Douglas-fir Tussock Moth and Western Spruce Budworm Infestation

Status and Treatment

April 25, 2016

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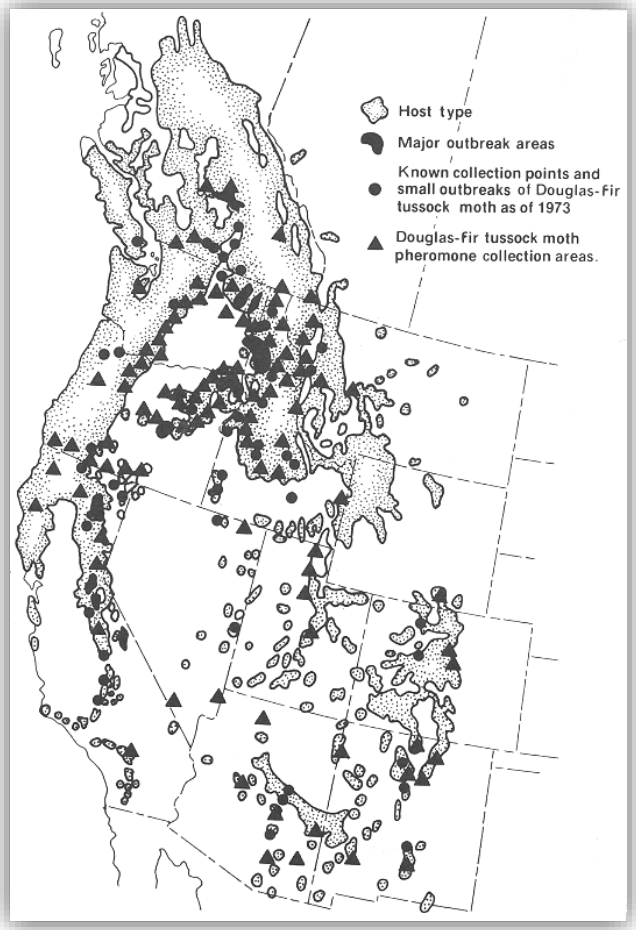
Presentation Outline

1. Historical Perspective of Douglas-Fir tussock moth outbreaks
2. What is Douglas-fir tussock moth? What are its host trees?
3. Identifying tussock moth and western spruce budworm damage
4. Current tussock moth damage in the greater Colorado Springs area
5. City of Colorado Springs' treatment plan
6. Next steps in the process

Historical Perspective

- Outbreaks have been documented since the 1930's
- The first large-scale, wildland forest outbreak since the 1930's occurred between 1993-1996 in the South Platte River drainage on Pike N.F.
  - 30-40% mortality of approximately 18,000 acres
- The most recent epidemic occurred from 2004-08 along the Rampart Range
  - Pocket mortality – not widespread across entire drainages



What is Douglas-fir tussock moth?

- Common defoliator of Douglas-fir and other true firs. In forest settings, also feeds on spruce
- Has a 1 year life cycle and overwinters on host trees as eggs
- Outbreaks commonly occur every 8-12 years and last 2-4 years
- Tussockosis - Hairs on the tussock moth larvae can cause an allergic reaction in humans

Host Trees

White fir

Douglas-fir

Colorado Blue Spruce

Needle Damage

- Tussock moth

- Western spruce budworm

Defoliation

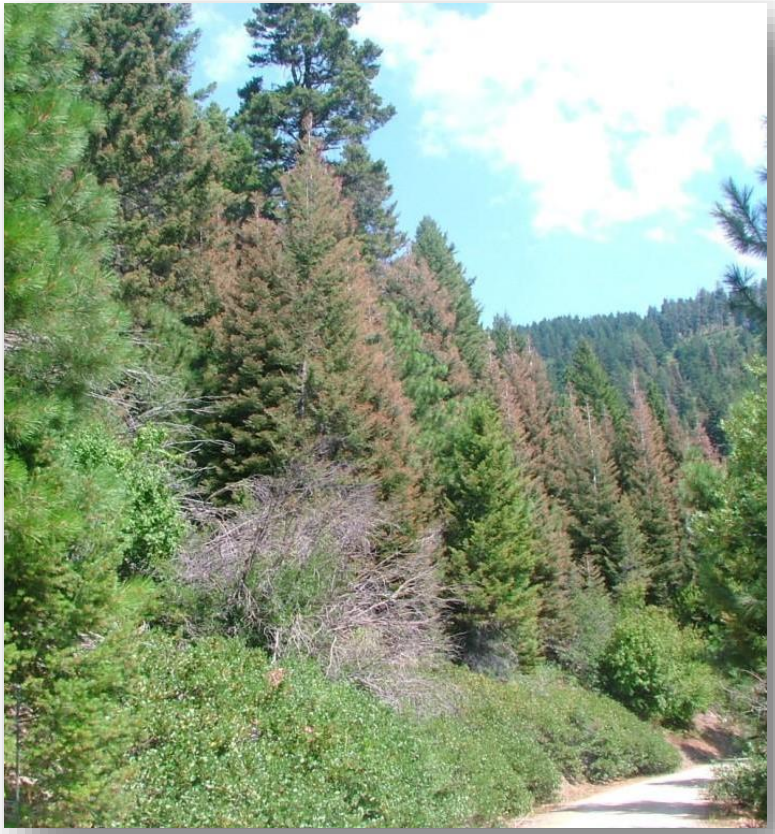
- Tussock moth

- Western spruce budworm

Whole Tree Damage

- Tussock moth

- Western spruce budworm



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Current Infestation

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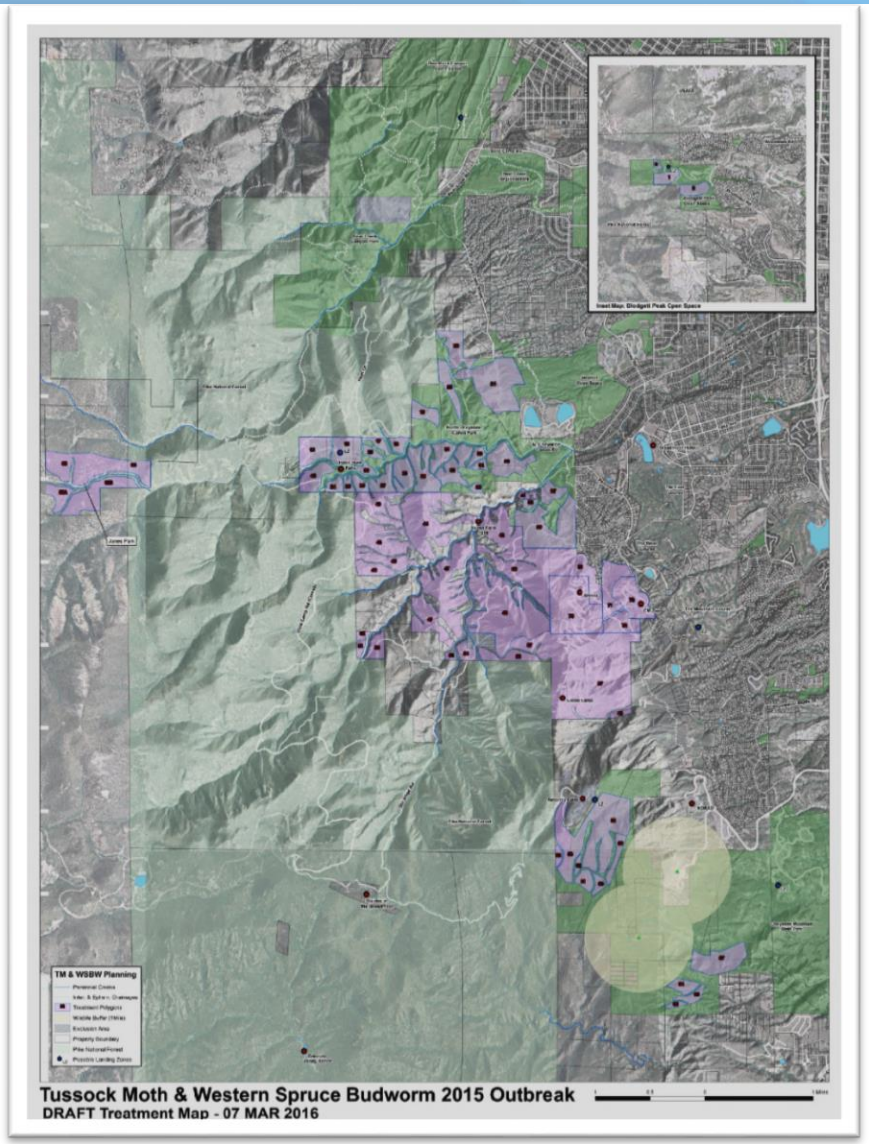
Valley Park, Larkspur

Will the Trees Survive?



Collaborative Approach

- Infestation first detected in late spring, 2015
- Tussock moth and western spruce budworm at higher than endemic levels
- Immediately began planning efforts for a 2016 Treatment
- City Forestry has a signed MOU with multiple stakeholders
- Treatment area will be approximately 3,400 acres
- May require more than a single year of treatment to increase efficacy

Treating with *Bacillus thuringiensis (Bt)*

- A naturally occurring soil bacterium discovered in 1901 in Japan
- First used as a pesticide by farmers in 1920
- In the U.S., Bt has been used commercially since 1958
- In 1961, Bt was registered as a pesticide with the EPA
- Now used worldwide as a biocide that targets a very narrow range of insects, in our case tussock moth and western spruce budworm

How Does Bt Work?

- Application rate equals ½ gallon per acre
- Must be ingested by the moths
- Allows bacterium to germinate in the body cavity
- Paralysis ensues, moths stop feeding and die within a day or two

Treatment Timing

- Treatment timing must coincide closely with bud break
  - Temperature and moisture dependent
- Optimal times to treat tussock moth and western spruce budworm are slightly different
- Bt can remain effective after application for 10-14 days
- Our goal is to monitor both moth populations and spray when we can most effectively control both insects

Helicopter Application

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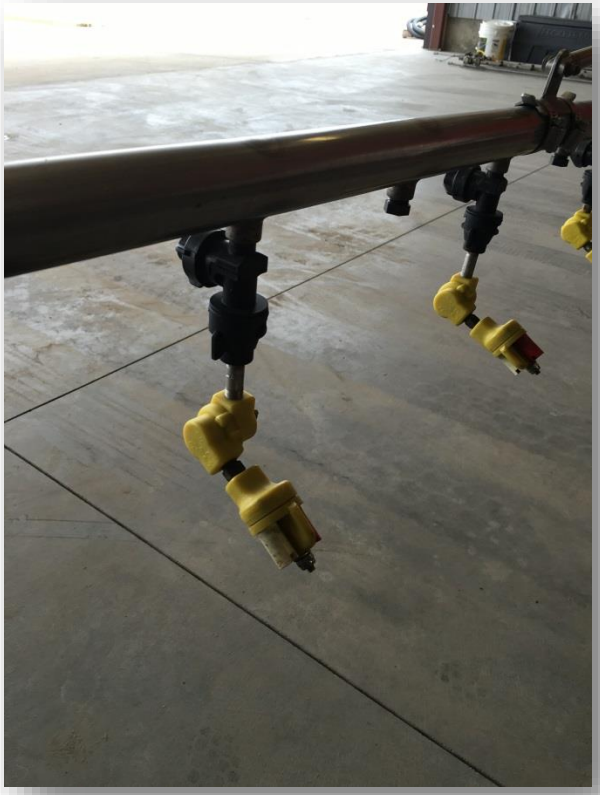
Spray Apparatus



Sample Spray Methodology

Next Steps

- Continued Stakeholder meetings/public outreach
- Additional field/insect surveys
- Development of aerial treatment logistics
- Monitor for spring bud-break
- Spray operations should commence early to mid-June
- More information is on the City's tussock moth web page: https://parks.coloradosprings.gov/tussock

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