WOOD-BORING INSECT PESTS OF WOODY PLANTS

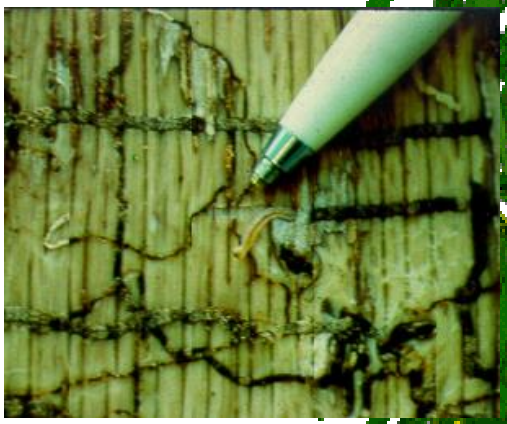
IDENTIFICATION

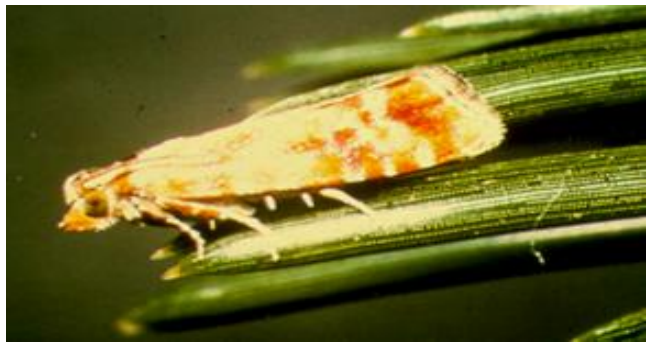
BIOLOGY

MANAGEMENT

WOOD-BORING INSECT PESTS

- Clearwing moth borers
- Beetle borers
- Bark beetles
- Shoot and stem borers
- Cavity feeders





CLEAR-WINGED MOTH BORERS

- Peach Tree Borer
- Ash-Lilac Borer
- Viburnum Borer

PEACH TREE BORER

- **Preferred hosts** include plum, peach cherry trees

- Extended adult emergence period

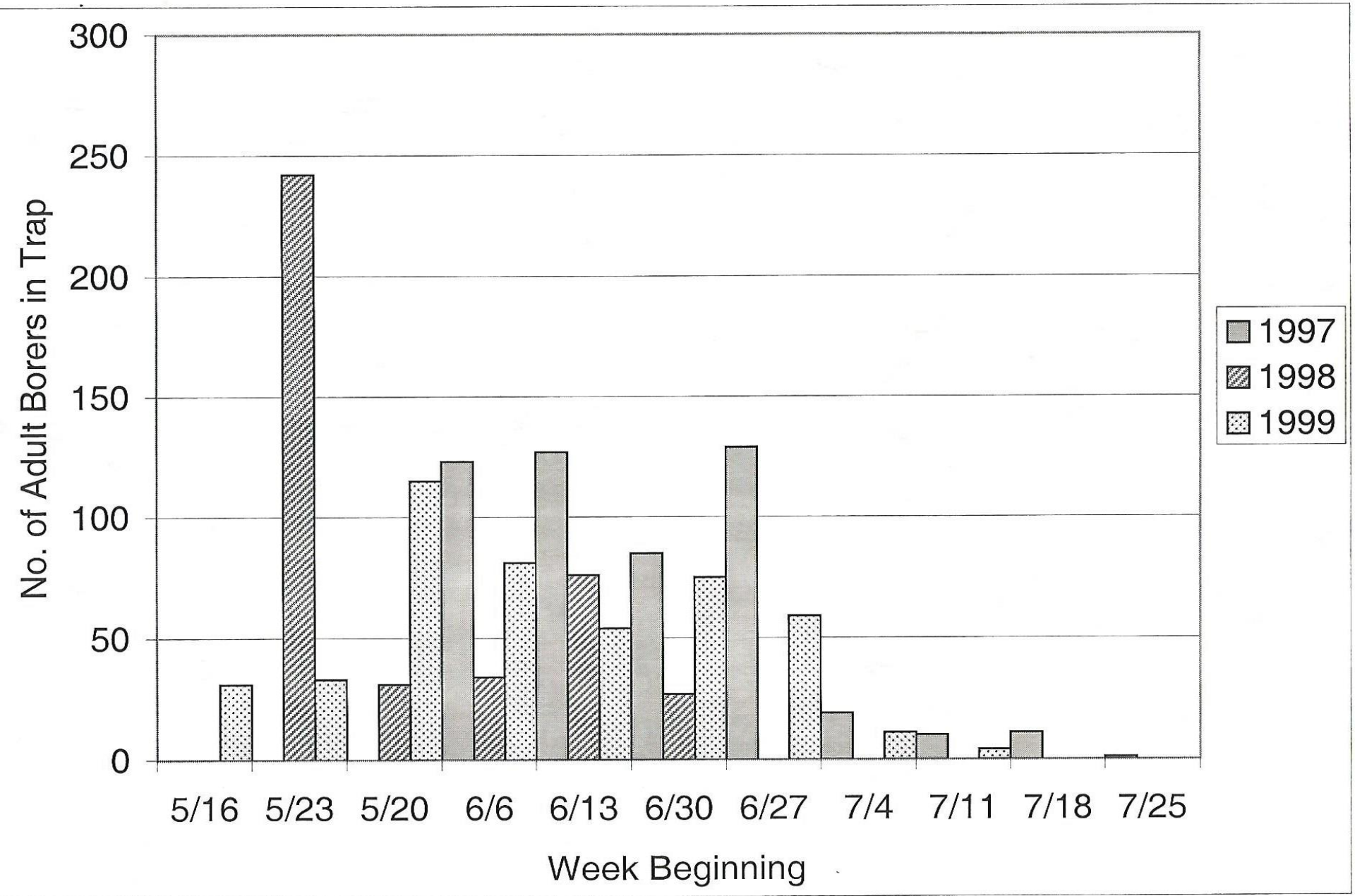
PEACH TREE BORER

- Lays eggs near soil line
- Lethal to the tree
- One generation per year

ASH-LILAC BORER

- **Preferred hosts** include ash and lilac
- Adult emergence early to mid June
- Larvae tunnel into **heartwood** to overwinter
- Lethal to the tree
- One generation per year

Adult Ash/Lilac Borers Caught in Pheromone Traps
The Morton Arboretum
1997 - 1999

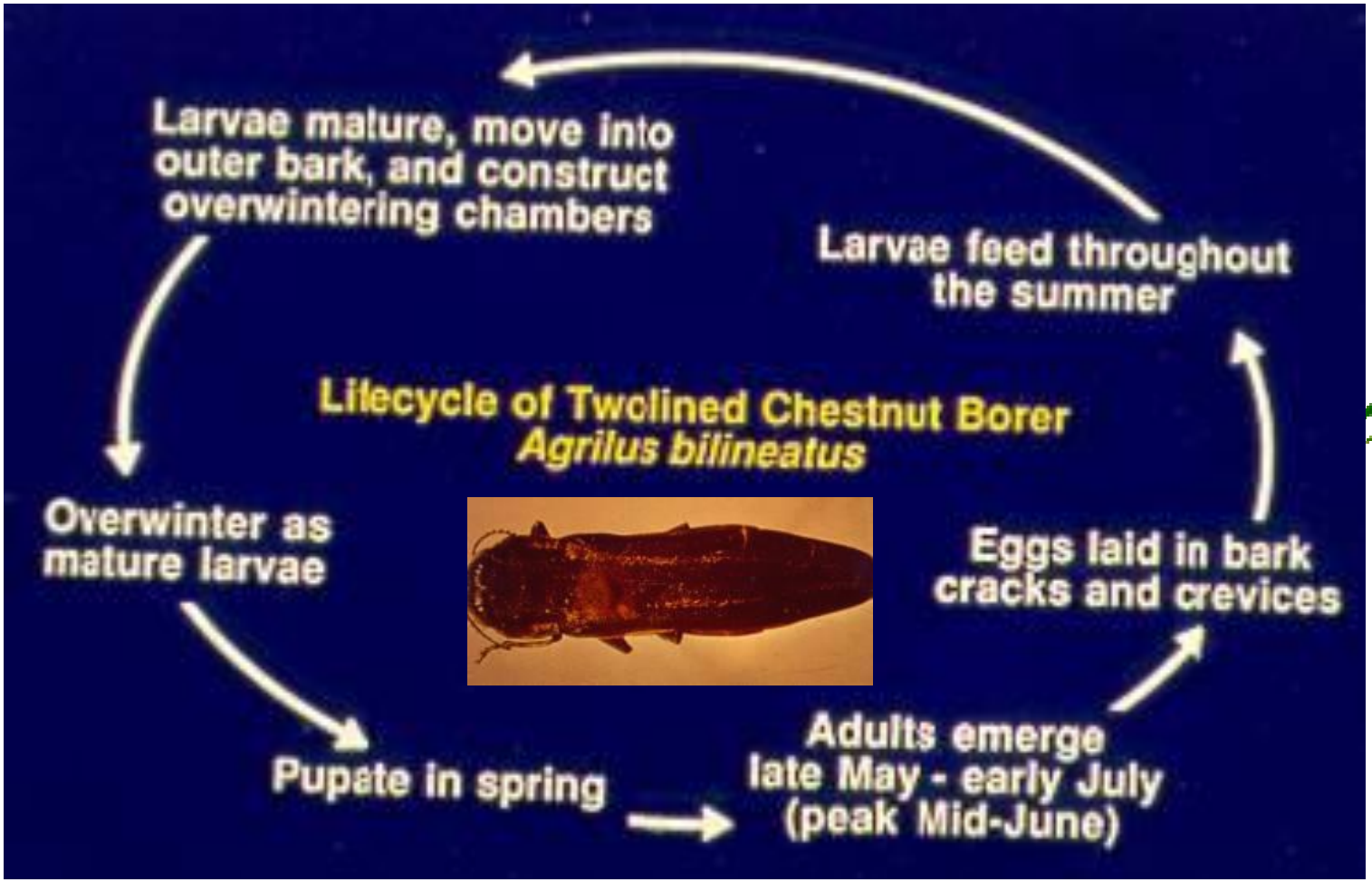


VIBURNUM BORER

- **Preferred host** is viburnum
- Adult emergence early to mid June
- Larvae tunnel into **heartwood** to overwinter
- Cause **vascular** and **structural damage**
- Lethal to the plant
- One generation per year

VIBURNUM BORER DAMAGE

LIFE CYCLE OF BEETLE BORERS



FLAT-HEADED APPLE TREE BORER

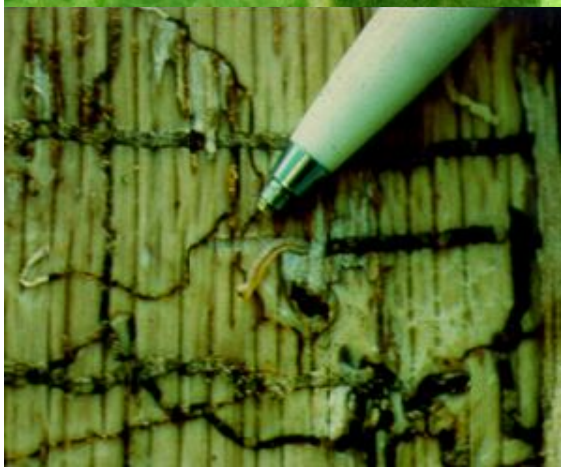
- **Prefers newly transplanted** trees especially maple and apple
- Adult is a metallic beetle
- Larvae have flattened **prothorax**
- One generation per year

TWO-LINED CHESTNUT BORER

- **Attack the crowns of stressed trees**
  - Adults are able to perceive “quality” trees due to volatile chemicals given off by stressed trees
  - Tree condition appears to regulate both beetle attraction and colonization
- **Oaks are susceptible** within a narrow range of physiological conditions somewhere between stress and prior to mortality
- **Xylem-girdled trees** died within a few weeks, but **phloem-girdled trees** died only when attacked by TLCB

TWO-LINED CHESTNUT BORER

- Larvae form **tunnels** and **galleries**
- Disrupt the **vascular system**
- Adults form **“D” shaped emergence holes**
- One generation per year
- Capable of killing trees
- Appear to attack trees only after some threshold of severity of physiological tolerance of stress
- **TLCB exploits a narrow “window of tree vulnerability”**



TWO-LINED CHESTNUT BORER

- Adults form **“D” shaped emergence holes**
- One generation per year
- Capable of killing trees

ASIAN LONGHORN BEETLE

- Attack healthy and stressed trees
- **Prefer** maples, willows, elms, poplars, crabapples
- Larvae form tunnels and galleries in **sapwood**

ASIAN LONGHORN BEETLE

- Destroy the **heartwood**

- **May take one to two years to complete their development**

- Adults form large (1/2 inch) exit holes

Asian Longhorned Beetle Lifecycle

Adults and ovipostion scars

Emergence holes

Adult emerging from tree

Larva in tree

Pupal chamber in tree

Diagram by Michael Bohne

ASIAN LONGHORN BEETLE

ASIAN LONGHORNED BEETLE DAMAGE

MANAGEMENT OF WOOD-BORING INSECTS

- **Plant Health Care (PHC)** is the first line of defense

- **Chemical management** can be effective in preventing initial infestations

SHOOT AND STEM BORERS

- European pine shoot moth
- Zimmerman pine moth

EUROPEAN PINE SHOOT MOTH

- Major problem in Christmas tree **plantations** and landscape plantings
- **Prefers** Scots and mugo pines
- Larvae tunnel out the **growing tips/shoots**

EUROPEAN PINE SHOOT MOTH

- Infested tips turn brown and form a **shepherd's crook**

- **Shearing** is a common mechanical method of control

ZIMMERMAN PINE MOTH

- **Major pest of Scots and Austrian pines**
- One generation per year
- Larvae active from early spring to mid-summer

ZIMMERMAN PINE MOTH

- Adult moths active in late summer

- Larvae tunnel under bark in the **branch whorl** region damaging the **vascular system**

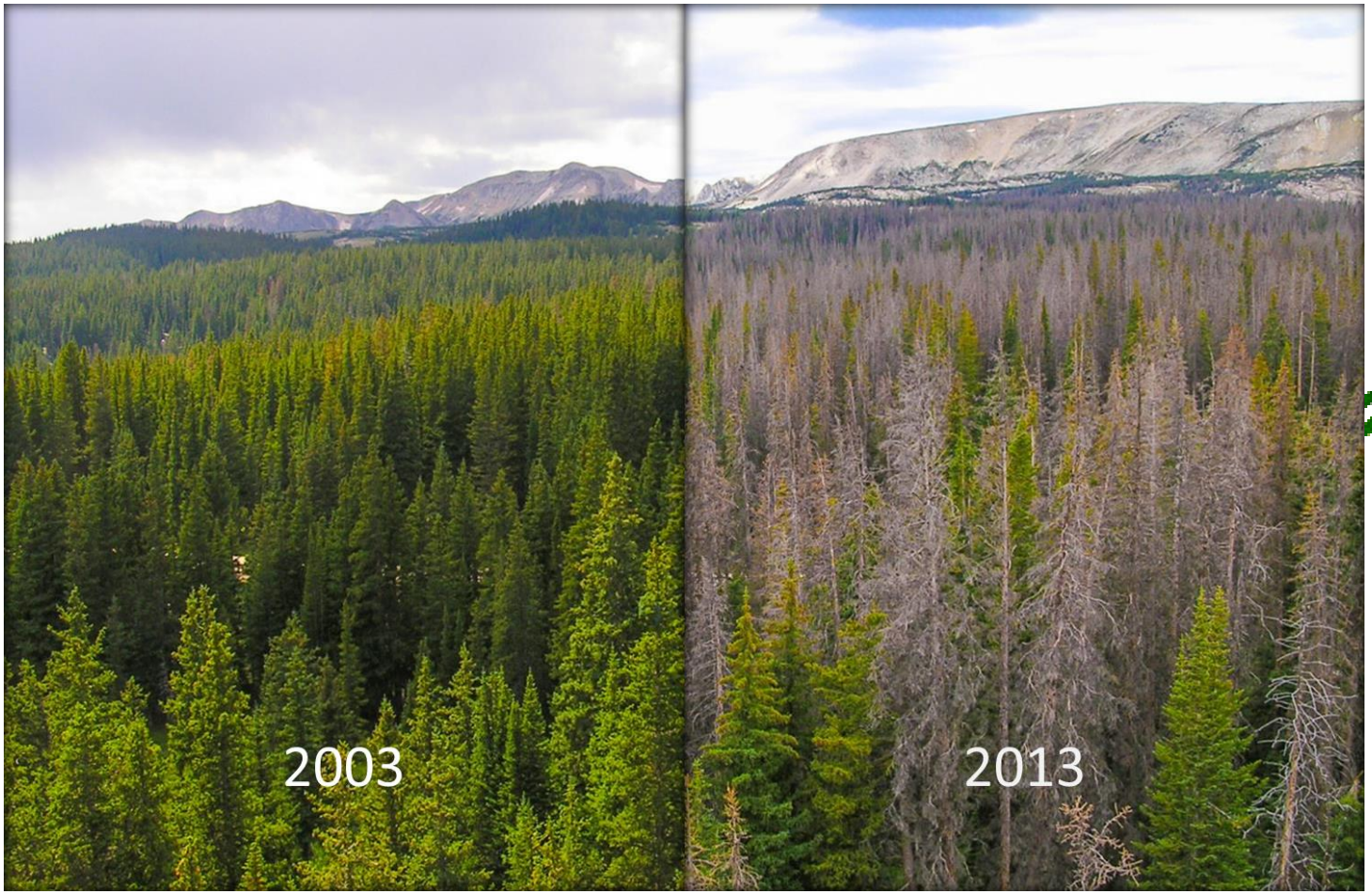
ZIMMERMAN PINE MOTH

- Usually not lethal to the tree, but larval feeding may result in death of **terminal**
- Tend to attack stressed trees
- **Chemical applications** can be effective
  - Apply in early April for larvae
  - Apply in early August for adult and larvae

MANAGEMENT OF STEM AND SHOOT BORERS

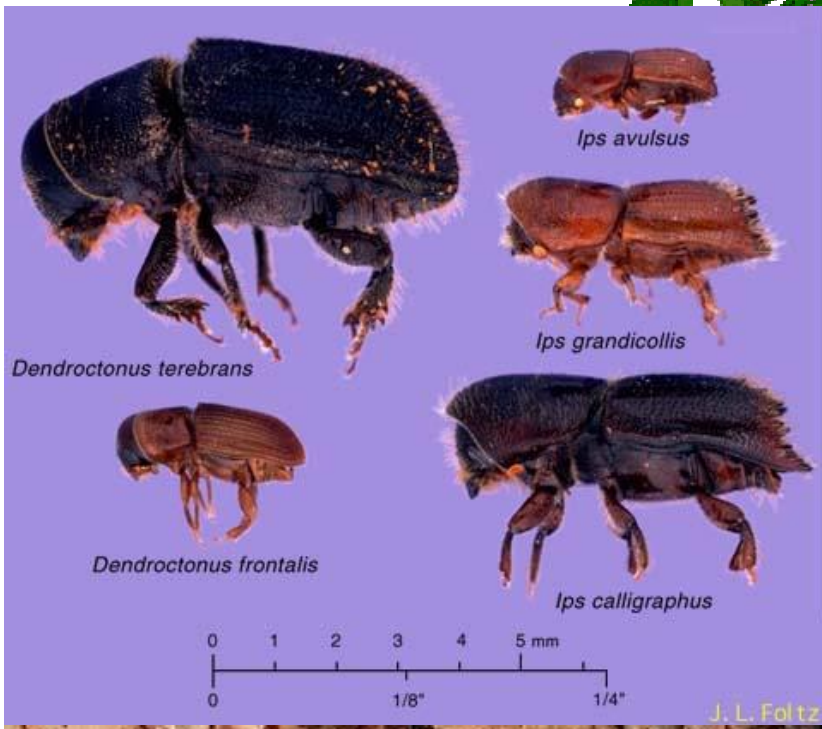
- **Plant Health Care** is critical in preventing borer infestations
- **Mechanical shearing** can be effective in controlling European pine shoot moth
- **Chemical management** can be effective in protecting plants from initial infestations

BARK BEETLES



BARK BEETLES

- **Mass attack** stressed trees
- **Capable of killing trees**
- **Multiple generations** per year
- Attack both hardwoods and conifers



BARK BEETLES

- Considered "**secondary agents**"
- Adult exit holes are small (1/16 inch) and in a random pattern
- **Pitch tubes** resembling popcorn are present on the trunk

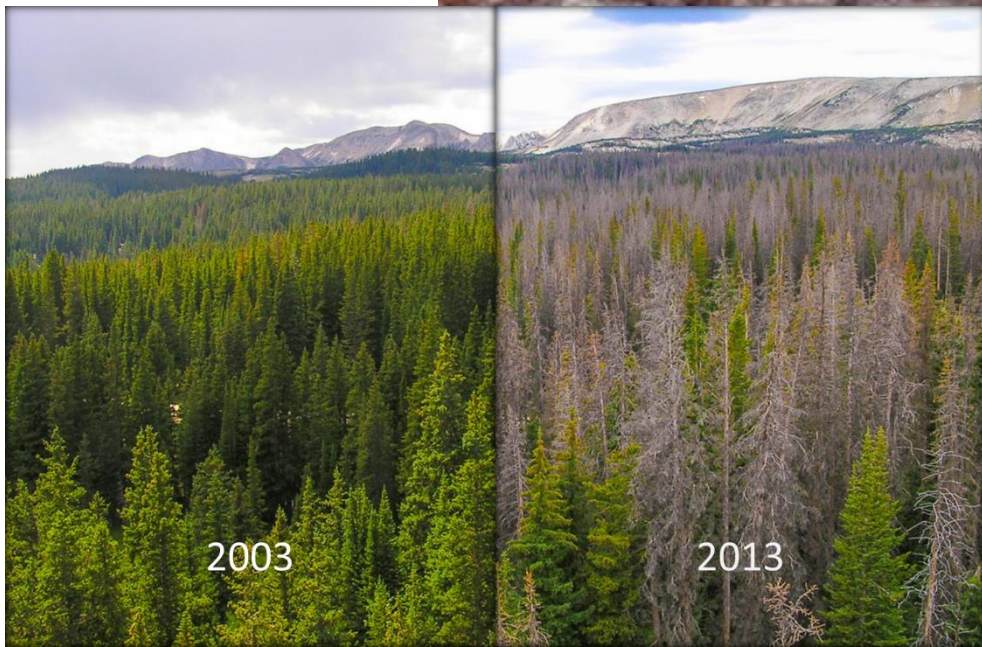
BARK BEETLES

- Destroy the **vascular system** of the tree

- Infested trees will color from **light green** to **yellow** to **brown** to **rust red**

BARK BEETLE OUTBREAKS

- Overstocked stands
- Environmental factors
- Lightning strikes
- Development



BARK BEETLES

- Large stands can be destroyed
- Serve as **vectors** of blue stain, Dutch elm disease, or oak wilt fungi

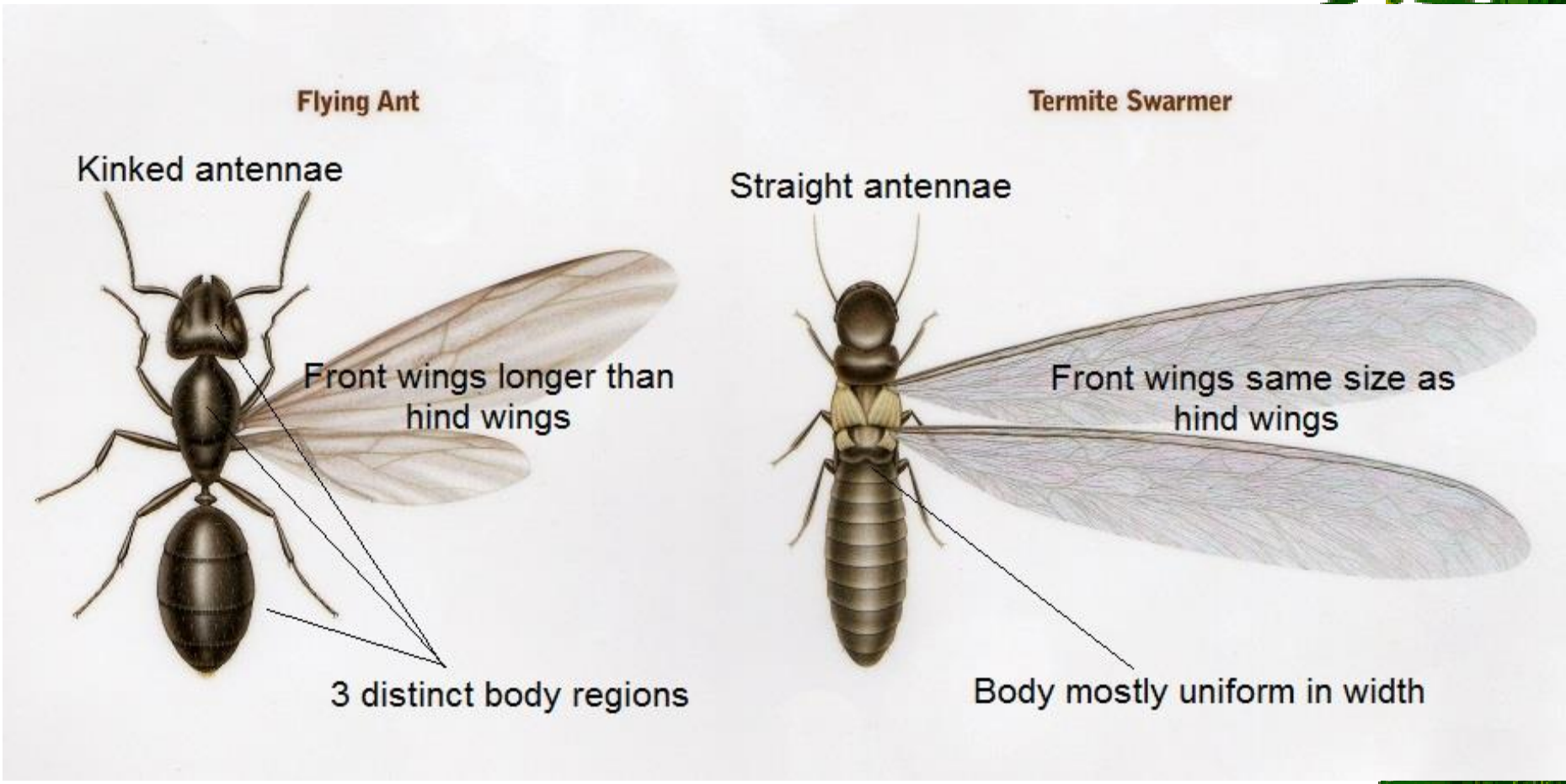
MANAGEMENT OF BARK BEETLES

- **Plant Health Care (PHC)** is essential for prevention of bark beetle attacks
- **Sanitation**
- **Chemical management** can somewhat effective as a preventative treatment

CAVITY FEEDERS

- Carpenter Ants

TERMITES VERSUS ANTS



CARPENTER ANTS

- Large black ants (1/4 inch or longer)
- **Prefer decaying and moist wood**
- Do not eat wood, but use it for nesting
- **Social insects with a “caste system”**

CARPENTER ANTS

- Do not kill trees
- Signal the presence of **wood decay** and **moisture problems**
- **No effective chemical treatments**
- **Tree should be inspected for structural integrity**

SUMMARY

- Most wood-boring insects are **secondary agents** and attack stressed plants
- **Plant Health Care** is the first line of defense against wood-boring insects
- **Chemical treatments** can be effective in preventing infestations

END OF PRESENTATION