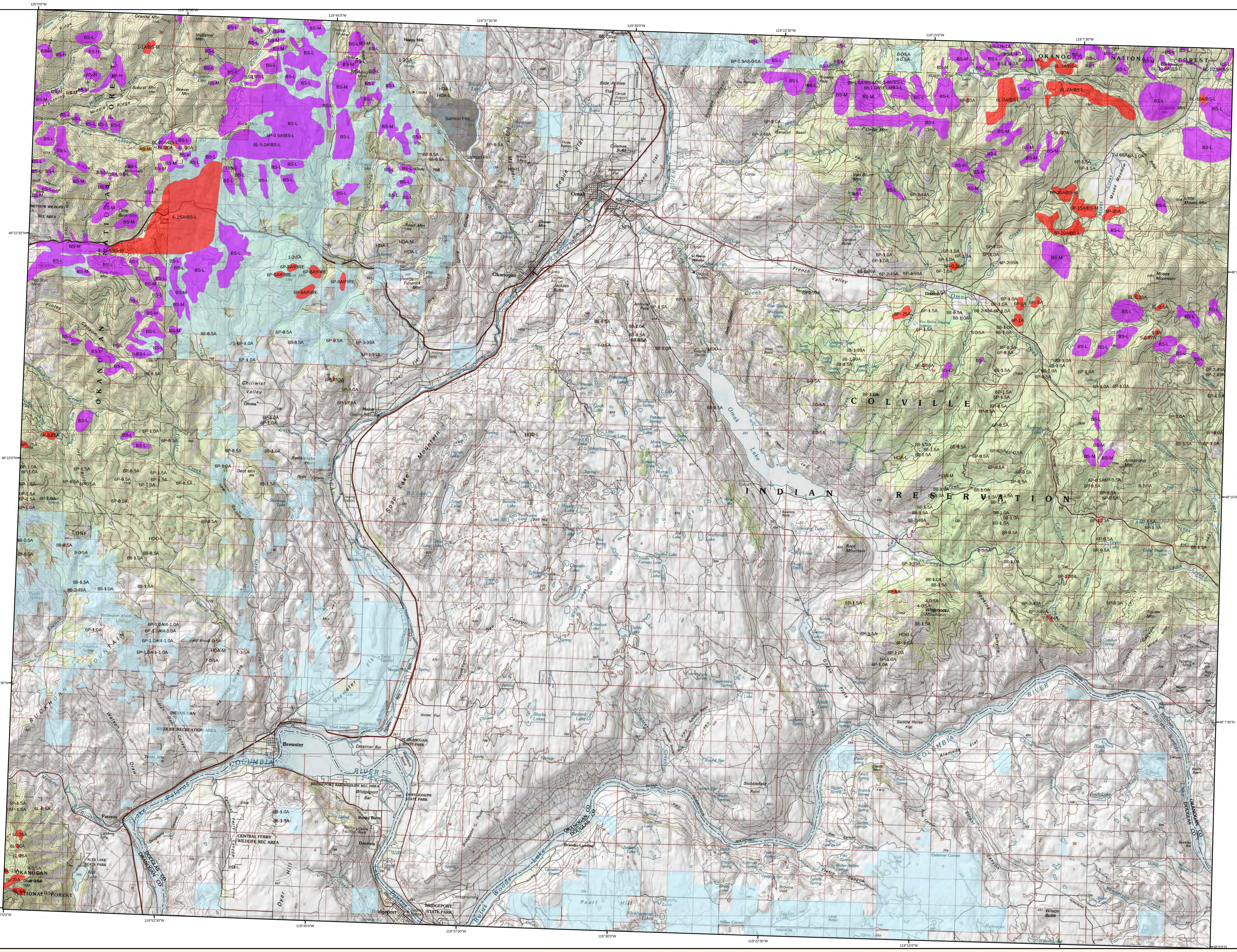
2011 Aerial Insect and Disease Survey
USGS 100K Quad: OMAK - A148119; 6B



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	Western balsam bark beetle	Sub-alpine fir
6B	Mountain pine beetle	Whitebark pine
6L	Mountain pine beetle	Lodgepole pine
6P	Mountain pine beetle	Ponderosa pine
6S	Mountain pine beetle	Sugar pine
6W	Mountain pine beetle	Western white pine
7	Ips spp.	Ponderosa, lodgepole pines
8	Western pine beetle	Ponderosa pine
88	Western pine beetle	Pole-sized ponderosa pine
9	Silver fir beetle	Silver fir, true fir
BEAR	Bear damage	Conifer
F	Flatheaded woodborer	Douglas-fir
LW	Black stain root disease	Douglas-fir, ponderosa pine
PL	Port-Orford-cedar root disease	Port-Orford-cedar
RD	Root disease	Conifer
WATR	Water Damage	All species

Other Damaging Agents

Code	Damaging Agent	Primary Host
AB	Balsam woolly adelgid	True fir
AC	Cooley spruce gall adelgid	Spruce, Douglas-fir
AM	Leaf discoloration	Maple
BR	Blister rust	Five-needle pines
CC	Cystospora canker	True fir
DH	Dying hemlock	Hemlock
FIRE	Fire	All species
HD	Hardwood decline	Hardwoods
HDA	Hardwood decline	Aspen
HDO	Hardwood decline	Oak
NFN	Areas not flown - non host	
NFH	Areas not flown - host	
PMD	Pacific madrone decline	Pacific madrone
PR	Leaf rust in poplars	Poplars
RB	Red belt	All species
SLID	Slide	All species
WATR	Water damage	All species
WIND	Windthrow	All species
WNTR	Winter damage	All species

Defoliators

Code	Damaging Agent	Primary Host
BS	Western spruce budworm	True fir, Douglas-fir, spruce
CH	Larch casebearer/hypodermella	Western larch
HL	Western Hemlock looper	Western hemlock
LC	Needle cast	Lodgepole pine
LS	Black pine leaf scale	Ponderosa pine
ML	Larch budmoth	Western larch
PB	Pine butterfly	Ponderosa pine
PC	Pine needle cast	Ponderosa pine
RC	Needle cast	Western larch
SF	Sawfly	True fir
SH	Sawfly	Hemlock
SM	Satin moth	Aspen
SNC	Swiss needle cast	Douglas-fir
SP	Sawfly	Ponderosa pine
TA	Tent caterpillar, alder	Alder
TM	Douglas-fir tussock moth	True fir, Douglas-fir

The cause of damage is described by a symbol above and is followed by: number of trees affected; number of trees/acre (example: 5A); or intensity of damage (L- Light, M- Moderate, H- Heavy).

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2011 Aerial Insect and Disease Survey
Map Scale: 1:100,000
Date:15 December 2011

Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WaDNR Managed Lands
  Source: Washington Dept. of Natural Resources
- Areas Not Flown
- 2011 Large Fires
  Source: Northwest Interagency Coordination Center

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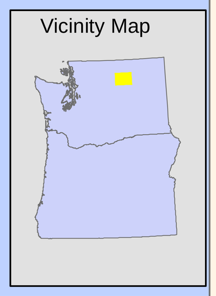
The TOPO! maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps. For more information on this map, visit us online at http://goto.arcgisonline.com/maps/USA_Topo_Maps

A data dictionary, digital copies of this map and Arcgis insect and disease data are available at: www.fs.usda.gov/goto/r6/fhp/ads



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, the Washington Department of Natural Resources and the Oregon Department of Forestry. 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:

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Resource Protection Division
Forest Health
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Olympia, WA 98504-7037

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Portland, Oregon 97208

DISCLAIMER
Forest Health Protection (FHP), Washington Department of Natural Resources (WDNR) and Oregon Department of Forestry (ODF) strive to maintain an accurate Aerial Detection Survey (ADS) Dataset, but due to the conditions under which the data are collected FHP, WDNR and ODF shall not be held responsible for missing or inaccurate data. ADS are not intended to replace more specific information. An accuracyassessment has not been done for this dataset; however, ground checks are completed in accordance with local and national guidelines: http://www.fs.fed.us/foresthealth/aviation/qualityassurance.shtml. Maps and data may be updated without notice. Please cite: "USDA Forest Service, Forest Health Protection; Washington Department of Natural Resources, Resource Protection Division; and Oregon Department of Forestry, Forest Health Management" as the source of this data.