

Mountain Pine Beetle



Figure 1. Side view of adult MPB. Note gradually rounded wing covers. Photo credit: Erich Valley, USDA FS.



Figure 2. Side view of adult engraver beetle. Note spined wing covers. Photo credit: Ken Walker, Museum Victoria Bugwood.org.



Figure 3. MPB caused popcorn-like pitch tubes. Photo credit: Scott Tunnock, USDA FS.

Scientific name: *Dendroctonus ponderosae*

History

- Mountain pine beetle (MPB) is native to the western United States, British Columbia, Canada and northern Mexico where it infests most species of pine.
- MPB is currently not present in Minnesota. The Minnesota Department of Agriculture has documented two cases (2012 and 2014) where MPB infested wood has been imported into the state. In both instances the adult beetles were dead.
- Periodic outbreaks of MPB are common throughout its natural range. However, in recent decades, climatic shifts and other factors have allowed for unprecedented outbreaks resulting in the loss of millions of acres of trees.
- MPB is currently killing large amounts of trees as far to the east as the Black Hills of South Dakota and has recently expanded its range across Alberta, Canada, where it is now infesting jack pine (*Pinus banksiana*).
- There is concern that MPB could naturally expand its range into Minnesota or be introduced through the movement of infested wood.

Description and Life Cycle

- Adult beetles are typically oval shaped and black, 4-7.5 mm in length (Figure 1).
- MPB has a one year life cycle in most of its range. Overwintered adults emerge from infested trees in July or August to colonize new host trees. At high elevations, two years may be required to complete the life cycle.
- Females attack a pine first and release chemicals into the air called aggregation pheromones that attract more females and males to the tree.
- MPB prefer stands of densely packed trees that range from 8 to 12 inches in diameter.
- Female beetles lay eggs along the sides of vertical galleries, within the inner bark of the tree. Newly hatched larvae mine horizontally away from the egg galleries. These larval beetles continue feeding over the winter, through spring. They become pupae mid-summer, and then emerge as adults.
- Mountain pine beetles and related bark beetles in the genus *Dendroctonus* can be distinguished from other bark beetles in pines by the shape of the hind wing cover. From the side view, MPB's wing covers are gradually curved (Figure 1). Wing covers of *Ips*, or engraver beetles, another common group of bark beetles attacking conifers, are sharply spined (Figure 2).

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Figure 4. MPB infested trees exhibiting foliage discoloration. Photo credit: USDA FS R2-RMR



Figure 5. Characteristic galleries of MPB caused by adult and larval tunneling and discoloration of sapwood caused by blue stain fungi. Photo credit: Ladd Livingston, Idaho Department of Lands

Signs of Infestation

- Popcorn-like masses of resin, called "pitch tubes," appear on the trunk where beetle tunneling begins. Pitch tubes may be brown, pink or white (Figure 3). In particularly dry years, infested trees may also have boring dust but no apparent pitch tubes.
- Presence of boring dust caused by the beetles tunneling in bark cracks and at the base of infested trees.
- Discolored foliage. Needles will fade from green to yellow to run red throughout the entire crown. This occurs the summer (8-10 months) after infestation (Figure 4).
- Presence of live life stages (eggs, larvae and pupae) in galleries under the bark (Figure 5).
- Presence of blue stained sapwood: a fungus introduced into the tree by the beetle (Figure 5).

When to Suspect MPB

In Minnesota it is common to find pine trees infested with native bark beetles. Our native bark beetles are less aggressive than MPB and typically only infest trees that are declining or under severe drought stress. It is uncommon to find pitch masses above 6 feet in Minnesota, however it is not certain how pines in Minnesota will respond to MPB attack and any trees exhibiting pitch tubes must be examined more closely.

Regulations

Minnesota currently has regulations in place to prevent the introduction of mountain pine beetle. The regulations prohibit the movement of all pine wood with bark into Minnesota from areas where mountain pine beetle occurs.

For questions, or if you suspect you have seen this pest in Minnesota, contact the Minnesota Department of Agriculture
Arrest.the.Pest@state.mn.us
1-888-545-6684 (Voicemail)

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.