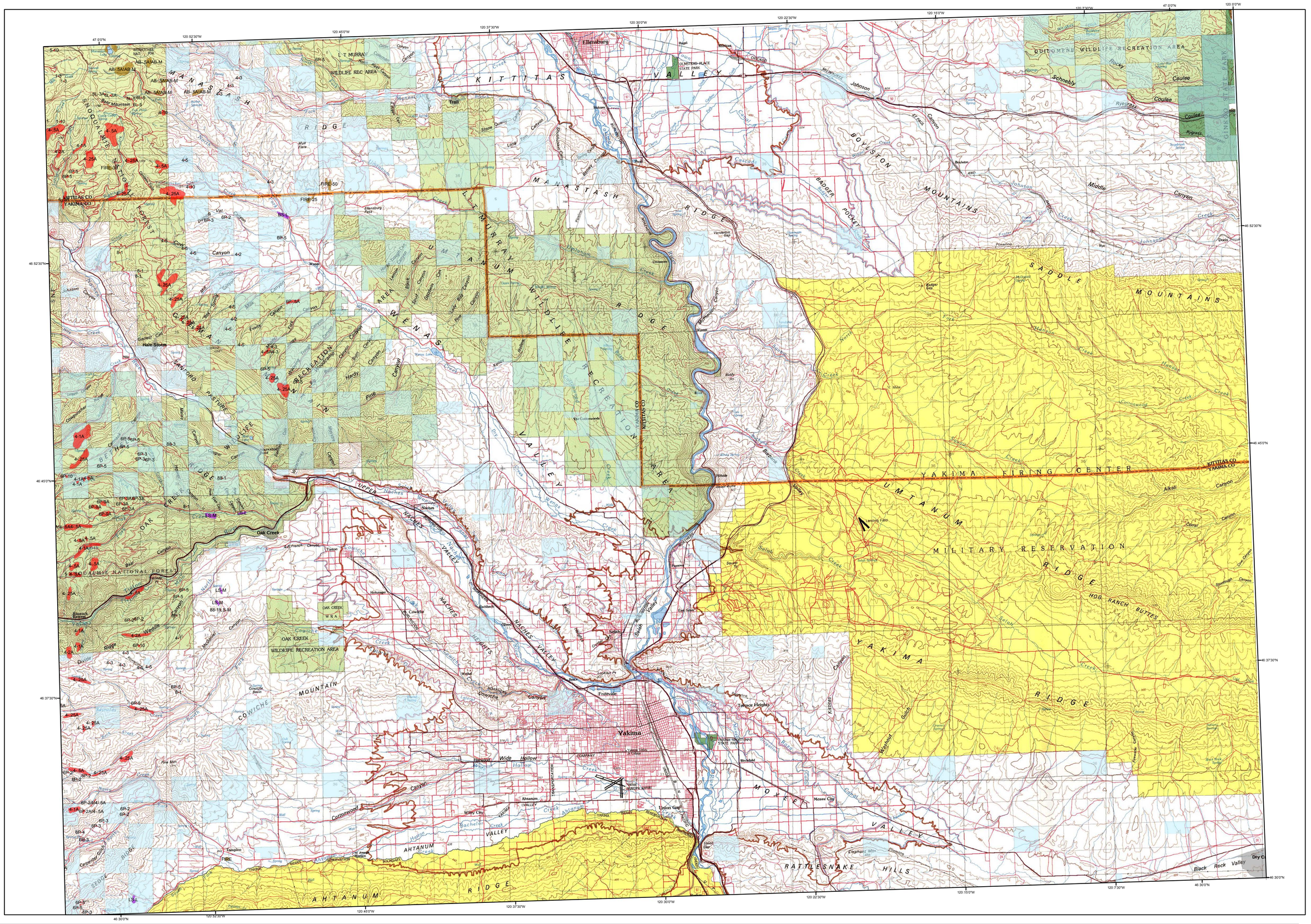
# 2009 Aerial Insect and Disease Survey
# USGS 100K Quad: Yakima - E146120; 5E




## 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 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 | Cytospora 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).**

**USGS 100K Quad: Yakima - E146120; 5E**
**2009 Aerial Insect and Disease Detection Survey**
**Mapscale: 1:100,000**
**Date: January 21, 2010**

## Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WaDNR Managed Lands
  Source: Washington Dept. of Natural Resources
- 2009 Large Fires
  Source: Northwest Coordination Center

N, W, E, S

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.