

# USFS Region 6 Forest Insect and Disease Aerial Detection Survey Data Dictionary Date: 12/2010

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## Region Six Insect and Disease Layers Available:

r6id1980.e00/.shp	r6id1988.e00/.shp	r6id1996.e00/.shp	r6id2004.e00/.shp
r6id1981.e00/.shp	r6id1989.e00/.shp	r6id1997.e00/.shp	r6id2005.e00/.shp
r6id1982.e00/.shp	r6id1990.e00/.shp	r6id1998.e00/.shp	r6id2006.e00/.shp
r6id1983.e00/.shp	r6id1991.e00/.shp	r6id1999.e00/.shp	r6id2007.e00/.shp
r6id1984.e00/.shp	r6id1992.e00/.shp	r6id2000.e00/.shp	r6id2008.e00/.shp
r6id1985.e00/.shp	r6id1993.e00/.shp	r6id2001.e00/.shp	r6id2009.e00/.shp
r6id1986.e00/.shp	r6id1994.e00/.shp	r6id2002.e00/.shp	r6id2010.e00/.shp
r6id1987.e00/.shp	r6id1995.e00/.shp	r6id2003.e00/.shp	

## Data Description:

Theme keywords: insect, disease, tree mortality, tree defoliation, tree damage  
 Place keywords: Oregon and Washington  
 Temporal keywords: 1980-2010  
 Feature Class: polygon  
 Data source and date: various (see narrative below)  
 Data extent: all forested lands in Oregon and Washington (all ownerships)  
 Data Confidence: fair (see narrative)  
 Locational Confidence: fair (see narrative)  
 Scale: 1:100,000  
 Date data transferred to base: various/none (see narrative)  
 Projection: Albers  
 Horizontal Datum: NAD 83  
 Units: Meters  
 Spheroid: GRS 1980  
 1st standard parallel: 43 0 0.000  
 2nd standard parallel: 48 0 0.000  
 Central Meridian: -120 0 0.00  
 Latitude of projection's origin: 34 0 0.00  
 False Easting (meters): 600000.00000  
 False Northing (meters): 0.00000  
 Primary contact: Keith Sprengel - [ksprengel@fs.fed.us](mailto:ksprengel@fs.fed.us) 503-668-1476

Secondary contact: Julie Johnson – [jljohnson02@fs.fed.us](mailto:jljohnson02@fs.fed.us) 503-808-2998  
 Originator/publisher: USFS/R6/RO/Natural Resources/Forest Health Protection  
 Availability for download: <http://www.fs.fed.us/r6/nr/fid/data.shtml>  
 Download format: arc/Info .e00 files; shapefiles

Column	Item	Definitio	Description
1-24			Standard coverage items
25-54	ALYYYY	30,30,C	Summary of the damaging agent(s) and the total number of current dead trees and/or severity level of the defoliation affecting that polygon; there are 1-3 damaging agents/polygon.
55-58	AGENT1	4,4,C	First damaging agent code
59-64	DAM1C	6,6,C	Number of dead trees/acre or severity level associated with the first damaging agent; character field
65-68	AGENT2	4,4,C	Second damaging agent code
69-74	DAM2C	6,6,C	Number of dead trees/acre or severity level associated with the second damaging agent; character field
75-78	AGENT3	4,4,C	Third damaging agent code
79-84	DAM3C	6,6,C	Number of dead trees/acre or severity level associated with the third damaging agent; character field
85-94	DAM1	10,10,N	Number of dead trees/acre (if present in dam1c); numeric field
95-104	DAM2	10,10,N	Number of dead trees/acre (if present in dam2c); numeric field
105-114	DAM3	10,10,N	Number of dead trees/acre (if present in dam3c); numeric field

### Attribute Examples:

Example 1.) If AL2000 = '4-10!BS-L!1-.25A' and the polygon is 20 acres, then:

AGENT1: 4  
 DAM1C: .5 (10 dead trees / 20 acre polygon = .5 dead trees/acre)  
 AGENT2: BS  
 DAM2C: L  
 AGENT3: 1  
 DAM3C: .25 ('A' indicates dead trees/acre; no conversion needed)  
 DAM1: .5  
 DAM2: .0  
 DAM3: .25

Example 2.) If AL1984 = 'RD' and the polygon is 10 acres, then:

AGENT1: RD  
DAM1C: (no severity modifier is **required**, so this item may remain blank)  
AGENT2: (there is no second damaging agent, so this item remains blank)  
DAM2C: (there is no second agent severity, so this item remains blank)  
AGENT3: (there is no third damaging agent, so this item remains blank)  
DAM3C: (there is no third agent severity, so this item remains blank)  
DAM1: .0  
DAM2: .0  
DAM3: .0

### Process Record/Narrative:

Each year, all forested federal, state and private land in Oregon and Washington are aerially surveyed for insect and disease damage. This survey is flown cooperatively by the Region 6 US Forest Service, Forest Insects and Diseases group; the Oregon Department of Forestry, Insect and Disease Section; and the Washington Department of Natural Resources. This data is collected to determine regional insect and disease trends and to serve as an indicator to land owners/managers on insect and disease activity in their area.

Data is collected during annual surveys that are generally flown from early July through September. Historically, the surveys were flown in fixed wing aircrafts on various grid patterns. The accuracy of polygon placement and polygon attributes was limited by several factors, including: surveyor experience, weather, time of day, time of year and visibility. Areas of activity were sketched on 1:126,720 or 1:100,000 USGS quad, paper maps by two flight observers, each one sketching approximately a two mile swath out their side of the plane. After the flight, the two observer's maps were combined and overlapping polygons were resolved on a final map. The data was then manuscripted on a stable base and scanned; it was edited and attributed using Arc/Info software. All data was forced into a UTM Zone 10 projection.

In 2000, the Region 6 aerial surveyors began beta-testing a digitally assisted sketch mapping system. GeoLink software allows the surveyor to digitize and attribute the damage polygons in real time using gps and a geo-referenced, digital base map on a laptop. After the flight, the data is converted to Arcview shape files and processed. Since 2000, portions of the regional surveys have been flown using this software. Since 2003, 100% of the surveys have been flown using GeoLink. Details about the GeoLink system can be found at [http://www.fs.fed.us/foresthealth/id/id\\_tech.html](http://www.fs.fed.us/foresthealth/id/id_tech.html). Arc/info coverages showing when areas were flown, which data capture method was used, and who flew the areas are available on request.

Since 2003, the insect and disease data has also been posted as 100k quad .pdf maps on the web. They are best used when plotted at 36"x36", but users can also zoom in, on screen, and print a small area of interest. The 95 quad maps cover the forested areas in Oregon and Washington that are surveyed each year. The base map data is the TOPO! 100K quad series from National Geographic. Draft maps of the survey data are posted anywhere from one day to one week after the flight (between July and September) for use during the current year's field season. No draft spatial data is made available during this timeframe. Feedback from field personnel is used to help clean up the current-year data for final posting. Finalized survey maps and spatial survey data are generally posted on the website by November of the survey year. Links to these maps and data can be found at: <http://www.fs.fed.us/r6/nr/fid/as/index.shtml>

### Disclaimer:

The insect and disease data should be used only as an indicator of insect and disease activity, and should be ground-verified for actual causal agent and location. Polygons indicate areas of tree mortality and/or defoliation; intensity of damage is variable and not all trees indicated by polygons are dead or defoliated. The joint cooperators reserve the right to correct, modify, update or replace the data as necessary. Using this data for purposes other than those for which it was intended may yield inaccurate or misleading results.

The agencies which cooperatively conduct this survey (US Forest Service, Washington Department of Natural Resources and Oregon Department of Forestry) 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 site-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; Washington Department of Natural Resources, Resource Protection Division, Forest Health; and Oregon Department of Forestry, Forest Health Management" as the source of this data in maps and publications.

## Other Aerial Survey Insect and Disease Data:

Insect and disease detection survey digital coverages for 1955-1979 are available for the SW portion of Oregon (all ownerships) and the Blue Mountains area of Oregon; some data is available for the Olympic NF area in the 1950's. Please contact Julie Johnson at 503.808.2998 for more information.

Hard copy maps of the non-digital, insect and disease surveys from 1955-1979 are available for a copying fee. The insect and disease group will eventually have all this data available digitally and posted.

## Attribute Code Lists:

### BEETLES

Code	Description	Severity
1-	Douglas-fir Beetle	# of dead trees
2-	Douglas-fir Engraver	# of dead trees
3-	Engelmann Spruce Beetle	# of dead tress
4-	Fir Engraver	# of dead trees
5-	Western Balsam Bark Beetle, Sub-Alpine Fir	# of dead trees
F-	Flathead Borer	# of dead trees
6B-	Mountain Pine Beetle, Whitebark Pine	# of dead trees
6J-	Mountain Pine Beetle, Jeffrey Pine	# of dead trees
6K-	Mountain Pine Beetle, Knobcone Pine	# of dead trees
6L-	Mountain Pine Beetle, Lodgepole Pine	# of dead trees
6P-	Mountain Pine Beetle, Ponderosa Pine	# of dead trees
6S-	Mountain Pine Beetle, Sugar Pine	# of dead trees
6W-	Mountain Pine Beetle, Western White Pine	# of dead trees
7-	Pine Engraver (Historically, L/M/H was used as a modifier)	# of dead trees
8-	Western Pine Beetle	# of dead trees
88-	Western Pine Beetle, Pole-size Ponderosa Pine	# of dead trees
9-	Silver Fir Beetle	# of dead trees

### OTHER INSECTS

Code	Description	Severity
AB-	Balsam Woolly Adelgid	# of dead trees - AND/OR - L/M/H*
AC-	Cooley Spruce Gall Aphid	L/M/H
AM	Maple discoloration	L/M/H
AS-	Spruce Aphid	L/M/H

BB-	Western Blackheaded Budworm	L/M/H
BM-	Modoc Budworm	L/M/H/V
BM-	Modoc Budworm	1/2/3/4**
BP-	Sugar Pine Tortrix	L/M/H
BS-	Western Spruce Budworm	L/M/H/V
BS-	Western Spruce Budworm	1/2/3/4**
CH-	Larch Casebearer/Hypodermella	L/M/H
GP-	Gouty Pitch Midge	L/M/H
HL-	Western Hemlock Looper	L/M/H
LG-	Green Striped Forest Looper	L/M/H
LL-	Larch Looper	L/M/H
LS-	Black Pine Leaf Scale	L/M/H
MD-	Douglas-fir Budmoth	L/M/H
ML-	Larch Budmoth	L/M/H
MN-	Douglas-fir Needle Midge	L/M/H
MS-	Spruce Budmoth	L/M/H
NM-	Needle Miner	L/M/H
ND-	Needle Miner, Douglas-fir	L/M/H
NJ-	Needle Miner, Jeffrey Pine	L/M/H
NK-	Needle Miner, Knobcone Pine	L/M/H
NL-	Needle Miner, Lodgepole Pine	L/M/H
NP-	Needle Miner, Ponderosa Pine	L/M/H
NS-	Needle Miner, Sugar Pine	L/M/H
NT-	Needle Miner, True Fir	L/M/H
NW-	Needle Miner, Western White Pine	L/M/H
OL-	Western Oak Looper	L/M/H
PB-	Pine Butterfly	L/M/H
PH-	Phantom Hemlock Looper	L/M/H
PM-	Pandora Moth	L/M/H
PN-	Pine Needlesheath Miner	L/M/H
PS-	Pine Needle Scale	L/M/H
S-	Spider Mite	L/M/H
SA-	Sawfly	L/M/H
SD-	Sawfly, Douglas-fir	L/M/H
SF-	Sawfly, True fir	L/M/H
SH-	Sawfly, Hemlock	L/M/H
SK-	Sawfly, Knobcone Pine	L/M/H
SL-	Sawfly, Lodgepole Pine	L/M/H
SM-	Satin Moth	L/M/H
SP-	Sawfly, Ponderosa Pine	L/M/H
SW-	Sawfly, Western Larch	L/M/H
TA-	Tent caterpillar, Alder	L/M/H
TC-	Tent caterpillar, Other	L/M/H
TM-	Douglas-fir Tussock Moth	L/M/H
TS-	Tent caterpillar, Aspen	L/M/H

\*AB = Number of dead trees or L/M/H. Balsam woolley adelgid can have both mortality and severity reported because of differences in vector infestation.

- 1) Branch infestation causes flagging and is reported as L/M/H.
- 2) Bole infestation can cause tree mortality, which is reported by the number of current dead stems observed during the survey.

One polygon may have both types of damage recorded (example: AB-LIAB-15).

\*\*The numbering system used in Oregon to reflect current budworm defoliation severities, while indicating relative cumulative damage, from 1984-1998:

- 1 = Current year's defoliation is visible from the air.
- 2 = Current year's defoliation with some bare tops visible (very little gray and still a lot of green foliage).
- 3 = Current year's defoliation visible with a lot of bare tops (both some gray foliage and some green foliage visible in host trees).
- 4 = Current year's defoliation with bare crowns (very gray in color, no visible green foliage in tree).

### OTHER DAMAGING AGENTS

Code	Description	Severity
BEAR-	Bear Damage	# of dead trees (1993->present; Prior to 1993, L/M/H were used.)
BR-	Blister Rust	# of dead trees - OR - L/M/H
BY-	Bynum's Blight/Lophodermella Mordida, P.Pine	L/M/H
CC-	Cytospora Canker	L/M/H
DH-	Dying Hemlock	# of dead trees - OR - L/M/H
FIRE-	Fire Damage	# of dead trees -OR- No modifier
HAIL	Hail Damage	L/M/H
HD-	Hardwood decline	# of dead trees - OR - L/M/H
LC-	Needle cast, Lodgepole Pine	L/M/H
LW	Black Stain Root Disease (If another agent is present, no modifier is used with the LW code.)	# of dead trees -OR- no modifier
NFH	Areas not flown – host.	
NFN	Areas not flown – no host.	
OUT	No Damage Detected (in the middle of a polygon with activity)	
PC	Needle cast in Ponderosa Pine	L/M/H
PL-	Port Orford Cedar Root Disease, Phytophthora lateralis	# of dead trees - OR - L/M/H
PMD-	Pacific Madrone Decline	L/M/H

PR-	Needle Rust in Poplars	L/M/H
RC-	Needle cast, Larch	L/M/H
RB-	Red Belt	L/M/H
RD-	Root Disease (If another agent is present, no modifier is used with the RD code.)	# of dead trees - OR - No modifier
SLID-	Slide	# of dead trees -OR- No modifier
SNC -	Swiss Needle Cast	L/M/H
UNKD-	Unknown defoliation	L/M/H
UNKM-	Unknown mortality	# of dead trees
WATR-	Water Damage	# of dead trees - OR - No modifier
WIND	Wind-throw	# of dead trees -OR- No modifier
WNTR	Winter Damage	L/M/H - OR- no modifier