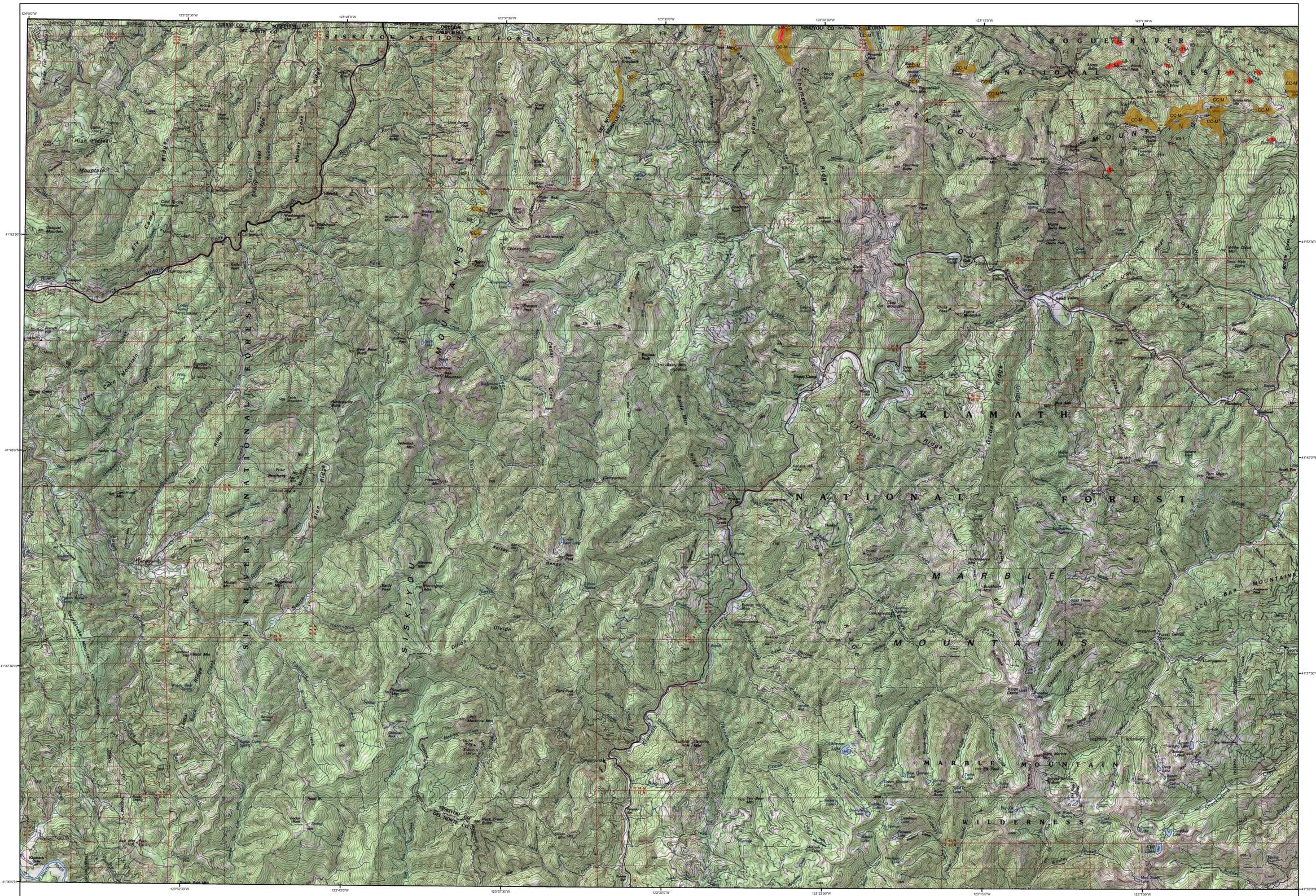


# 2011 Aerial Insect and Disease Survey

## USGS 100K Quad: HAPPY CAMP - A141123; 20



Mortality Agents		
Code	Damaging Agent	Primary Host
2	Douglas fir beetle	Douglas fir
2	Douglas fir engraver	Douglas fir
3	Spotted bark beetle	Spotted fir
4	Pit engraver	True fir
5	Western balsam bark beetle	Sub-alpine fir
6B	Mountain pine beetle	Whitebark 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	Sit spruce	Ponderosa pine
8	Western pine beetle	Pine
8B	Western pine beetle	Pine
9	Silver fir beetle	Silver fir, true fir
9E&H	Bark damage	Conifers
FR	Flatheaded woodborer	Douglas fir
TA	Black stain root disease	Pine
PL	Pine bark beetle root disease	Pine
RD	Root disease	Conifers
WATR	Water Damage	All species

Defoliators		
Code	Damaging Agent	Primary Host
BS	Western spruce budworm	True fir, Douglas fir, spruce
CH	Larch casebearer/typhodermata	Western larch
HL	Western hemlock looper	Western hemlock
LC	Needle cast	Lodgepole pine
LS	Black pine leaf scale	Ponderosa pine
ML	Larch budmoth	Western larch
PB	Pine butterfly	Ponderosa pine
PC	Pine needle cast	Ponderosa pine
HC	Needle cast	Western larch
SP	Sawfly	True fir
SH	Sawfly	Aspen
SM	Satin moth	Douglas fir
SNK	Swainson's needle cast	Ponderosa pine
SP	Sawfly	Ponderosa pine
TA	Tent caterpillar, alder	Alder
TM	Douglas fir tussock moth	Truefir, Douglas fir

Other Damaging Agents		
Code	Damaging Agent	Primary Host
AB	Balsam woolly adelgid	True fir
AC	Cooley spruce gall adelgid	Sitka spruce, Douglas fir
AM	Leaf discoloration	Maple
AM	Leaf discoloration	True needle pines
BR	Bitter rust	True fir
CC	Chrysobothris canker	All species
DI	Dying hemlock	Hemlock
FIRE	Fire	All species
HD	Hardwood decline	Hardwoods
HDC	Hardwood decline	Aspen
HQA	Arava nut flower - non host	Oak
MN	Arava nut flower - host	Oak
PAID	Pacific madrone decline	Pacific madrone
RF	Rail fuel	Maple
RB	Rail fuel	All species
SLD	Slate	All species
WATR	Water damage	All species
WIND	Windthrow	All species
WINT	Winter damage	All species

**USGS 100K Quad: HAPPY CAMP - A141123; 20**  
**2011 Aerial Insect and Disease Survey**  
**Map Scale: 1:100,000**  
**Date: 13 December 2011**

### Legend

	<b>Defoliating Agents</b>		<b>Areas Not Flown</b>
	<b>Mortality Agents</b>		<b>2011 Large Fires</b>
	<b>Other Damage</b>		

Source: Northwest Interagency Coordination Center

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

The TOPOI maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps. For more information on this map, visit us online at [http://gto.arcgis.com/maps/USA\\_Topo\\_Maps](http://gto.arcgis.com/maps/USA_Topo_Maps)

A data dictionary, digital copies of this map and Arctics insect and disease data are available at: [www.fs.usda.gov/gto/r6/fhp/ads](http://www.fs.usda.gov/gto/r6/fhp/ads)

#### 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.

**DIRECT ALL INQUIRIES TO:**

  
 Oregon Department of Forestry  
 Forest Health Management  
 2600 State Street  
 Salem, OR 97310  
 -- OR --  
 USDA Forest Service, Region 6  
 Natural Resources  
 Forest Health Protection  
 PO Box 3623  
 Portland, Oregon 97208  


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/ads/>

Quality assurance sheet. 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.