pair of antennae
- If present, two pairs of wings
- Three body segments
 - Head: sensory – antennae, eyes
 - Thorax: locomotion – 6 legs, wings
 - Abdomen: digestion and reproduction



Photo: JHC

Are these insects?



Arachnids (spiders, mites, and relatives)

No antennae

No wings

One or two body segments

4, 6, or 8 legs



Photos: JHC



Insect Development

- During development, the shedding of the exoskeleton is called molting.
- Immature stages are called instars



Insect Development

Gradual / simple metamorphosis
– immatures are called nymphs



Examples:

Aphids
Adelgids
Scales

Insect Development

Complete metamorphosis (holometabolous)
– immatures are called larvae



eggs



larvae



Transitional
stage is called
pupa

Insects with complete metamorphosis

Beetles

Flies

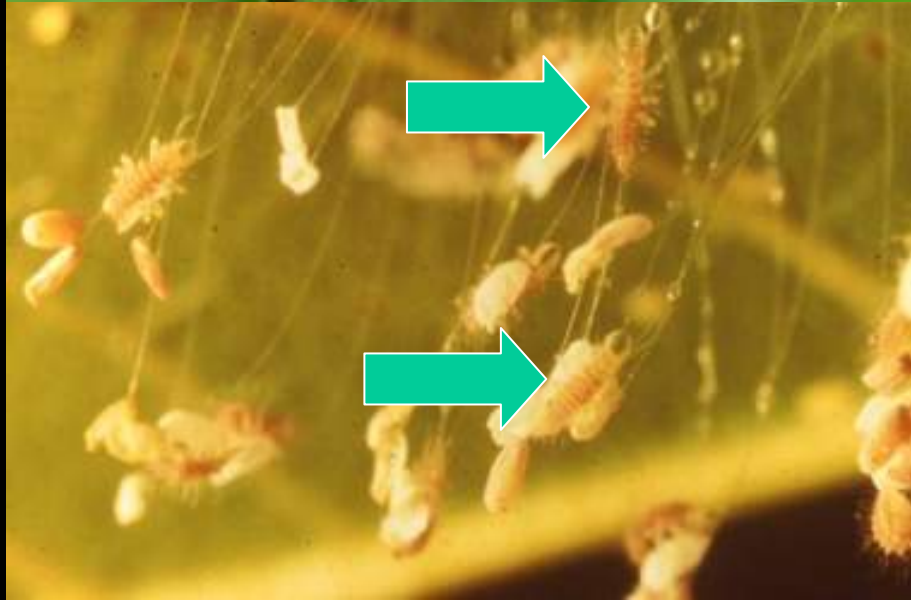
Sawflies, ants, bees, wasps

Butterflies and moths

Lacewings



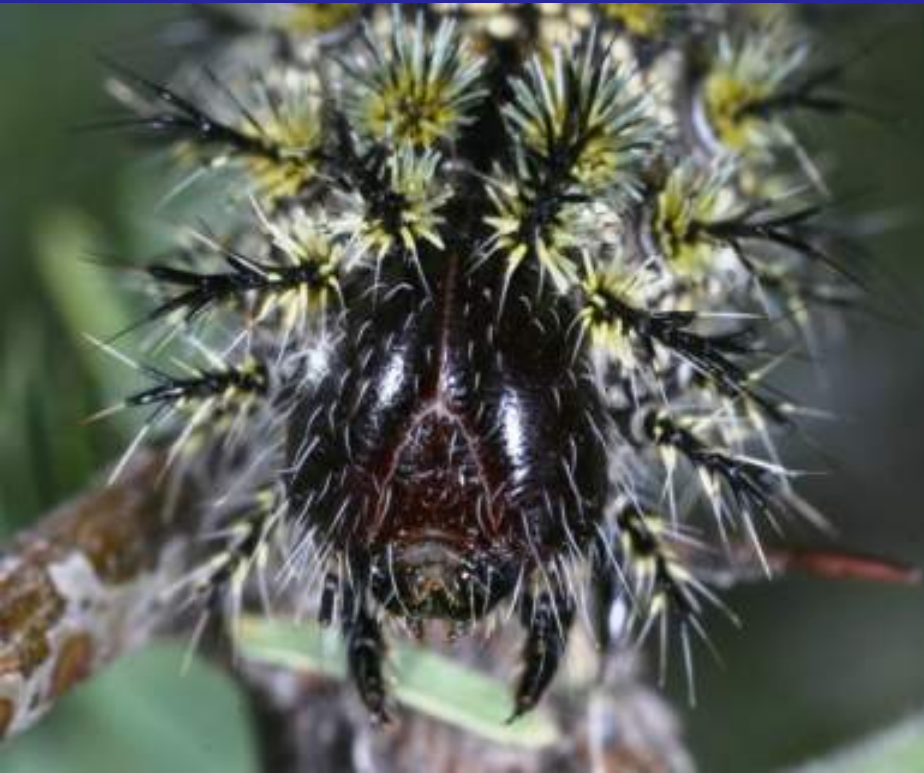
Photo: JHC



Mouthparts, feeding habits

- Chewing
- Sucking

Photos: JHC



Why do we need to know life cycles?

Know when to look for evidence (scouting)

Appropriate timing of sprays

- matching product characteristic to life cycle
- best effect for \$ spent
- avoiding “revenge” spraying



**Beat sampling with
a clipboard and
pad of white paper:**

**balsam twig aphid
spruce spider mite
scale crawlers**

Aphids vs. adelgids

Balsam twig aphid

Overwinters as eggs

Hatch at bud break

1st generation, stem mothers

3 cycles, parthenogenic

reproduction by live birth

Winged sexuparae

Mate; Lay overwintering eggs

Eastern spruce gall adelgid

Overwinters as nymphs

Develop wool and eggs

Crawlers settle and feed,
causing **galls to form**

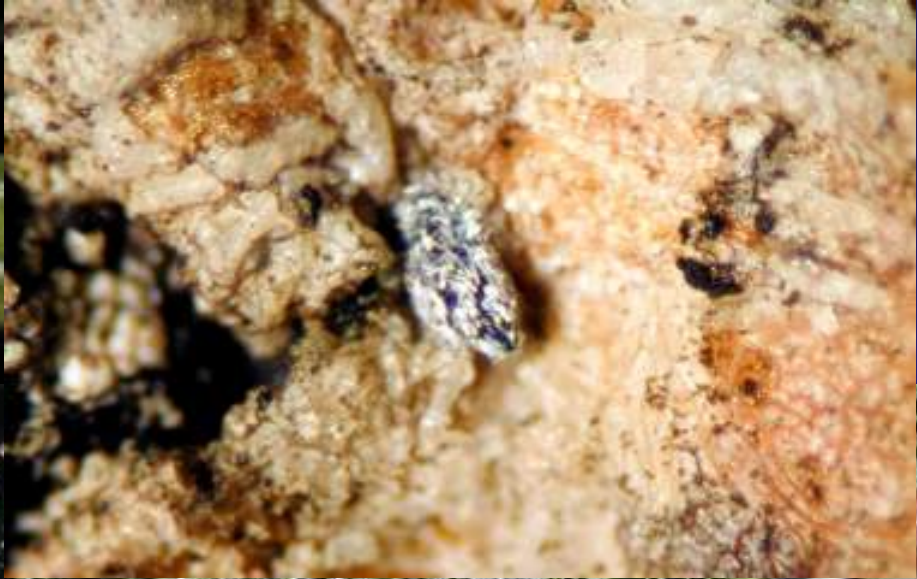
Galls open in late summer

Develop wings and fly

Lay eggs on needles

Crawlers move to bud base

Conifer root aphids and Cooley spruce gall
adelgid life cycles are even more complex!



Application
at 50%
balsam fir
bud break
is optimal





Eastern spruce gall
adelgid and other
adelgids: application
just as galls open in late
summer or early
autumn is ideal