**Douglas-fir Tussock Moth Frequently Asked Questions**

**Outbreaks and 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 feed from June-August and develop into moths in mid-late August. Female moths cannot fly, and she attracts the male moth with a pheromone. Mating occurs into the fall and the female lays the overwintering egg mass.

**Q: What species of trees are affected?**
A: Douglas-fir and grand fir especially, occasionally Engelmann spruce, ornamental spruce and subalpine fir. Ponderosa pine, lodgepole pine and western larch are rarely fed upon.

**Q: Where do the outbreaks occur?**

A: DFTM outbreaks can occur wherever the preferred host species (Douglas-fir and grand fir), however defoliation tends to occur in the same general areas. In southern Idaho the Owyhee Mountains, the Long Valley area of Valley and Adams Counties, the Wood River Valley and the Boise and Sawtooth National Forests have recorded periodic outbreaks. DFTM outbreaks regularly occur in northern Idaho (Latah, Benewah, Idaho, and Kootenai Counties) approximately every 8-12 years. Current defoliation in the Floodwood area is an uncommon but not unprecedented outbreak area.

**Q: How do the outbreaks spread?**

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

**Q: How long do the outbreaks last?**

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

**Q: What causes the outbreaks to collapse after 2-4 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, larvae and pupae), and a naturally occurring viral disease that is specific to DFTM. This virus is called a nucleopolyhedrosis virus (NPV), and it causes widespread mortality in DFTM populations usually within 3 years after the outbreak starts.

**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 the new needles can affect DFTM populations, but a cold winter will not kill the eggs.

**Damage and Mortality**

**Q: What kind of damage can occur?**

A: Defoliation can cause growth loss, top-kill or outright mortality. High populations of larvae combined with very hot and dry conditions have contributed to very high levels of mortality of Douglas-fir and grand fir. Douglas-fir tussock moth feeding does not always kill trees, but weakened trees can be attacked and killed by bark beetles later.

**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 though the tree had red needles last summer, if the tree developed buds, it will usually form new needles the following spring. Repeated defoliation is most damaging to trees. Trees can be killed by DFTM, but they can also recover. Do not assume that trees defoliated are dead. WAIT UNTIL SPRING to see if the tree develops a new flush of growth. Severely defoliated trees can be weakened enough that they are more susceptible to bark beetles in subsequent years.

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

A: Most mortality and top-kill occurs in trees that are heavily defoliated. Published research from the Blue Mountains of Oregon shows that most mortality occurs when trees are defoliated > 90%. 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:** **What trees are most vulnerable to being killed or damaged?**

A: Smaller trees, those that are pole sized and smaller (sub merchantable) are most susceptible to top-kill and mortality. Smaller trees have less stored energy to develop buds and refoliate. 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: Douglas-fir tussock moth prefers Douglas-fir and grand fir. It will occasionally feed on Engelmann spruce, western larch and pines, but the feeding is usually incidental. The best option is to manage for these less preferred species through silviculture.

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

A: Several insecticides are registered for control of DFTM. As a private landowner, it is often impractical and expensive to aerially spray forest acreages. Individual landscape trees can be sprayed with registered insecticides.