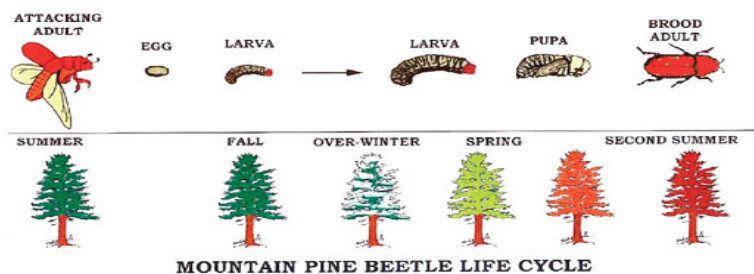


## MOUNTAIN PINE BEETLES (MPBs)

(Sandy Lindquist notes, Oct 2011)

There are insects or diseases that can damage or kill virtually every plant. Most are a natural part of the ecosystem. The current historic evergreen “epidemic” is by the Mountain Pine Beetle (MPB) – affecting lodgepole, ponderosa, limber, & possibly bristlecone pines in the Estes area.



MPBs generally have a one-year, late-summer-to-late-summer life cycle (figure from CSU-CSFS “Colorado’s Common Insects and Diseases”), although recent observations suggest that the flight & attack period might extend from earlier (spring) to later (fall) in the year than previously known.

New attacks & infestations (by migrating new-adult beetles) volumetrically **peak** in the **July through early Sept** time frame in the Estes area, although some have been witnessed flying **as early as late March** and **as late as late September to October**. Hundreds of beetles can attack one tree.

Attacking MPBs space themselves optimally on the trunk, drill through the bark, & then burrow vertically inside the tree along its “vascular cambium” within the innermost bark & at the outermost wood – where all new annual growth occurs & where water/nutrients travel. MPBs feed on the innermost bark & soon lay dozens of eggs per female in the vertical trails. Eggs hatch within a couple weeks. Hatchling mortality is high, but annual **proliferation from ONE infested tree likely results in MULTIPLE new tree attacks next year**. New beetle larvae (& older pupae) tunnel horizontally as they grow/feed over winter – girdling the tree with damage – until their maturity & migration next season. MPBs carry a blue-stain fungus that penetrates & probably clogs the youngest (outermost) wood where water travels up from the roots.

**Removal timing is CRITICAL to help mitigate annual proliferation.** Known infested trees (newly fading) should be removed & properly disposed of as early as possible (and certainly **before July**).

### **SIGNS OF NEW ATTACK OR INFESTATION** – during/after the summer migration (e.g., Jul – Oct):

- New “**pitch tubes**” on trunk (ground level to tens-of-feet up) look like wads of chewed gum (white, cream, yellow, orange, or red-brown **sap** with included sawdust). New pitch tubes can be soft to the touch & might preserve visible small holes where the beetle burrowed in. *(If the tree is vigorously healthy & the attack limited, the tree MIGHT successfully repel the beetle(s) this time & survive (likely to be attacked again the next year!). Pitch tubes thus might be limited in number & runny in appearance, perhaps with beetles entrapped outside the bark (a “pitchout”).*
- Possible boring **sawdust** might be at base of tree, within pitch tubes, or in crevices on the trunk bark. But note that such sawdust can be dispersed relatively soon by rain and wind.
- Needles still look the same (**normal**) until **NEXT spring/summer’s growing season** when there usually is a **quickly progressing and uniform needle discoloration to eventual red-brown**.

### **HOW TO DETERMINE IF ATTACK IS SUCCESSFUL** – (watch tree until **early next spring/summer!**)

- Generally, the more pitch tubes (e.g., hundreds) and the darker their color, the greater the possibility that the attack has been successful at a large scale (wherein the tree is doomed).
- Woodpeckers might work on an active beetle “brood” tree a lot throughout the winter.
- By the following spring/summer, needles will start fading (**very subtle at first!**) and browning.
- On a fading/browning tree (or one with many new pitch tubes in the fall), have the tree checked (debark a small area w/hatchet) to determine if there is evidence of active beetle life stages or burrowing. **IF YES**, the tree should be **removed & disposed of properly ASAP and certainly before July**. The town of Estes Park has a free incinerator & free inspections for valley residents ([info @ 577-3587](mailto:info@577-3587)). Winter inspection & removals are encouraged, especially if many new pitch tubes are seen in the fall or new fading is seen early in the calendar year.

Note that other things can cause pine needles to turn brown. Oldest (~3-5 year old) needles closest to the trunk naturally die and drop off each autumn. Other stressors (drought, salt, insects) can result in partial browning of needles, especially the tips. But if the entire needle is affected over all or most of the tree, MPBs are likely to be present, and the tree should be examined for attack evidence immediately.

### PREVENTIVE MEASURES

Healthy, vigorous trees in uncrowded conditions are less likely to succumb to beetle attacks. No preventative measures are 100% successful in preventing beetle attacks under all conditions, but they do reduce risk. Best preventive measures include the following, alone or in combination:

- 1) annual (May-Jun) **chemical spray** of selected high-value trees (beware of environmental risks).
  - Carbaryl (Sevin), Permethrin (Astro), or Bifenthrin (Onyx) formulations. Carbaryl has been shown to still have some carryover effectiveness into the 2<sup>nd</sup> year after spraying.
  - Lower 30' (or more!) of thickest trunk sprayed to the point of runoff. Trees as small as 4" diameter can be successfully attacked/killed, but larger trees are more likely to be hit.
  - Careful use of product by professionals under proper environmental conditions (not too much wind during spraying or immediate rainfall after spraying).
  - Be aware that repeated annual chemical spraying can result in other problems like spider mite infestations, wherein miticides (spray) might be needed. If white webbing or white cotton-candy-like bits are noticed within needle clusters, they can be sprayed with a high-pressure stream of water to remove them.
- 2) annual **emplacement** (May-Jun) of "anti-aggregating" **pheromone packets** (e.g., "Beetle Block," "Verbenone") tacked to selected trees at recommended heights and areal density of placement. Recent evidence suggests that a May placement with an August replacement might be more effective (but twice the cost!). Pheromones are less effective than chemical sprays when beetle populations are large.

### TREE SPRAYING AND TREE SERVICE COMPANIES

Tree-service & preventive spraying companies can be found in newspapers, phone books, and from the Colorado State Forest Service. You should check on licensing, insurance, and bonding for these contractors, as well as for referrals from clients in the area. You can ask the Town Public Works Dept if they have local licensing information on specific companies (577-3587).

### FREE SERVICES FOR AREA RESIDENTS

**BEETLE BUSTERS** – The town of Estes Park offers free educational and tree-inspection services by town volunteers and staff. Call Public Works 577-3587 for help with your property.

### FREE DISPOSAL OF BEETLE TREES FOR VALLEY RESIDENTS:

Air-curtain burner @ Town yards (666 Elm Road) accepts max 3-foot lengths of infested trunk with no slash, limbs, or needles. 8 am – 4 pm, Mon – Fri.

### ONLINE INFO: see [www.frontrangepinebeetle.org](http://www.frontrangepinebeetle.org)

**ESTES PARK TREE BOARD WEBSITE** ([www.estesnet.com](http://www.estesnet.com) --choose "residential" tab & then "trees" at lowermost right under "Community" header) OR directly go to this following address:

<http://www.estesnet.com/PublicWorks/Parks/TreeBoardPage.aspx>

**TOWN OF ESTES PARK HOME PAGE** <http://www.estesnet.com>

**CO STATE FOREST SERVICE** – Colo State University (search window & links to download information for most everything about trees!) <http://csfs.colostate.edu/>



Pitch tubes vary from whitish to red or brown and can be small & hard to see.

