What is that killing my trees?

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Introduction

Trees become stressed through various manmade or natural events, including machine damage, fires, flooding, and drought. Secondary pests include agents such as insects and fungi that are able to attack and infect newly susceptible trees.

Bark and Ambrosia Beetles

- Bark beetles tunnel through wood, laying eggs and indirectly sowing fungi from their bodies. These fungi usually have a mutualistic relationship with the beetle, though some species can negatively affect them.
- Ambrosia beetles don't consume the wood, but tunnel through it and sow fungi that they then cultivate and feed off of.
- Both beetles are centered in the phloem portion of the tree, but the fungi can spread to the xylem where they lower moisture content, making it more habitable for larval development.

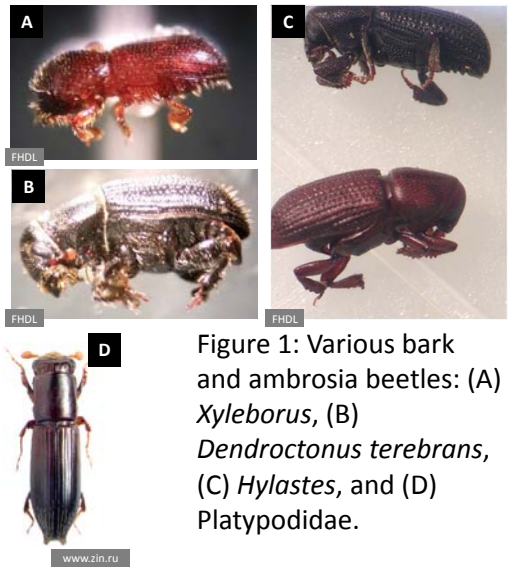

Figure 1: Various bark and ambrosia beetles: (A) *Xyleborus*, (B) *Dendroctonus terebrans*, (C) *Hylastes*, and (D) Platypodidae.

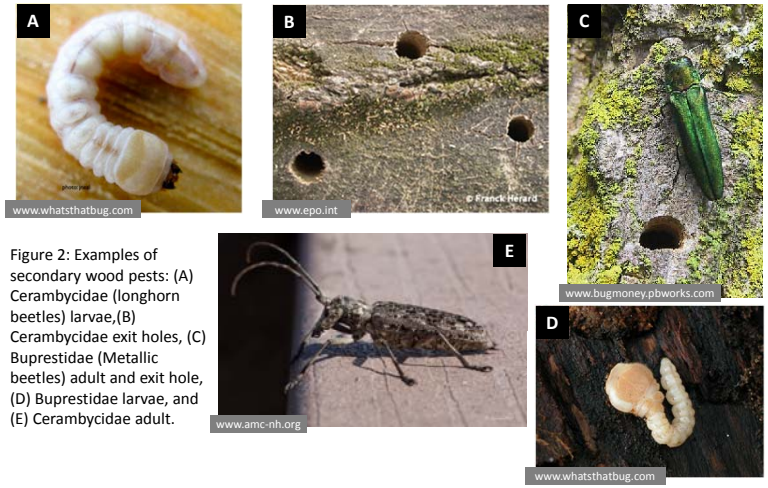

Figure 2: Examples of secondary wood pests: (A) Cerambycidae (longhorn beetles) larvae,(B) Cerambycidae exit holes, (C) Buprestidae (Metallic beetles) adult and exit hole, (D) Buprestidae larvae, and (E) Cerambycidae adult.

Cerambycids and Buprestids

- Usually attack dead or decomposing wood.
- Larvae of both families consume wood (Figure 2) while Cerambycidae adults can gnaw bark and twigs, causing girdling.
- Usually found after the bark beetles have left and feed on what's left.

Ips Beetles

- Pine engraver beetles with 3 main species (Figures 4, 5, and 6).
- Create Y – and H – shaped galleries right under the bark in the phloem (Figure 3).
- Attack stressed, weakened, or dying trees.
- Can occur in conjunction with Southern pine beetle and black turpentine beetle attacks.

Figure 3: *Ips* galleries.

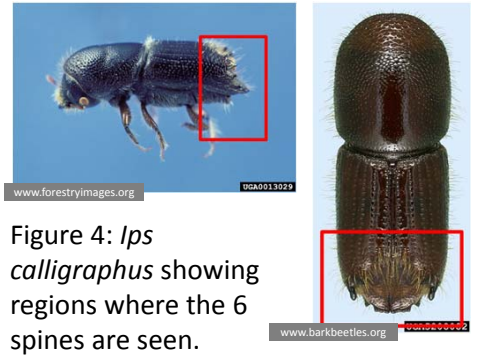

Figure 4: *Ips calligraphus* showing regions where the 6 spines are seen.

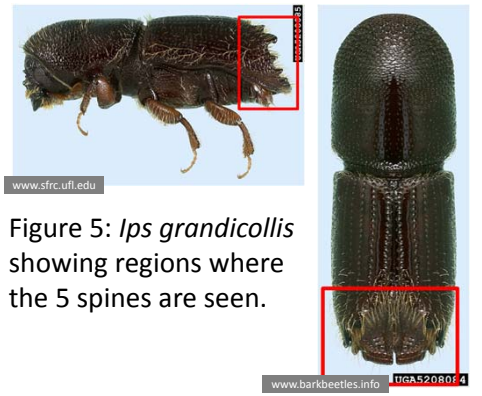

Figure 5: *Ips grandicollis* showing regions where the 5 spines are seen.

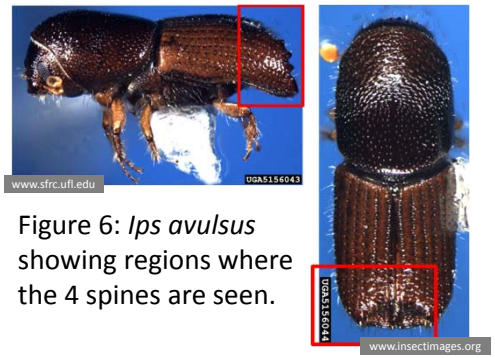

Figure 6: *Ips avulsus* showing regions where the 4 spines are seen.