

DIRECT CONTROL OF MOUNTAIN PINE BEETLE (MPB)

“Direct control” strategies are ones aimed primarily at reducing beetle populations through some methods designed to kill beetles in varying stages of development. Direct control may be considered to include “preventive” treatments aimed at preventing attacks on susceptible trees.

“Indirect control,” on the other hand implies reducing beetle impacts by changing stand conditions and/or reducing beetle development sites, food sources, etc.

Generally, the best long-term approaches to reducing beetle-caused mortality are indirect control measures to include hazard and risk rating, and silviculturally reducing host stand susceptibility.

There may be times, however, when direct control may be warranted. Actions at these times are most effective when beetle populations are small and somewhat isolated. To be effective, they must be thorough, well-coordinated, and maintained until desired results are achieved. Most are fairly labor-intensive, and should be considered interim measures until long-term, indirect control approaches can be implemented.

Direct Control strategies may include, but are not necessarily limited to the following.

Recommended Direct Control Treatments

Before trees are infested:

- Bole saturation with approved insecticide. Carbaryl applications applied correctly, are effective for two flight seasons following treatment. Pyrethroids are also effective preventative treatments but we find are not as efficacious as carbaryl applications and last for approximately one season.
- Individual tree or area deployment of verbenone pheromone pouches. Verbenone, the principal aggregation disrupting pheromone component of MPB, has shown mixed results in repelling mountain pine beetle attacks. Some level of mortality (1-40+%) can be expected compared to less than 1% mortality expected when using carbaryl. Verbenone should not be used if >20% of the stand is currently infested. Results may be improved if all currently infested trees are removed prior to the application of verbenone.

After trees are infested but before beetles mature:

- Removal of infested trees from site **before** beetles mature
 - o use/process material before beetles emerge
 - o place material where no host trees are available for immigrating beetles (within 2 mi)
 - o burn entire stand (Note: any remaining live trees may be infested by other beetles.)
 - o NOTE: use of attractants to draw beetles into stands to be harvested may help decrease populations in areas where beetle numbers are not high
- Any action that destroys phloem **before** beetles mature
 - o Remove phloem
 - peeling (log wizard, tree monkey, etc.)
 - partial peeling/scoring bark (chain saw, draw knife, heavy equipment, etc.)
 - chipping
 - o Destroy phloem value
 - burning (cutting/piling/burning)
 - exposure to solar radiation (heat & drying)
 - delimb slash
 - scatter, don't pile
 - place slash in the most open spot available
 - south and east slopes will have greater sun exposure
 - ROTATE logs 3x before beetles mature to expose all log surfaces

Maybe Effective, but Not Recommended

After trees are infested but before beetles mature:

- In shady moist areas soaking infested logs (sprinklers, ground water, etc.) may cause fungus to grow rapidly, ruining the food value and/or directly killing the larvae
- Wrapping single-layer log piles with clear plastic. Plastic must be at least 6 mil, edges fully buried, all holes patched daily, and deployed months before larvae mature. Benefits may be augmented by soaking logs prior to wrapping or placing a No Pest Strip ® under the plastic. Problems with ravens pecking holes in plastic, ants taking up residence under the plastic, and the non-degradability of the plastic have all been noted as problems with this method.
- Burying infested logs in a soil pit would keep beetles from emerging but is not likely cost effective or feasible when there are hundreds of trees.

Not Recommended

Before trees are infested:

- Systemic injection of insecticides or fertilizers
- Systemic insecticides through soil treatments

After trees are infested but before beetles mature:

- Currently, there are no chemicals available that will kill beetles once they are inside trees.
- Wrapping log piles with black plastic. Only the plastic will heat up and any holes for escape will be readily visible to mature beetles. Piling of logs so that there is more than one layer preserves the phloem for beetle use and maintains a favorable temperature.
- Systemic injections of insecticides or fertilizers

RELEVANT LITERATURE

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