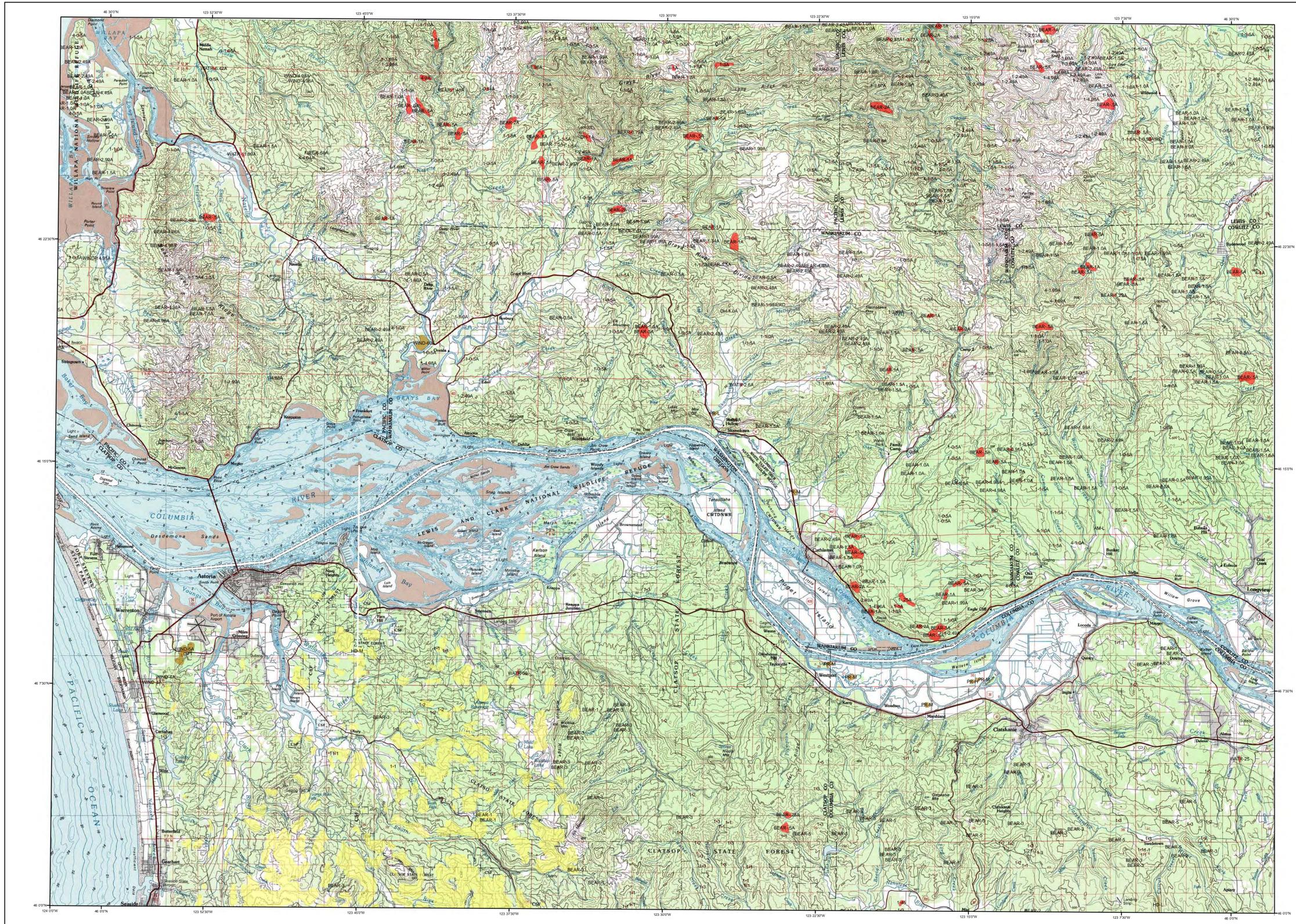


# 2010 Aerial Insect and Disease Survey

## USGS 100K Quad: Astoria - A146123; 2F



Defoliators		Mortality Agents	
Code	Damaging Agent	Code	Damaging Agent
AS	Spittle bug	1	Douglas-fir beetle
BS	Western blackheaded budworm	2	Douglas-fir engraver
BM	Modoc budworm	3	Spittle bug
BY	Sugar pine tortrix	4	Fire engraver
BS	Western spruce budworm	5	Western bark bark beetle
CH	Bynum's blight/Lophodermium	6B	Mountain pine beetle
HL	Western hemlock looper	6J	Mountain pine beetle
LG	Green striped looper	6K	Mountain pine beetle
LL	Larch looper	6L	Mountain pine beetle
LS	Black pine leaf scale	6P	Mountain pine beetle
MD	Douglas-fir budmoth	6W	Mountain pine beetle
NL	Larch budmoth	7	Western white pine
ND	Douglas-fir needle midge	8	Ponderosa pine
NS	Spittle bug	9	Pine stand/pandora pine
NJ	Needle miner	10	Silver fir, true fir
NK	Needle miner	11	Conifer
NL	Needle miner	12	Conifer
NI	Needle miner	13	Conifer
NP	Needle miner	14	Conifer
NS	Needle miner	15	Conifer
NT	Needle miner	16	Conifer
NV	Needle miner	17	Conifer
CL	Western oak looper	18	Conifer
PB	Pine butterfly	19	Conifer
PC	Pine needle cast	20	Conifer
PH	Phantom hemlock looper	21	Conifer
PM	Pine needle scale	22	Conifer
PN	Pine needle scale	23	Conifer
PS	Pine needle scale	24	Conifer
PC	Needle cast	25	Conifer
SD	Spider mite	26	Conifer
SA	Sawfly	27	Conifer
SF	Sawfly	28	Conifer
SH	Sawfly	29	Conifer
SK	Sawfly	30	Conifer
SL	Sawfly	31	Conifer
SM	Sawfly	32	Conifer
SN	Swiss needle cast	33	Conifer
SP	Sawfly	34	Conifer
SV	Sawfly	35	Conifer
TA	Tent caterpillar, alder	36	Conifer
TC	Tent caterpillar, other	37	Conifer
TD	Douglas-fir tussock moth	38	Conifer
TS	Tent caterpillar, spruce	39	Conifer

**USGS 100K Quad: Astoria - A146123; 2F**  
**2010 Aerial Insect and Disease Detection Survey**  
**Mapscale: 1:100,000**  
**Date: January 18, 2011**

**Legend**

- 2010 Special Swiss Needle Cast Survey
- More information about this special survey and the related data is located here: <http://www.oregon.gov/ODF/privateforests/18Maps.shtml>
- Defoliating Agents
- Mortality Agents
- Other Damage

**Other Damaging Agents**

Code	Damaging Agent	Code	Damaging Agent
AB	Balsam woolly adelgid	TR	True fir
AC	Coarse bark scale	SD	Spittle bug
AD	Bluish rat	SE	Spittle bug
AE	Bluish rat	SF	Spittle bug
AF	Bluish rat	SG	Spittle bug
AG	Bluish rat	SH	Spittle bug
AH	Bluish rat	SI	Spittle bug
AI	Bluish rat	SJ	Spittle bug
AJ	Bluish rat	SK	Spittle bug
AK	Bluish rat	SL	Spittle bug
AL	Bluish rat	SM	Spittle bug
AM	Bluish rat	SN	Spittle bug
AN	Bluish rat	SO	Spittle bug
AO	Bluish rat	SP	Spittle bug
AP	Bluish rat	SQ	Spittle bug
AQ	Bluish rat	SR	Spittle bug
AR	Bluish rat	SS	Spittle bug
AS	Bluish rat	ST	Spittle bug
AT	Bluish rat	SU	Spittle bug
AV	Bluish rat	SV	Spittle bug
AW	Bluish rat	SW	Spittle bug
AX	Bluish rat	SX	Spittle bug
AY	Bluish rat	SY	Spittle bug
AZ	Bluish rat	SZ	Spittle bug
BA	Bluish rat	TA	Spittle bug
BB	Bluish rat	TB	Spittle bug
BC	Bluish rat	TC	Spittle bug
BD	Bluish rat	TD	Spittle bug
BE	Bluish rat	TE	Spittle bug
BF	Bluish rat	TF	Spittle bug
BG	Bluish rat	TH	Spittle bug
BH	Bluish rat	TI	Spittle bug
BI	Bluish rat	TJ	Spittle bug
BJ	Bluish rat	TK	Spittle bug
BK	Bluish rat	TL	Spittle bug
BL	Bluish rat	TM	Spittle bug
BM	Bluish rat	TN	Spittle bug
BN	Bluish rat	TO	Spittle bug
BO	Bluish rat	TP	Spittle bug
BP	Bluish rat	TQ	Spittle bug
BQ	Bluish rat	TR	Spittle bug
BR	Bluish rat	TS	Spittle bug
BS	Bluish rat	TT	Spittle bug
BT	Bluish rat	TU	Spittle bug
BU	Bluish rat	TV	Spittle bug
BV	Bluish rat	TW	Spittle bug
BW	Bluish rat	TX	Spittle bug
BX	Bluish rat	TY	Spittle bug
BY	Bluish rat	TZ	Spittle bug
BZ	Bluish rat	UA	Spittle bug
CA	Bluish rat	UB	Spittle bug
CB	Bluish rat	UC	Spittle bug
CC	Bluish rat	UD	Spittle bug
CD	Bluish rat	UE	Spittle bug
CE	Bluish rat	UF	Spittle bug
CF	Bluish rat	UG	Spittle bug
CG	Bluish rat	UH	Spittle bug
CH	Bluish rat	UI	Spittle bug
CI	Bluish rat	UJ	Spittle bug
CJ	Bluish rat	UK	Spittle bug
CK	Bluish rat	UL	Spittle bug
CL	Bluish rat	UM	Spittle bug
CM	Bluish rat	UN	Spittle bug
CN	Bluish rat	UO	Spittle bug
CO	Bluish rat	UP	Spittle bug
CP	Bluish rat	UQ	Spittle bug
CQ	Bluish rat	UR	Spittle bug
CR	Bluish rat	US	Spittle bug
CS	Bluish rat	UT	Spittle bug
CT	Bluish rat	UU	Spittle bug
CU	Bluish rat	UV	Spittle bug
CV	Bluish rat	UW	Spittle bug
CU	Bluish rat	UX	Spittle bug
CV	Bluish rat	UY	Spittle bug
CU	Bluish rat	UZ	Spittle bug
CV	Bluish rat	VA	Spittle bug
CU	Bluish rat	VB	Spittle bug
CV	Bluish rat	VC	Spittle bug
CU	Bluish rat	VD	Spittle bug
CV	Bluish rat	VE	Spittle bug
CU	Bluish rat	VF	Spittle bug
CV	Bluish rat	VG	Spittle bug
CU	Bluish rat	VH	Spittle bug
CV	Bluish rat	VI	Spittle bug
CU	Bluish rat	VJ	Spittle bug
CV	Bluish rat	VK	Spittle bug
CU	Bluish rat	VL	Spittle bug
CV	Bluish rat	VM	Spittle bug
CU	Bluish rat	VN	Spittle bug
CV	Bluish rat	VO	Spittle bug
CU	Bluish rat	VP	Spittle bug
CV	Bluish rat	VQ	Spittle bug
CU	Bluish rat	VR	Spittle bug
CV	Bluish rat	VS	Spittle bug
CU	Bluish rat	VT	Spittle bug
CV	Bluish rat	VU	Spittle bug
CU	Bluish rat	VV	Spittle bug
CV	Bluish rat	VW	Spittle bug
CU	Bluish rat	VX	Spittle bug
CV	Bluish rat	VY	Spittle bug
CU	Bluish rat	VZ	Spittle bug
CV	Bluish rat	WA	Spittle bug
CU	Bluish rat	WB	Spittle bug
CV	Bluish rat	WC	Spittle bug
CU	Bluish rat	WD	Spittle bug
CV	Bluish rat	WE	Spittle bug
CU	Bluish rat	WF	Spittle bug
CV	Bluish rat	WG	Spittle bug
CU	Bluish rat	WH	Spittle bug
CV	Bluish rat	WI	Spittle bug
CU	Bluish rat	WJ	Spittle bug
CV	Bluish rat	WK	Spittle bug
CU	Bluish rat	WL	Spittle bug
CV	Bluish rat	WM	Spittle bug
CU	Bluish rat	WN	Spittle bug
CV	Bluish rat	WO	Spittle bug
CU	Bluish rat	WP	Spittle bug
CV	Bluish rat	WQ	Spittle bug
CU	Bluish rat	WR	Spittle bug
CV	Bluish rat	WS	Spittle bug
CU	Bluish rat	WT	Spittle bug
CV	Bluish rat	WU	Spittle bug
CU	Bluish rat	WV	Spittle bug
CV	Bluish rat	WW	Spittle bug
CU	Bluish rat	WX	Spittle bug
CV	Bluish rat	WY	Spittle bug
CU	Bluish rat	WZ	Spittle bug
CV	Bluish rat	XA	Spittle bug
CU	Bluish rat	XB	Spittle bug
CV	Bluish rat	XC	Spittle bug
CU	Bluish rat	XD	Spittle bug
CV	Bluish rat	XE	Spittle bug
CU	Bluish rat	XF	Spittle bug
CV	Bluish rat	XG	Spittle bug
CU	Bluish rat	XH	Spittle bug
CV	Bluish rat	XI	Spittle bug
CU	Bluish rat	XJ	Spittle bug
CV	Bluish rat	XK	Spittle bug
CU	Bluish rat	XL	Spittle bug
CV	Bluish rat	XM	Spittle bug
CU	Bluish rat	XN	Spittle bug
CV	Bluish rat	XO	Spittle bug
CU	Bluish rat	XP	Spittle bug
CV	Bluish rat	XQ	Spittle bug
CU	Bluish rat	XR	Spittle bug
CV	Bluish rat	XS	Spittle bug
CU	Bluish rat	XT	Spittle bug
CV	Bluish rat	XU	Spittle bug
CU	Bluish rat	XV	Spittle bug
CV	Bluish rat	XW	Spittle bug
CU	Bluish rat	XZ	Spittle bug
CV	Bluish rat	YA	Spittle bug
CU	Bluish rat	YB	Spittle bug
CV	Bluish rat	YC	Spittle bug
CU	Bluish rat	YD	Spittle bug
CV	Bluish rat	YE	Spittle bug
CU	Bluish rat	YF	Spittle bug
CV	Bluish rat	YG	Spittle bug
CU	Bluish rat	YH	Spittle bug
CV	Bluish rat	YI	Spittle bug
CU	Bluish rat	YJ	Spittle bug
CV	Bluish rat	YK	Spittle bug
CU	Bluish rat	YL	Spittle bug
CV	Bluish rat	YM	Spittle bug
CU	Bluish rat	YN	Spittle bug
CV	Bluish rat	YO	Spittle bug
CU	Bluish rat	YP	Spittle bug
CV	Bluish rat	YQ	Spittle bug
CU	Bluish rat	YR	Spittle bug
CV	Bluish rat	YS	Spittle bug
CU	Bluish rat	YT	Spittle bug
CV	Bluish rat	YU	Spittle bug
CU	Bluish rat	YV	Spittle bug
CV	Bluish rat	YW	Spittle bug
CU	Bluish rat	YZ	Spittle bug
CV	Bluish rat	ZA	Spittle bug
CU	Bluish rat	ZB	Spittle bug
CV	Bluish rat	ZC	Spittle bug
CU	Bluish rat	ZD	Spittle bug
CV	Bluish rat	ZE	Spittle bug
CU	Bluish rat	ZF	Spittle bug
CV	Bluish rat	ZG	Spittle bug
CU	Bluish rat	ZH	Spittle bug
CV	Bluish rat	ZI	Spittle bug
CU	Bluish rat	ZJ	Spittle bug
CV	Bluish rat	ZK	Spittle bug
CU	Bluish rat	ZL	Spittle bug
CV	Bluish rat	ZM	Spittle bug
CU	Bluish rat	ZN	Spittle bug
CV	Bluish rat	ZO	Spittle bug
CU	Bluish rat	ZP	Spittle bug
CV	Bluish rat	ZQ	Spittle bug
CU	Bluish rat	ZR	Spittle bug
CV	Bluish rat	ZS	Spittle bug
CU	Bluish rat	ZT	Spittle bug
CV	Bluish rat	ZU	Spittle bug
CU	Bluish rat	ZV	Spittle bug
CV	Bluish rat	ZW	Spittle bug
CU	Bluish rat	ZX	Spittle bug
CV	Bluish rat	ZY	Spittle bug
CU	Bluish rat	ZZ	Spittle bug

**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.

**Washington State Department of Natural Resources**

**Forest Health Protection**

**USDA Forest Service, Region 6**

**Forest Health Protection**

**Portland, Oregon 97208**

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**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 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/adsurvey/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.

The map base was created with TOPO! (Copyright 2001, National Geographic); available online at: [www.ngmappstore.com](http://www.ngmappstore.com)

A data dictionary, digital copies of this map and ArcGIS insect and disease data are available at: [www.fs.fed.us/r6/nr/rid/data.shtml](http://www.fs.fed.us/r6/nr/rid/data.shtml)