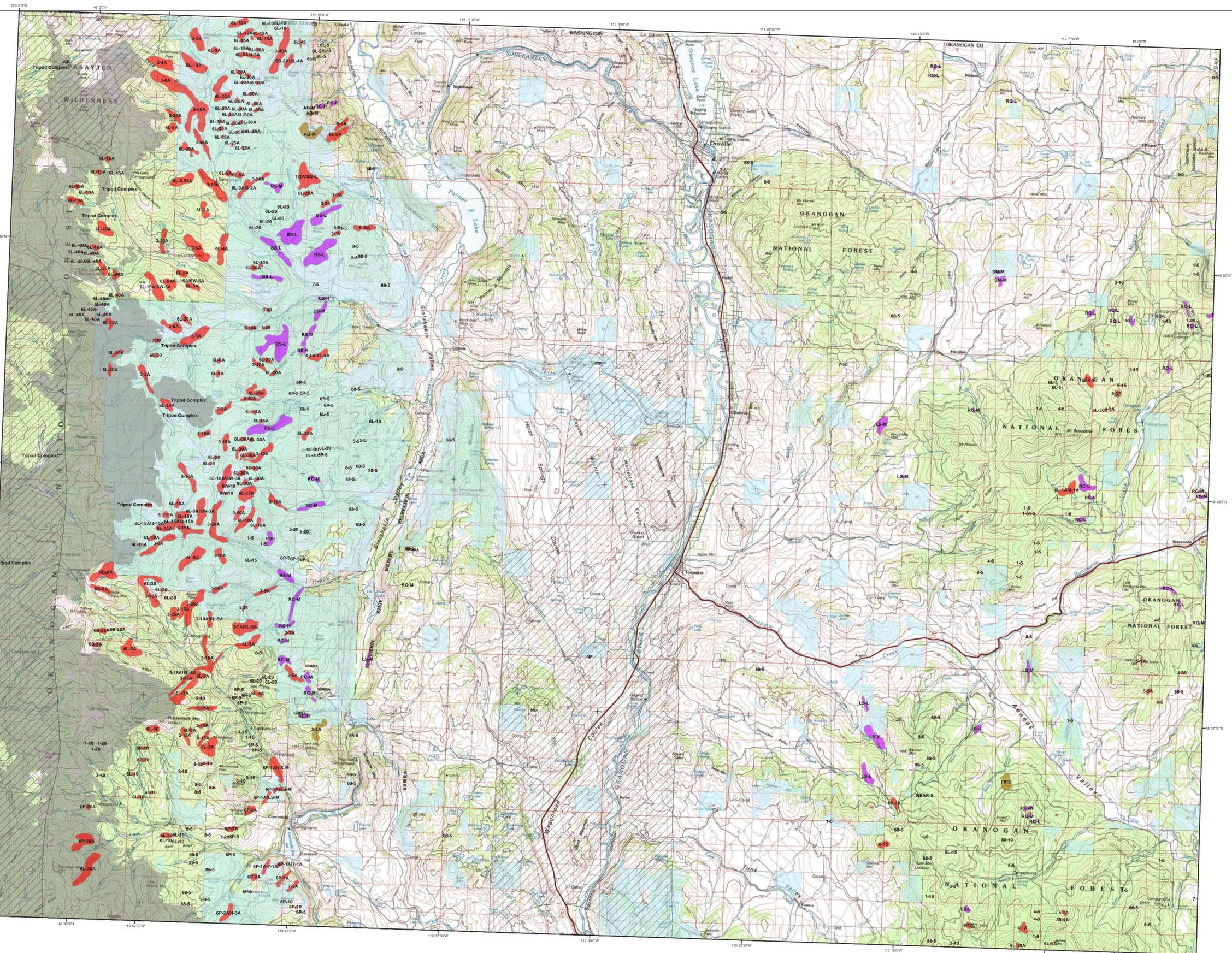


# 2006 Aerial Insect and Disease Survey

## USGS 100K Quad: Oroville - E148119; 6A



### Defoliators

Code	Damaging Agent	Primary Host
AS	Spruce aphid	Sitka spruce
BS	Western blackheaded budworm	Hemlock, spruce, true fir
BM	Moscow budworm	White fir
BY	Sugar pine tortrix	Lodgepole, ponderosa pines
BS	Western spruce budworm	True fir, Douglas-fir, spruce
BY	Bynum's light-brown moth	Ponderosa pine
CH	Larch	Western larch
HL	Western hemlock looper	Western hemlock looper
LD	Green striped forest looper	Douglas-fir, Western hemlock
LL	Larch looper	Western larch
LS	Black pine needle scale	Douglas-fir
MD	Douglas-fir budmoth	Douglas-fir
ML	Larch budmoth	Western larch
MS	Douglas-fir needle midge	Douglas-fir
MS	Spruce budmoth	Spruce
ND	Needle miner	Jeffrey pine
NJ	Needle miner	Knobcone pine
NK	Needle miner	Lodgepole pine
NL	Needle miner	Conifer
NP	Needle miner	Ponderosa pine
NS	Needle miner	Sugar pine
NT	Needle miner	True fir
NW	Needle miner	Western white pine
OL	Western oak looper	Oaks
PC	Pine needle cast	Ponderosa pine
PH	Phantom hemlock looper	Hemlock, Douglas-fir
PM	Pandora moth	Ponderosa, Jeffrey pines
PN	Pine needle-beetle miner	Ponderosa, Jeffrey pines
PS	Pine needle scale	Pines
RC	Needle cast	Western larch
SA	Sawfly	Conifer
SB	Sawfly	Douglas-fir
SC	Sawfly	True fir
SD	Sawfly	Hemlock
SE	Sawfly	Knobcone pine
SM	Sawfly	Lodgepole pine
SN	Sawfly	Ponderosa pine
SN	Sawfly	Swiss needle cast
SP	Sawfly	Ponderosa pine
SW	Sawfly	Western larch
TA	Tent caterpillar, alder	Alder
TC	Tent caterpillar, other	Hardwoods
TD	Douglas-fir tussock moth	True fir, Douglas-fir
TS	Tent caterpillar, aspen	Aspen

### Mortality Agents

Code	Damaging Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir
2	Douglas-fir engraver	Douglas-fir
3	Spruce beetle	Spruce
4	Fir engraver	True fir
5	Sub-slope fir	Sub-slope fir
6J	Mountain pine beetle	Whitebark pine
6K	Mountain pine beetle	Jeffrey pine
6L	Mountain pine beetle	Knobcone pine
6M	Mountain pine beetle	Lodgepole pine
6N	Mountain pine beetle	Ponderosa pine
6O	Mountain pine beetle	Sugar pine
6P	Mountain pine beetle	Western white pine
6Q	Mountain pine beetle	Ponderosa, lodgepole pines
6R	Western pine beetle	Ponderosa pine
6S	Silver fir beetle	Pole-sized ponderosa pines
6T	Western pine beetle	Conifer
6U	Bear damage	Flat-headed wood borer
6V	Flat-headed wood borer	Douglas-fir
6W	Bear damage	Port Orford cedar
6X	Port Orford cedar root disease	Port Orford cedar
6Y	Root disease	Conifer
6Z	Water damage	All species

### Other Damaging Agents

Code	Damaging Agent	Primary Host
AB	Balsam woolly adelgid	True fir
AC	Douglas-fir sawfly	Spruce, Douglas-fir
AD	Leaf discoloration	Maple
AE	Bleed rust	Fine-needle pines
AF	Cystospora canker	True fir
AG	Dying hemlock	Hemlock
AH	Fire	All species
AI	Glowy pitch midge	Ponderosa pine
AJ	Hail	All species
AK	Hardwood decline	Hardwoods
AL	Wesley's log	Hardwoods
AM	No damage detected	Pacific madrone
AN	Pacific madrone decline	Poplars
AO	Leaf rust in poplars	All species
AP	Rust	All species
AQ	Slide	All species
AR	Unknown defoliation	All species
AS	Unknown mortality	All species
AT	Winter damage	All species
AU	Winter damage	All species
AV	Winter damage	All species
AW	Winter damage	All species
AX	Winter damage	All species
AY	Winter damage	All species
AZ	Winter damage	All species

The cause of damage is described by a symbol above and is followed by: number of trees affected; number of trees/acre (example: SA); or intensity of damage (L- Light, M- Moderate, H- Heavy).

USGS 100K Quad: Oroville - E148119; 6A  
2006 Aerial Insect and Disease Detection Survey  
Mapscale: 1:100,000  
Date: December 4, 2006

## Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WadNR Managed Lands
- 2006 Large Fires
- Areas Not Flown



The map base was created with TOPOI (Copyright 2001, National Geographic); available online at: [www.ngmapstore.com](http://www.ngmapstore.com)

A data dictionary, digital copies of this map and ArcGIS insect and disease data are available at: [www.fs.fed.us/r6/nrr/id/data.shtml](http://www.fs.fed.us/r6/nrr/id/data.shtml)

### How the Aerial Surveys Are Conducted

Data represented on this map are based on trees visibly affected by forest insects and diseases detected and recorded during aerial survey flights conducted by the USDA Forest Service and the Washington Department of Natural Resources. Observers have just a few seconds to recognize the color difference between healthy and damaged trees of different species; diagnose causal agents correctly; estimate intensity; delineate the extent of damage; and precisely record this information on a georeferenced, digital map. Air turbulence, cloud shadows, distance from aircraft, haze, smoke and observer experience can all affect the quality of the survey. These data summaries provide an estimate of conditions on the ground and may differ from estimates derived by other methods.

The aerial survey provides information on the current status for many causal agents, and is important when examining insect activity trends by comparing historical and current survey data over large areas. Overview surveys are a 'snap shot' in time and therefore may not be timed to accurately capture the true extent or severity of a particular disturbance activity. Specially designed surveys with modified flight patterns and timing may be conducted to more accurately delineate the extent and severity of a particular disturbance agent. Special surveys, such as Swiss needle cast surveys, are conducted when resources are available to address situations of sufficient economic, political or environmental importance.

### DIRECT ALL INQUIRIES TO:

Washington State Department of Natural Resources  
Resource Protection  
Forest Health  
1111 Washington St. SE  
Olympia, WA 98504

-- OR --  
USDA Forest Service, Region 6  
Natural Resources  
Forest Health Protection  
PO Box 3623  
Portland, Oregon 97208



\*\*\*\*DISCLAIMER\*\*\*\*  
The insect and disease data presented should only be used as an indicator of insect and disease activity, and should be ground-checked for precise location, extent, severity and causal agent. Color coded polygons show locations where trees were recently killed or defoliated. Intensity of damage is variable and not all trees within coded polygons are dead or defoliated. The cooperators reserve the right to correct, update, modify or replace GIS products without notice. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.