

Sap Sucking Insects
Seed and Cone Pests
Nursery and Regeneration Insects
Misc. Forest/Shade and Beneficial
Insects

Laboratory #5 and 6

Sap Sucking Insects

- ❖ Have piercing, sucking mouthparts
- ❖ Inconspicuous and hard to control
- ❖ Impact based on populations

Hemlock Woolly Adelgid (Homoptera)



An adelgid nymph feeding on a hemlock needle (left); crawlers in their protective cottony nests (above).

- ❖ Larvae (crawlers) are spread by wind, birds, or mammals
- ❖ Nymphs feed on foliage
Cause major defoliation;
can kill trees in 1 year
- ❖ Wingless female lay 50-300 eggs in each cottony mass.



Spittlebugs (Froghoppers)(Homoptera)

- ❖ Nymphs secrete a liquid (spittle) that covers and protects them
- ❖ Adults (froghoppers) attack red pine but do not produce a spittle
- ❖ Found in forests, urban areas, and Christmas tree plantations



Scale Insects (Homoptera)



- ❖ Small; have scales for protection
 - soft-cottony waxy coating (Soft Scales)
 - armored-hard waxy coating (Armored Scales)
 - margaroid-pit scales (Mealybugs)
- ❖ Make feeding wounds and then introduce ascomycetous fungi through the wounds
- ❖ Leads to tree mortality

Woolly Pine Scale



Pine Needle Scale



Tulip Tree Scale



Gall Forming Insects

Gall formation follows:

- ❖ Insect adults laying eggs to form larvae
- ❖ Chemical reaction: Insect excretions mix with plant chemicals



❖ Abnormal cell growth

❖ Immatures are protected by and can feed on galls

Caused By.....

- Hymenoptera, Diptera, Homoptera, and Mites



Oak Apple Gall Wasp

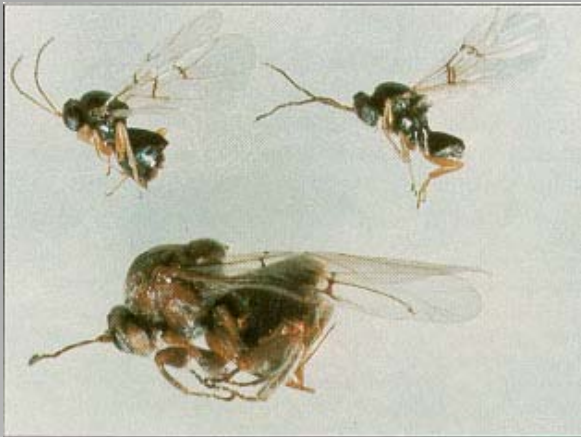


Figure 2. *Disholcaspis* adults. Top: Female (left) and male (right) of sexual generation. Bottom: Female of asexual generation.



Figure 5. Kernel-like gall of sexual generation *Disholcaspis*. Hole in gall made by emerging *Disholcaspis* adult.



Figure 4. Mature *Disholcaspis* larva within spherical gall in November. Brown mantle color indicates gall growth has stopped.



Mealy Oak Gall Wasp

Eggs



Hackberry
Nipple Gall

Aphids



❖ Black sooty mold (honeydew) forms on aphid secretions

❖ Attracts ants

❖ Feeding causes stunting



Lace Bugs (Homoptera)



- ❖ Feed on underside of leaves
- ❖ Leaving brown, necrotic tissue

Seed/Cone Pests

Acorn Weevil (Coleoptera)

- ❖ Lays eggs inside acorn
- ❖ Larvae eat the inside

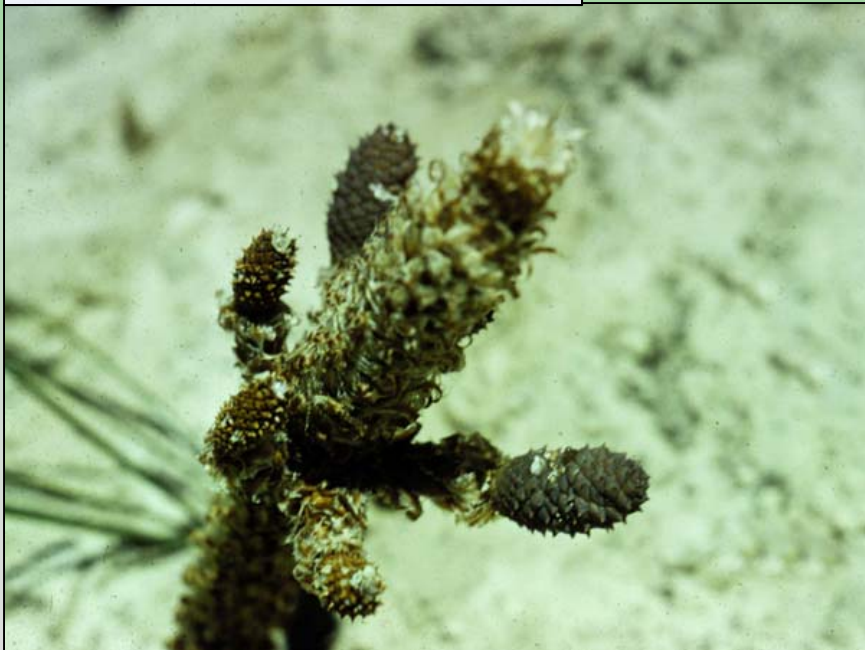


Slash Pine Thrips (Thysanoptera)



❖ Damage cone flowers

❖ Leads to crooked conelets



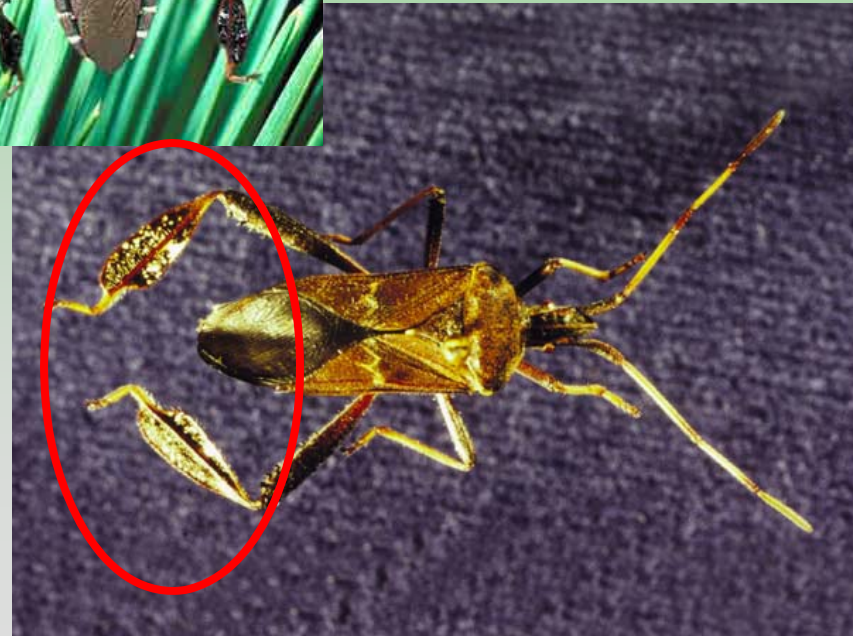
Pine Seedworm (Lepidoptera)



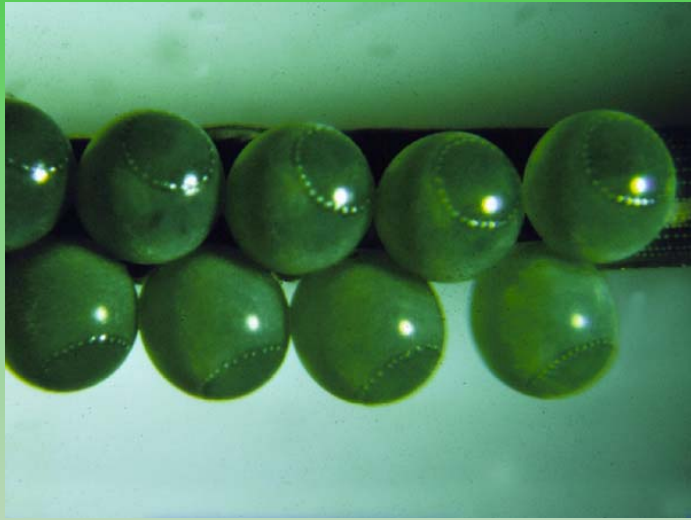
- ❖ Larvae completely consume the inside of seed
- ❖ when pine cones mature, each larva may eat 5 to 7 seeds
- ❖ No external signs on cones

Leaf-footed Seedbug (Hemiptera)

- ❖ Feed in groups
- ❖ Adults pierce into cone and suck out seed content
- ❖ Nymphs feed on cone



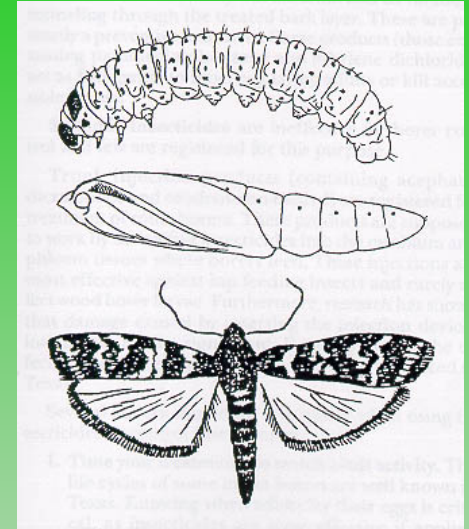
Shieldbacked Pine Seed Bug (Hemiptera)



Pine Coneworm (Lepidoptera)



- ❖ Tunnel through and destroys inside
- ❖ Resin and frass on outside



Nursery/Regeneration Pests

White Grubs (Coleoptera)

- ❖ Larvae are C-shaped; adults become June beetles
- ❖ Feed on and sever feeder roots of seedlings
- ❖ Roots look chewed on or cut off



White Grubs



Pine Webworm (Lepidoptera)



Pales Weevil (Coleoptera)



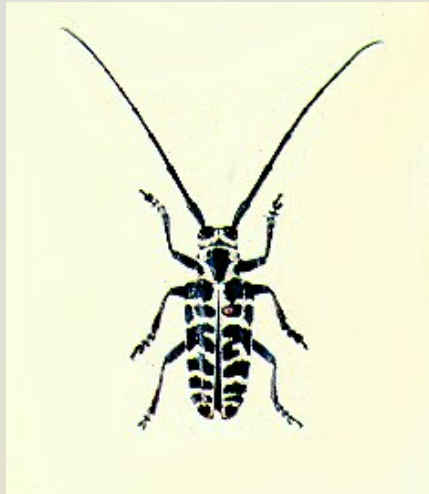
- ❖ Adults attracted to recent stumps to lay eggs
- ❖ Larvae feed on stumps
- ❖ Adults feed on pine branches and near root collar
- ❖ Girdle and kill seedlings/saplings



Pitch-eating Weevil (Coleoptera)



Cottonwood Borer (Coleoptera)



Photograph by Michael Bohne



Seeding/Sapling/Plantation Pests

Bagworm (Lepidoptera)



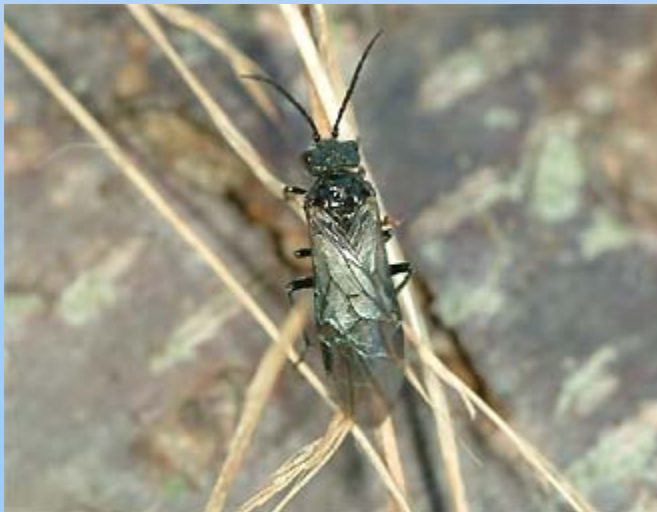
Aphids



❖ Feeding causes stunting



Sawflies (Hymenoptera)

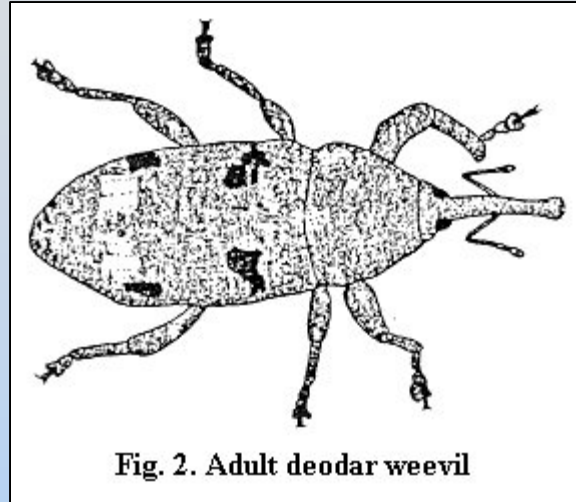


Nantucket Pine Tip Moth (Lepidoptera)

- ❖ Several more instars develop
- ❖ 3-4 gen/yr around Auburn; more in South/less moving North
- ❖ 2nd instar larvae bore into shoot tips and feed on pith
- ❖ Feeding damage causes shoot tip dieback or deformities

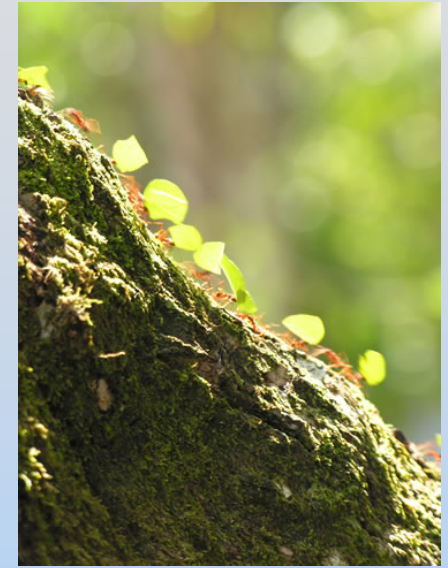


Deodar Weevil (Coleoptera)



- ❖ Larvae damage on leaders causes crooks/forks
- ❖ Straight wood value diminishes
- ❖ Repeated attacks can lead to mortality

Leaf Cutting (Town) Ants (Hymenoptera)

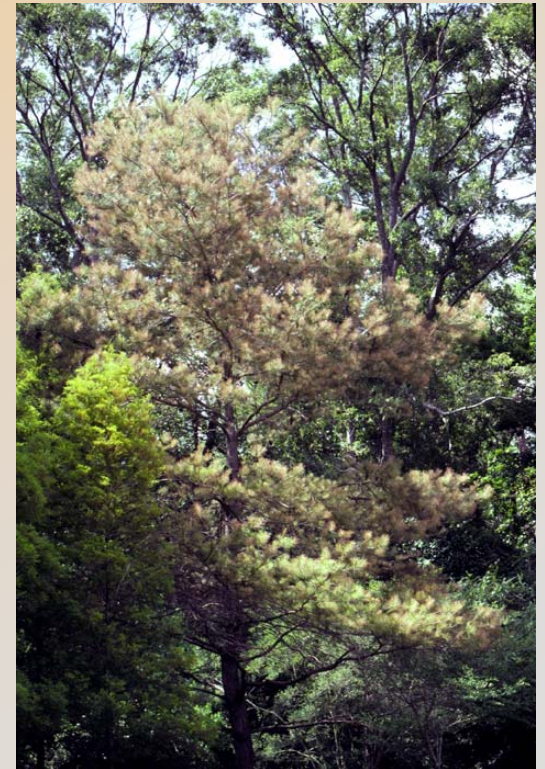


Miscellaneous Forest/Shade Tree Insects

Pine Colaspis Beetle (Coleoptera)



- ❖ Feed on the edges of needles and produce an irregular, saw-like edge
- ❖ Can lead to entire browning of the tree



Larger Elm Leaf Beetle

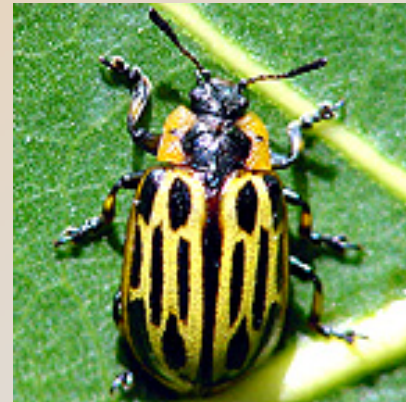
- ❖ Almost entirely exclusive to Elm
- ❖ Skeletonizer



Cottonwood Leaf Beetle (Coleoptera)



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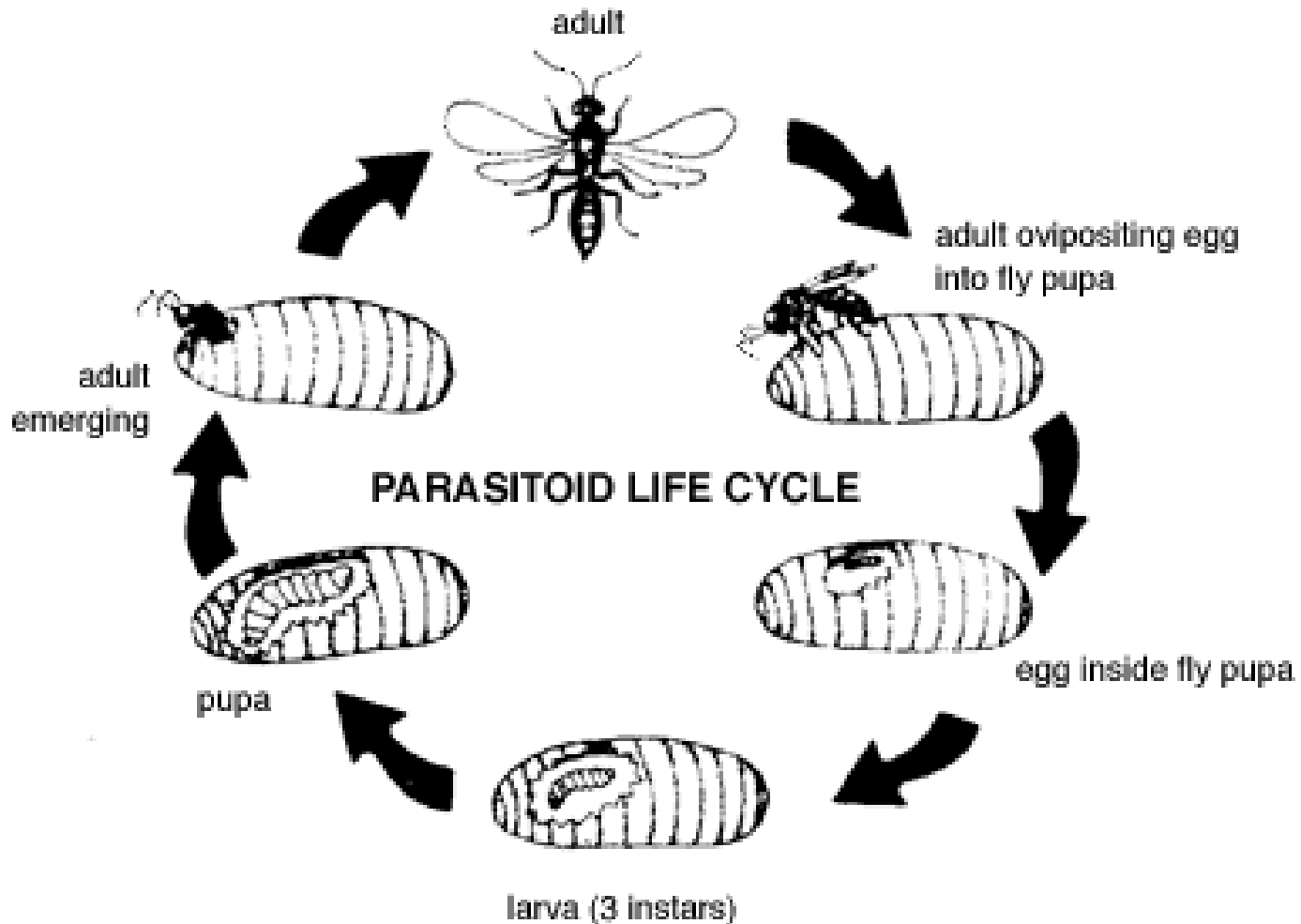
Beneficial Insects

- **Predator:** An organism that lives by preying on other organisms
- **Parasite:** An organism that grows, feeds, and is sheltered on or in a different organism while contributing nothing to the survival of its host.
- **Parasitoid:** an insect that lays its eggs within a host, eventually causing the death of the host.

Checkered Beetles



Parasitoid Life Cycle



Hymenopterous Parasites

Vespidae



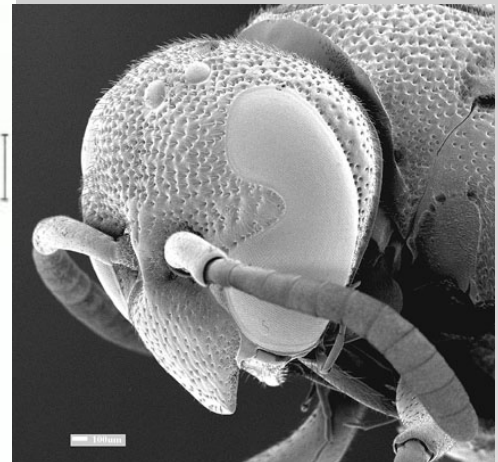
Ichneumonidae



Sphecidae



Vespidae



Sphecidae

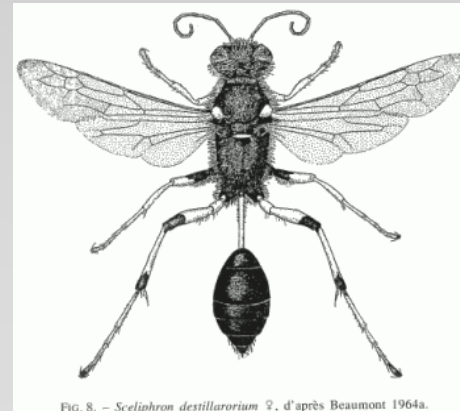


FIG. 8. - *Sceliphron destillatorium* ♀, d'après Beaumont 1964a.



Ichneumonidae



SPB Parasite (Spathius)



Dinotiscus dendroctoni
SPB parasitoid wasp



Coeloides pissodis
Ovipositing in bark beetle



Parasatoid Emerging from Cocoon



Robber Flies(Diptera)



Predaceous Beetle Carabidae Adults



Lady Beetles (Coccinellidae)





Eastern Eyed
Click Beetle

(Coleoptera) Elaeteridae



UGA127405



UGA1435196

Fire
(F)

