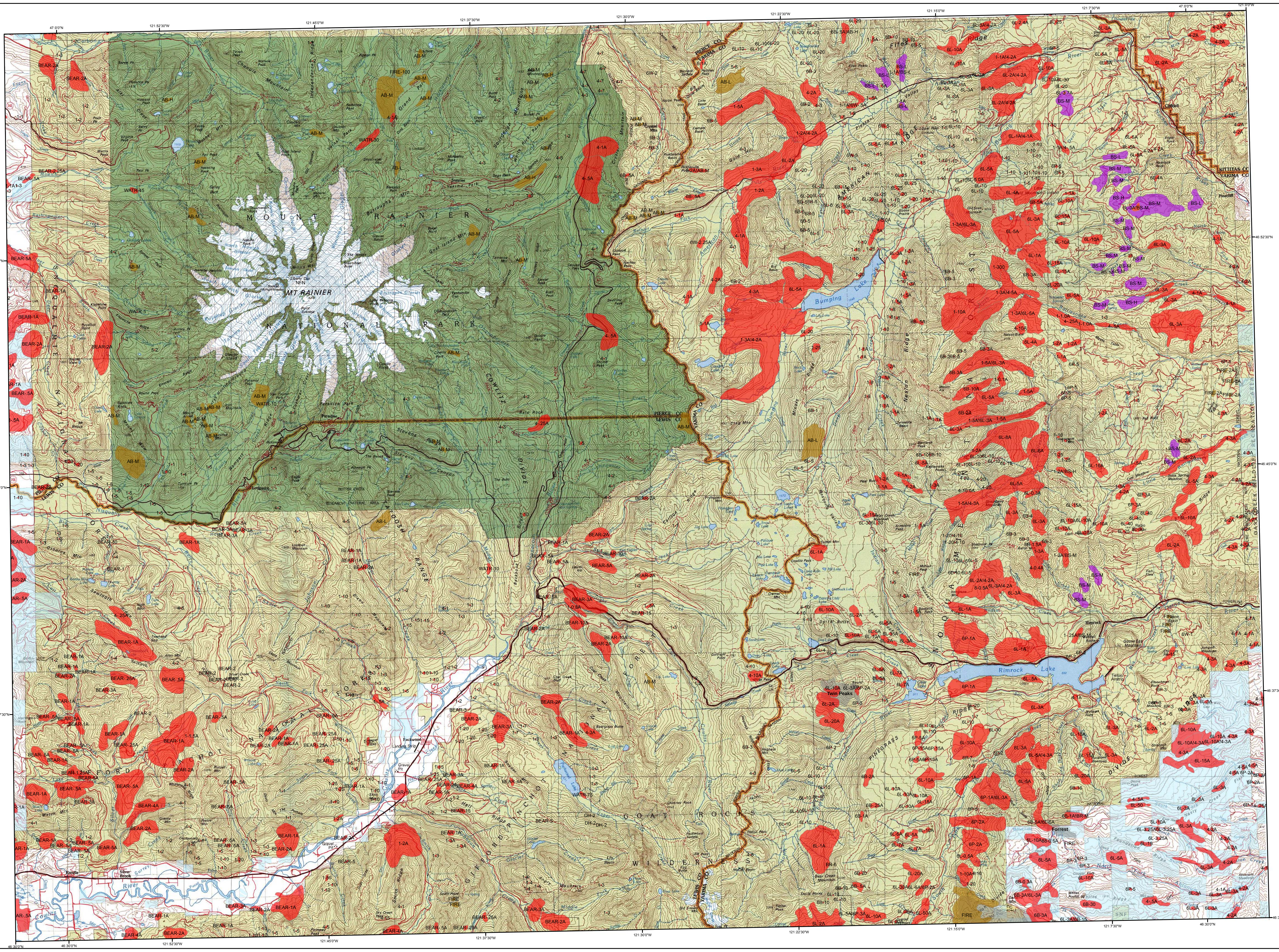
2009 Aerial Insect and Disease Survey
USGS 100K Quad: Mt. Rainier - E146121; 4E



Defoliators

Code	Damaging Agent	Primary Host
AS	Spruce aphid	Sitka spruce
BB	Western blackheaded budworm	Hemlock, spruce, true fir
BM	Modoc budworm	White fir
BP	Sugar pine tortrix	Lodgepole, ponderosa pines
BS	Western spruce budworm	True fir, Douglas-fir, spruce
BY	Bynum's blight/Lophodermella	Ponderosa pine
CH	Larch	Western larch
HL	Western hemlock looper	Western hemlock looper
LG	Green striped forest looper	Douglas-fir, Western hemlock
LL	Larch looper	Western larch
LS	Black pine needle scale	Ponderosa pine
MD	Douglas-fir budmoth	Douglas-fir
ML	Larch budmoth	Western larch
MN	Douglas-fir needle midge	Douglas-fir
MS	Spruce budmoth	Spruce
ND	Needle miner	Douglas-fir
NJ	Needle miner	Jeffrey pine
NK	Needle miner	Knobcone pine
NL	Needle miner	Lodgepole pine
NM	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
PB	Pine Butterfly	Ponderosa pine
PC	Pine needle cast	Ponderosa pine
PH	Phantom hemlock looper	Hemlock, Douglas-fir
PM	Pandora moth	Ponderosa, Jeffrey pines
PN	Pine needlesheath miner	Ponderosa, Jeffrey pines
PS	Pine needle scale	Pines
RC	Needle cast	Western larch
S	Spider mite	Conifer
SA	Sawfly	Conifer
SD	Sawfly	Douglas-fir
SF	Sawfly	True fir
SH	Sawfly	Hemlock
SK	Sawfly	Knobcone pine
SL	Sawfly	Lodgepole pine
SM	Satin moth	Aspen
SNC	Swiss needle cast	Douglas-fir
SP	Sawfly	Ponderosa pine
SW	Sawfly	Western larch
TA	Tent caterpillar, alder	Alder
TC	Tent caterpillar, other	Hardwoods
TM	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	Western balsam bark beetle	Sub-alpine fir
6B	Mountain pine beetle	Whitebark pine
6J	Mountain pine beetle	Jeffrey pine
6K	Mountain pine beetle	Knobcone 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 wood borer	Douglas-fir
LW	Black stain root dsease	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
GP	Gouty pitch midge	Ponderosa pine
HAIL	Hail	All species
HD	Hardwood decline	Hardwoods
NFN	Areas not flown non host	
NFH	Areas not flown - host	
OUT	No damage detected	
PMD	Pacific madrone decline	Pacific madrone
PR	Leaf rust in poplars	Poplars
RB	Red belt	All species
SLID	Slide	All Species
UNKD	Unknown defoliation	
UNKM	Unknown mortality	
WATR	Water damage	All Species
WIND	Wind-throw	All Species
WNTR	Winter Damage	All Species

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

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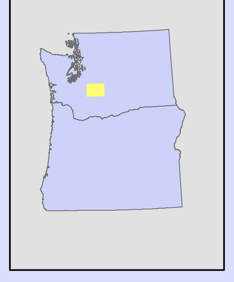
2009 Aerial Insect and Disease Detection Survey
Mapscale: 1:100,000
Date: January 20, 2010

Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WaDNR Managed Lands (Source: Washington Dept. of Natural Resources)
- Areas Not Flown
- 2009 Large Fires (Source: Northwest Coordination Center)

N E S W

Vicinity Map



The map base was created with TOPO! (Copyright 2001, National Geographic); available online at: 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/nr/fid/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 Division
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

Forest Health Protection (FHP) and Washington Department of Natural Resources (WDNR) strive to maintain an accurate Aerial Detection Survey (ADS) Dataset, but due to the conditions under which the data are collected, FHP and WDNR shall not be held responsible for missing or inaccurate data. ADS are not intended to replace more specific information. An accuracy assessment 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 and Washington Department of Natural Resources, Resource Protection Division, Forest Health" as the source of this data in maps and publications.