

## Tree Pests and Disease

### **Douglas Fir Health Management Plan:**

#### Readings:

Douglas-fir. [http://www.na.fs.fed.us/pubs/silvics\\_manual/Volume\\_1/pseudotsuga/menziesii.htm](http://www.na.fs.fed.us/pubs/silvics_manual/Volume_1/pseudotsuga/menziesii.htm)

#### Swiss Needle Cast:

[http://www.na.fs.fed.us/spfo/pubs/howtos/ht\\_df-ndlcst/ndlcst.htm](http://www.na.fs.fed.us/spfo/pubs/howtos/ht_df-ndlcst/ndlcst.htm)

<http://www.cof.orst.edu/coops/sncc/silviculture.htm>

Douglas-fir Dwarf Mistletoe: <http://www.fs.fed.us/r6/nr/fid/fidls/dougfirm.pdf>

Laminated Root Rot: <http://www.fs.fed.us/r6/nr/fid/fidls/fidl159.htm>

#### **I. Consider forest management objectives**

- A. Most extensive range of a commercial species in U.S.
  
  
  
  
  
  
  
  
  
  
- B. Most valuable lumber species in Pacific Northwest.
- C. Because of difficulties in getting natural regeneration, plantations are widespread.

#### **II. Tree species adaptations.**

- A. Climate:

- B. Soils

C. Competition

1. Intermediate in shade tolerance

2. Competitors

**III. Disease Complex Information: Swiss Needle Cast**

**A. Components**

1. What is Diseased in Trees, Plants:

a) Susceptible species:

b) Symptom(s) and diseased function(s):

(i) Tissue functions initially affected:

(ii) Potential impact on whole tree functioning:

(iii) Potential impact on forest.

2. Primary stress(es) [pathogen(s)]:

a) Abiotic factor(s) &/or Latin name(s): *Phaeocryptoptus gaumii*

b) Signs:

3. Environment: Geographic range where complex is found.

**B. Development:**

1. Predisposing factors:

a) Degree of tree adaptations to stress and environment.

b) Degree of stress

2. Inciting factors: Factors directly initiating disease.

3. Contributing factors: Factors detrimentally affecting the tree only after it has become diseased.

**C. Control options:** (Silvicultural, biological, breeding, legal, chemical, mech., none)

1. Preemptive:

a) What can increase tree resistance:

b) What else can decrease stress(es) (pathogen(s)):

2. Reactive:

a) What can increase tree resistance:

b) What else can decrease stress(es) (pathogen(s)):

3. Feasibility of option(s):



(iii) Potential impact on forest.

2. Primary stress(es) [pathogen(s)]:

a) Latin name(s): **Arceuthobium douglasii**

b) Signs:

3. Environment: Geographic range where complex is found.

**B. Development:**

1. Predisposing factors:

a) Degree of tree adaptations to stress and environment.

b) Degree of stress – life cycle

(i) **Seed mature on flowering shoots in the fall, September to October**

(ii) **Seeds germinate in spring**

(iii) **Endophytic system establishes in vascular tissue**

**(iv) First aerial shoots form 2-5 yr after infection**

**(v) Seeds mature in about 18 months**

**(vi) Male shoots fall-off after flowering; female shoots fall-off after seeds are dispersed**

**(vii) Leave basal cup**

**(viii) New shoots form on new branch segments**

**c) Factors favoring infections:**

2. Inciting factors: Factors directly initiating disease.

3. Contributing factors: Factors detrimentally affecting the tree only after it has become diseased.

**C. Control options:** (Silvicultural, biological, breeding, legal, chemical, mech., none)

1. Preemptive:

- a) What can increase tree resistance:

- b) What else can decrease stress(es) (pathogen(s)):

2. Reactive:

- a) What can increase tree resistance:

- b) What else can decrease stress(es) (pathogen(s)):



**V. Health Management Plan for Tree Species.**

Integrated approach for managing the tree species in order to minimize the damage/disease caused by both pests (stresses).

A. Coastal Douglas-fir

1. Preemptive measures.

2. Monitor and Survey:

3. Reactive measures.

4. Feasibility

B. Inland Douglas-fir

1. Preemptive measures.

2. Monitor and Survey:

3. Reactive measures.

4. Feasibility