WELCOME TO THE 2014 PINE
SAWWFLY INFORMATIONAL
MEETING

Elbert County, Colorado
November 15th, 2014

Meg Halford Assistant District Forester
Bill Ciesla-Forest Health Specialist
Sheila Kelley Elbert County Extension Office

Colorado State Forest Service
Agenda

- Sawfly Egg survey postponed
- Introductions
- Bill Ciesla present
- Break 5 minutes
- Meg Halford present
- Open Discussion and Questions
The Pine Sawfly in Elbert and El Paso Counties, Colorado
The Pine Sawfly in Elbert and El Paso Counties, Colorado

- Life history and habits
- Egg survey
  - Methods
  - Results to date
Stages in the life history of a pine sawfly

- Egg
- Larva
- Pupa
- Adult
Conifer Feeding Sawflies
(Family Diprionidae)

• Species feed on pines, spruce, fir or hemlock

• Occur across North America, Europe and Asia

• Periodically reach outbreak levels and can cause severe damage
Neodiprion autumnalis

- Species found in Elbert and El Paso Counties
- Does not have a common name
- Found throughout western North America (native species)
- Feeds only on ponderosa pine in the western U.S.
- Overwinters as an egg on pine needles
Life history of *Neodiprion autumnalis*
Newly hatched larvae (mid June)
Colony of young larvae
Mature larvae
Mature larvae in defensive position
Adult male

Adult female
Natural Enemies

- Parasitic wasps and flies
- Predators (small rodents feed on pupae)
- Virus disease
Sawfly activity in Elbert/El Paso Counties

• Sawfly has been abundant in area for many years

• Noticeable defoliation 2005, 2009

• Reasons why sawfly is common here
  – Areas of pure, open ponderosa pine
  – Light sandy soils
Heavy defoliation in 2014
Mass migration and starvation of immature larvae
What will happen in 2015?

• Egg survey

• Attempt to predict 2015 defoliation

• Breaking new ground
  – Don’t know relationship between egg numbers and defoliation
  – Technique we are using is based on work done with other sawflies
Pine Sawfly Egg Survey

- Sample points
  - 10 dominant/co-dominant pines
    - 2-15 cm (6 - inch) branch samples from lower or mid crown per tree

- Egg counts
  - Total number of egg infested needles
  - Average egg infested needles/branch
Tentative Decision Rules

• Egg infested needles/sample point:
  - $\leq 14$ – None to light defoliation
  - 15-41 – possibly light to moderate defoliation
  - $\geq 42$ – Moderate to heavy defoliation

• Based on an egg survey plan for a pine sawfly in red pine plantations in New York State
Collecting branch samples  Counting egg infested needles
Defoliation Rating

- **Step 1** – Divide crown into thirds

- **Step 2** - Rate each third
  - 0 = No defoliation
  - 1 = Light - Visible defoliation
  - 2 = Heavy – More than 75% of older foliage removed

- **Step 3** – Add ratings for each third for a tree rating

- **Step 4** – Average tree ratings for sample point rating

This third is undamaged = 0

This third has light defoliation = 1

This third has heavy defoliation = 2

0 + 1 + 2 = tree defoliation rating of 3
Defoliation Rating

- Tree defoliation rating = 3
- Trees were rated for 2014 defoliation
- Trees will be rated for 2015 defoliation (unless sprayed)
Heavy defoliation (Class 6)
Defoliation rating

Average number of egg masses per tree

$Y = 0.55 + 0.99x$

$R^2 = 0.689$

Desired end product
Progress to Date

• Tested mechanics of survey in late October – 9 plots

• Adults still active – 22 October

• Plans for this week affected by weather – 1 plot
# Results to Date

<table>
<thead>
<tr>
<th>Sample Point</th>
<th>2014 Defoliation Rating</th>
<th>Total egg infested needles</th>
<th>Predicted defoliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coleman 1</td>
<td>2.6</td>
<td>63</td>
<td>Moderate-heavy</td>
</tr>
<tr>
<td>Coleman 2</td>
<td>1.7</td>
<td>135</td>
<td>Moderate-heavy</td>
</tr>
<tr>
<td>Coleman 3</td>
<td>2.1</td>
<td>192</td>
<td>Moderate-heavy</td>
</tr>
<tr>
<td>Coleman 4</td>
<td>1.8</td>
<td>61</td>
<td>Moderate-heavy</td>
</tr>
<tr>
<td>Coleman 5</td>
<td>2.2</td>
<td>25</td>
<td>Light-moderate</td>
</tr>
<tr>
<td>Whispering Pines 1</td>
<td>0.1</td>
<td>0</td>
<td>0-light</td>
</tr>
<tr>
<td>Whispering Pines 2</td>
<td>0.2</td>
<td>16</td>
<td>Light-moderate</td>
</tr>
<tr>
<td>Timber Drive 1</td>
<td>0.1</td>
<td>0</td>
<td>0-light</td>
</tr>
<tr>
<td>Timber Drive 2</td>
<td>0.0</td>
<td>1</td>
<td>0-light</td>
</tr>
<tr>
<td>Silver Ranch West</td>
<td>2.8</td>
<td>0</td>
<td>0-light</td>
</tr>
</tbody>
</table>
Need to do

• Establish more sample points
  – Need suitable weather

• Rate defoliation on sample points in July 2015 (if left untreated)
Comments, Questions?
The End

Thank you for your attention

Gracias para su atención