BARK BEETLES IN ASPEN: WHAT TO KNOW

SPECIES PRESENT, SEASONAL ACTIVITY, AND HOW RESIDENTS CAN HELP

DOCUMENT NAVIGATION

CURRENT BARK BEETLE ACTIVITY AND MANAGEMENT IN ASPEN

Which bark beetle species are present in and around Aspen?

1. Douglas-fir beetle (Dendroctonus pseudotsugae)

   This is currently the most significant bark beetle affecting forests in and around Aspen. Its activity is closely tied to drought, windthrow, and other stressors, and because the beetle overwinters beneath the bark, winter does not interrupt its development. Douglas-fir beetle attacks Douglas-fir almost exclusively. It does *not* infest Engelmann spruce, blue spruce, lodgepole pine, ponderosa pine, subalpine fir, or hardwood species. Signs of possible Douglas-fir beetle activity include:

   - Early crown fade: needles shift from healthy green to dull yellow-green, eventually turning red.
   - Fine reddish-brown boring dust collecting in bark crevices, on the root flare, or on snow.
   - Minimal or absent pitch tubes, especially on drought-stressed trees with limited resin flow.
   - Fresh bark flaking from woodpeckers feeding on larvae.
   - Straight vertical galleries beneath the bark with small perpendicular larval tunnels (visible only if bark is naturally removed).
   - Rust-colored crowns appearing 8–12 months after attack.
     https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/douglas-fir-beetle
     https://www.fs.usda.gov/foresthealth/technology/douglas-fir-beetle
     https://extension.colostate.edu/topic-areas/insects
     https://www.cityofaspen.com/1388/Douglas-fir-Beetle-Mitigation

2. Spruce Beetle (*Dendroctonus rufipennis*)
   This is Colorado's most destructive high-elevation bark beetle, heavily affecting Engelmann spruce. CSFS provides an overview of its biology, symptoms, and management considerations.
   https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/spruce-bark-beetle

3. Mountain Pine Beetle (*Dendroctonus ponderosae*)
   Although the widespread epidemic has tapered, the species remains present statewide. It continues to affect lodgepole, ponderosa, and limber pines.

https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/mountain-pine-beetle

4. Ips Beetles (multiple *Ips* species)
   CSU Extension identifies 11 species in Colorado, several of which attack pines and spruce, especially when the trees are stressed by drought, pruning injury, root disturbance, or construction activity.
   https://extension.colostate.edu/topic-areas/insects/ips-beetles-5-558

5. Fir Engraver Beetle (*Scolytus ventralis*)
   This insect attacks subalpine fir, particularly when trees are weakened by drought. CSU Extension provides a summary of symptoms and management.
   https://extension.colostate.edu/docs/pubs/insect/05547.pdf

Do bark beetles continue to cause damage to trees during the winter?

Yes. Once beetles have entered a tree, both larvae and adults overwinter beneath the bark. CSFS notes that beetles remain insulated within the phloem, where temperatures are warmer than ambient air and often buffered by snowpack. As a result, the injury process continues even when trees are dormant.

Because conifers do not produce meaningful resin in winter, trees are unable to mount a defensive response until spring. Any tree successfully attacked before freeze-up remains vulnerable throughout the winter months.

https://csfs.colostate.edu/media/sites/22/2014/02/Spruce-Beetle-QuickGuide-FM2014-1.pdf

How cold does it have to be to kill bark beetles and their larvae?

Research shows that winter mortality requires prolonged, extremely cold conditions rather than brief cold snaps. Some key thresholds documented include:

- Temperatures near –20°F may kill some larvae but do not significantly reduce populations.
- Sustained temperatures near –30°F over several nights are needed for meaningful mortality.

- Beetles beneath thick bark or under snow insulation may be protected even at these temperatures.

These temperature thresholds explain why even historically cold Colorado winters rarely eliminate bark beetle populations. Cold weather helps, but it is not reliable as a primary control strategy.
https://newsmediarelations.colostate.edu/2010/02/01/recent-cold-weather-unlikely-to-kill-bark-beetles-says-colorado-state-forest-service

Does winter slow the spread of bark beetles?

Winter temporarily halts *flight*, which is the stage during which new host trees are attacked. Although winter helps to slow the spread temporarily, beetles already inside trees typically survive. In warmer winters, the larvae may even continue slow development and be ready to emerge early in spring. So basically, a relatively cold winter can pause new infestations but does not meaningfully reverse existing ones unless extremely cold conditions persist.
https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/mountain-pine-beetle
https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/spruce-bark-beetle

What are the biggest threats to Aspen's trees in the winter?

Several winter-related stressors increase the vulnerability of trees to bark beetles and other pests.

1. Lack of water in the warm season.
   Drought stress reduces a tree's ability to produce resin, which is its primary defense against bark beetle attacks. This is one of the biggest drivers behind most beetle outbreaks in Colorado.
   https://csfs.colostate.edu/forest-management/common-forest-insects-diseases

2. Lack of water in the cold season.
   Evergreens continue losing moisture through their needles all winter. Frozen soils prevent water uptake, producing needle browning and bud damage.
   https://extension.colostate.edu/topic-areas/yard-garden/winter-drying-of-evergreens-7-211

3. Snow load damage.
   Heavy, wet snow can break branches or leaders. This type of fresh wounding is strongly linked with subsequent Ips beetle attacks.
   Ips fact sheet (CSU Extension):
   https://extension.colostate.edu/topic-areas/insects/ips-beetles-5-558

4. Sunscald and frost cracking.
   Rapid freeze–thaw cycles injure bark on young or thin-barked ornamentals, creating entry points for decay fungi and opportunistic insects.
   https://extension.colostate.edu/topic-areas/yard-garden/sunscald-of-trees-7-423

5. Continued progression of attacks that occurred before winter.
   Infested trees continue to decline through the winter even though beetles are inactive externally. By spring, some trees that appeared to be in fair condition in fall may be too compromised to recover.

How can residents and property owners help slow the spread of bark beetles?

- Do not move firewood.
- Learn to recognize the symptoms of each bark beetle species. Report anything suspicious to trees@aspen.gov.
- If you are removing an infested tree, ensure that your contractor chips any material upon removal before transporting it away from your property.
- Consider "shadow planting" new species near susceptible trees in anticipation of future decline.
- Monitor updates from reliable local sources, such as the city's Forestry Page, the Colorado State Forest Service or Colorado State University.
- Hire a local certified arborist to treat trees with basal trunk sprays, soil drenches, or trunk injections (depending on the tree health, environmental conditions and specific pest pressure).
  https://ag.colorado.gov/eab
  https://storymaps.arcgis.com/stories/c5cfa14f7c394f5faf42bf0ae63e2749

What is Aspen Doing to Slow the Spread of Bark Beetles?

Over the past several years, the City of Aspen has taken a deliberately proactive approach to managing bark beetle activity in the forests that surround town, especially on Aspen Mountain where stand conditions, drought stress, and terrain complexity converge. Much of this work is grounded in the same principles outlined in our *State of the Forest* reporting and incorporated throughout the developing Forestry Master Plan: forest health interventions work best when they are coordinated, science-based, and sustained over multiple seasons.

Beginning in 2022, Aspen launched a multi-agency effort focused primarily on the Douglas-fir bark beetle. This program involves the annual installation of MCH pheromone packets—synthetic anti-aggregation signals that essentially communicate "this tree is already full" to incoming beetles. The science behind this approach is well documented in Colorado State Forest Service guidance, and these packets have demonstrated high efficacy in reducing successful attacks when deployed at the appropriate densities and spatial scales.

Between 2022 and 2023, crews installed thousands of packets across high-priority stands on Aspen Mountain, ultimately treating more than 180 acres in the first operational season. The work has been shaped by very real on-the-ground conditions: steep gullies, cliffs, unstable slopes, and limited access points all influence where treatments can occur safely. The 2023 coordination documents you shared reflect this clearly, noting which areas staff reached successfully, which ones remain too hazardous for installation, and how the teams adapted their strategy around terrain limitations.

This project is not something the City has taken on alone. It has relied on consistent collaboration with the Colorado State Forest Service, Pitkin County Open Space and Trails, the Aspen Fire Protection District, Aspen Skiing Company, and Aspen Center for Environmental Studies. Each year, partners convene to review updated imagery, share monitoring data, discuss trap results, secure lodging and access logistics, and align budgets. This model—annual planning, unified messaging, shared resources, and adaptive decision-making—is the same framework we identified as best practice in earlier forest-health reports.

Monitoring has become just as important as treatment. Traps deployed along ski runs have provided useful information about beetle activity levels, with some traps collecting higher numbers than expected. These data points help refine where packets should be

concentrated and offer an early indication of population trends. The intention is not only to mitigate immediate impacts, but to maintain a baseline of ecological awareness as climate patterns continue to change.

Public communication has also been part of the strategy from the beginning. Mailings, informational flyers, coordinated talking points, and periodic website updates have all helped create a consistent narrative about why we are treating, where we are focusing our attention, and how residents can expect the work to evolve. This is consistent with the larger direction outlined in the Master Plan—that transparent, accessible public information is essential for long-term forest resilience.

Taken together, Aspen's bark beetle work represents a sustained, landscape-scale effort rooted in collaboration and grounded in the best available science. It is also a living example of what the Forestry Master Plan emphasizes: forest health is not a single intervention, but an ongoing relationship with the landscape and the partners who help care for it.

PREPARING FOR EMERGING FOREST HEALTH CHALLENGES

What is Emerald Ash Borer, and why is it a concern for the Roaring Fork Valley?

Emerald Ash Borer (*Agrilus planipennis*) is a non-native, highly destructive wood-boring beetle that attacks all species of ash (*Fraxinus*). It was detected in Carbondale in June 2023 and confirmed by Colorado State University.

EAB has caused widespread mortality across the Midwest and East since 2002, and it continues to expand across Colorado. The City of Aspen's Emerald Ash Borer Management Plan is designed to help us prepare for its eventual arrival.
https://csfs.colostate.edu/forest-management/common-forest-insects-diseases/emerald-ash-borer

Has EAB been detected in Aspen?

No. As of now, the only confirmed Western Slope detection is in Carbondale (2023). However, adult EAB can fly approximately 30 miles, and human movement of infested firewood is a major pathway for spread. This means vigilance is essential up and down the valley. *https://csfs.colostate.edu/emerald-ash-borer*

What EAB symptoms should residents watch for?

Early symptoms can be subtle. CSU Extension highlights these key indicators:

- Thinning canopy
- Epicormic shoots (sprouts on trunk or branches)
- Bark splits exposing S-shaped galleries
- Woodpecker damage
- Distinctive D-shaped exit holes

https://extension.colostate.edu/topic-areas/insects/emerald-ash-borer-5-626

How can residents and property owners help slow the spread?

CSFS and CDA recommend:

- Do not move firewood long distances.

- Learn to recognize EAB symptoms.
- Consider "shadow planting" new species beneath or near mature ash in anticipation of future decline.
- Avoid chemical treatment unless EAB is within 10–15 miles.
- Monitor updates from reliable local sources. *https://ag.colorado.gov/eab*

What is Aspen doing to prepare?

The City of Aspen has an Emerald Ash Borer Management Plan, which includes:

- Monitoring with traps and field inspections
- Prioritizing high-value ash for future treatment once EAB is confirmed nearby
- Phasing removal of poor-condition ash
- Diversifying new plantings, and discontinuing the planting of ash trees.
- Providing public education and outreach
- Preparing wood-handling procedures to safely process infested material

Where can people find the most up-to-date information?

Residents should periodically check:

- City of Aspen Forest Health Briefs page (updates, advisories, local detections, and treatment recommendations)
- CSFS – Emerald Ash Borer portal https://csfs.colostate.edu/emerald-ash-borer
- Colorado Department of Agriculture – EAB updates https://ag.colorado.gov/eab
- CSU Extension urban pest management resources https://extension.colostate.edu

Given how quickly EAB spreads once established, staying current with these sources is one of the most effective forms of prevention.