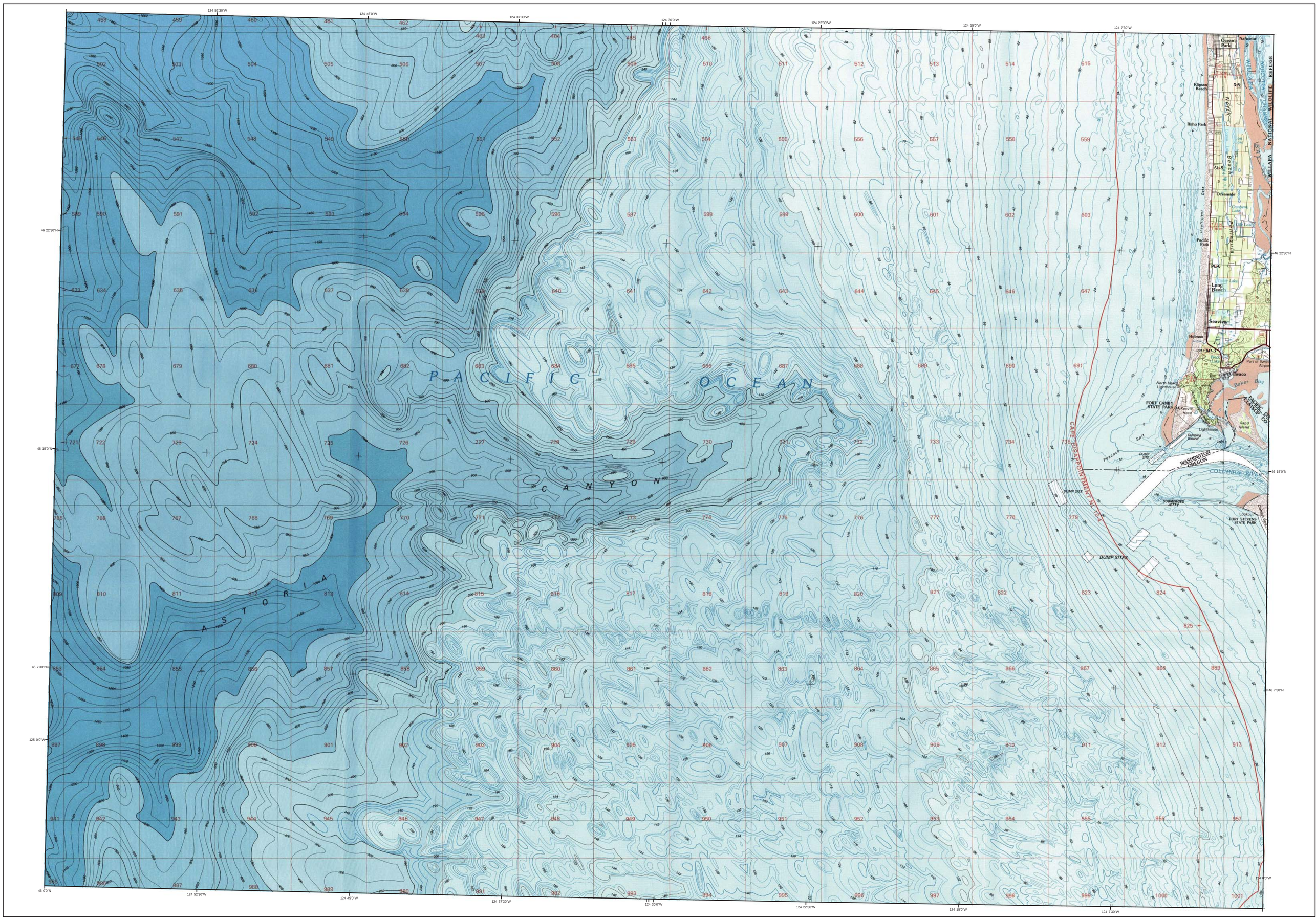
# 2006 Aerial Insect and Disease Survey
# Ilwaco - USGS 100K Quad E146124; 1F




## 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 | 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 |
| NF | Areas not flown | |
| 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 followed by: number of trees affected; number of trees/acre (example: 5A); or intensity of damage (L-Light, M-Moderate, H-Heavy).**

**USGS 100K Quad - Ilwaco; E146124; 1F**
**2006 Aerial Insect and Disease Detection Survey**
**Mapscale: 1:100,000**
**Date: November 24, 2006**

# Legend

- Defoliating Agents
- Mortality Agents
- Other Damage
- WaDNR Managed Lands

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:

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PO Box 3623
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*****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.