

DOUGLAS-FIR TUSSOCK MOTH IN IDAHO FORESTS

OUTBREAKS AND DOUGLAS-FIR TUSSOCK MOTH BIOLOGY

Q: What is the Douglas-fir tussock moth (DFTM)?

A: DFTM is a native defoliator (needle-eating caterpillar) that occurs throughout western North America. It often causes explosive outbreaks that can last for several years before subsiding. This moth overwinters as an egg, larvae hatch and caterpillars feed from June to August. Caterpillars then pupate and develop into adult moths in middle to late August. Female moths cannot fly, and after mating in the fall, lay eggs in hairy, gelatinous egg masses.

Q: What species of trees are affected?

A: Douglas-fir and grand fir are the primary hosts of DFTM, with Engelmann spruce, ornamental spruce and subalpine fir occasionally being attacked. Ponderosa pine, lodgepole pine and western larch are rarely fed upon.

Q: I am seeing a lot of caterpillars on huckleberry bushes. Do DFTM eat huckleberry, too?

A: Currently, entomologists are noting rusty tussock moth defoliating huckleberry and alder. DFTM commonly feed on conifers.

Q: How often do these outbreaks occur?

A: In northern Idaho, DFTM outbreaks have occurred approximately every 8-12 years.

Q: Where do the outbreaks occur?

A: DFTM outbreaks can occur wherever the preferred host species grow, however, defoliation tends to occur in the same general areas of historic outbreaks. In northern Idaho, DFTM outbreaks regularly occur in Latah, Benewah, Idaho, and Kootenai counties.

Q: I have lived here for over 30 years, and I don't remember any damage due to DFTM. Where did this outbreak come from?

A: Resident populations of DFTM occur in many of Idaho's forests, but outbreaks only occur when environmental conditions are favorable.

Q: How do outbreaks spread?

A: Female DFTM are flightless and cannot move from tree to tree to lay eggs. Young caterpillars are dispersed by the wind and can blow from tree to tree over short distances.

Q: How long do outbreaks last?

A: Outbreaks usually last from 2 to 4 years. In northern Idaho, outbreaks typically produce 3 years of defoliation before natural controls cause the outbreaks to collapse.

Q: What causes the outbreaks to collapse after 2 to 4 years?

A: Because DFTM is a native insect, there are natural controls that keep the populations in check. These controls include predators (birds, ants, small mammals, predatory insects), parasites (wasps and flies that attack eggs, caterpillars and cocoons), and a naturally occurring viral disease that is specific to DFTM.

Q: When will this outbreak end?

A: It is hard to tell right now. Egg mass surveys will be conducted by Idaho Department of Lands and Forest Service, Forest Health Protection in September 2020. Those data will give us a better idea on when the outbreak is anticipated to collapse.

Q: Will a cold winter kill the tussock moth?

A: DFTM is a native insect and has evolved with its hosts. It is adapted to the climate conditions in this area. Cold conditions in the spring when the eggs hatch, or a late frost that kills new needles, can affect DFTM populations, but a cold winter will not kill the eggs.

DAMAGE AND TREE MORTALITY

Q: What kind of damage can occur?

A: Defoliation can cause growth loss, top-kill or outright tree mortality. DFTM feeding does not always kill trees. However, severely defoliated trees can be weakened enough that they are more susceptible to bark beetle attacks in subsequent years.

Q: My trees are defoliated now; does that mean that the tree is dead?

A: A tree is not necessarily dead after one year of defoliation, even if the tree had red needles last summer. If the affected tree develops buds, it will usually form new needles the following spring. Repeated defoliation is damaging to trees. Trees can be killed by DFTM, but they can also recover. Do not assume that trees defoliated in 2020 are dead. It is best to wait until spring 2021 to see if the tree develops a new flush of needles.

Q: How much damage does it take to kill trees?

A: Tree mortality and top-kill occurs most often when trees are heavily defoliated. Published research from the Blue Mountains of Oregon shows that most mortality occurs when a tree experiences defoliation of at least 90% of its crown. Experience in Idaho indicates that mortality can occur when defoliation reaches 75%. Hot, dry weather during the growing season can increase the likelihood of mortality.

Q: Which trees are most vulnerable to being killed or damaged?

A: Smaller trees are most susceptible to top-kill and mortality. Smaller trees have less stored energy to develop buds and re-foliate. Larger trees can tolerate more defoliation and have more stored reserves.

DOUGLAS-FIR TUSSOCK MOTH MANAGEMENT

Q: What is the best way to manage DFTM?

A: DFTM prefers Douglas-fir and grand fir hosts. It will occasionally feed on Engelmann spruce, western larch and pines, but the feeding is usually incidental. The best option is to manage for less-preferred species through forest management treatments.

Q: Is there anything that I can spray to control DFTM?

A: Several insecticides are registered for control of DFTM. Some insecticides from home centers have labeling for ornamental trees. For effective control with insecticides application timing is important and it is required by law to follow the insecticide product label and labeling. As a private landowner, it is often impractical and expensive to aerially spray forest acreages.



For more information e-mail: Lee Pederson, Forest Entomologist,
lee.pederson@usda.gov, or Danielle Malesky, Forest Entomologist,
danielle.malesky@usda.gov.

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