

2006 Aerial Insect and Disease Survey Walsenburg, Colorado USGS 100K TOPO!: 37104-E1



1:100,000

Legend

Causal Agent(s) **Not Flown in 2006**

Use of the Number System
 Example: 5-25 = The first number before the dash is the causal agent code. The number after the dash is the number of dead "ladder" trees in the polygon or point. When recent dead trees are not counted, an intensity code of L-light, M-moderate, and H-high may be used after the causal agent code. Periodically, trees per acre estimates are used after the causal agent code instead of number of dead "ladder" trees (or an intensity code). For example: 5-120k = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "ladder" trees in the polygon per acre. In this case it would be an estimation that, on the average, one tree per every two acres would be a dead "ladder" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "ladder" trees. A / is used as a separator when a point polygon has more than one causal agent code.

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	40	Alfalfa	Lodgepole Pine	128	fox squirrel foraging	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	50	White pine blister rust	Lodgepole Pine	107	fall weevorn	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	61	Dwarf mistlebe	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	62	Encephalartos	Ponderosa Pine	109	groundwood nematode	Softwood Pine
5	Needle Pine	All Tree Species	63	Inclusus #50, 50 & 63	All Tree Species	110	oak wilt	Oak
6	Western spruce beetle	Ponderosa Pine	64	Air pollution	All Tree Species	111	ring-neck disease	All Tree Species
7	Fire Engraver	White Fir	65	Chemical damage	All Tree Species	112	spruce ips	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	66	Lophodermium pinastri	Softwoods	113	woolred chestnut borer	Oak
9	Western balsam bark beetle	Subalpine Fir	67	Rhabdocline pseudotsugae	Douglas-fir	114	ambrosia like four disease	Bur Oak
10	Unidentified bark beetle	Softwoods	68	Lophodermella arcuta	Softwoods	115	Dieback	All Tree Species
11	Pine engraver	Lodgepole Pine	69	Leucosticte acicola	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	70	Lophodermella concolor	Softwoods	117	Discoloration	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	71	Chrysomya	Softwoods	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	72	Needle cast (hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Lodgepole pine needle miner	Ponderosa Pine	73	Root Rot	All Tree Species	120	aspen tortix	Quaking Aspen
16	Jack pine budworm	Jack Pine	74	Unidentified disease	All Tree Species	121	Marsipposia blight	Quaking Aspen
17	Spine budworm, light defol.	Douglas-fir	75	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Spine budworm, medium defol.	Douglas-fir	76	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Spine budworm, heavy defol.	Douglas-fir	77	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Douglas-fir tussock moth	Douglas-fir	78	Diploids	Softwoods	203	Dieback (oak)	Oak
21	Pine Buttefly	Ponderosa Pine	79	Prionus bark stain	Common Piñon	210	Mortality (old cottonwood)	Cottonwood/Poplar
22	Pine looper	Ponderosa Pine	80	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine tortix	Hardwoods	81	Peronospora	Softwoods	212	Mortality (hardwood)	Hardwoods
24	Tart caterpillars	Hardwoods	82	Windthrow	All Tree Species	213	Mortality (oak)	Oak
25	Leaf beetles	Hardwoods	83	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Oak leaf roller	Hardwoods	74	Avalanche	All Tree Species	220	Discoloration (ash)	Ash
27	Pine needle-sheath miner	Ponderosa Pine	75	Aspen decline-multiple agents(x)	Quaking Aspen	221	Discoloration (cedar)	Softwoods
28	Pine sawflies	Ponderosa Pine	76	Juniper mortality	Common Piñon	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Pine tussock moth	Ponderosa Pine	77	Juniper mortality-unknown agents(x)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Variable oak leaf scabellator	Hardwoods	78	Limber pine mortality	Limber Pine	224	Discoloration (hardwood)	Hardwoods
31	Unidentified defoliator	All Tree Species	79	Limber pine decline-multiple agents(x)	Limber Pine	225	Discoloration (oak)	Oak
32	Heterobasidion annosum (Pines annosus)	Softwoods	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Armillaria ostroyae (Amillaria mellea)	Softwoods	81	Unkown pathogen	Common Piñon	227	Herbicide (cottonwood)	Cottonwood/Poplar
34	Polyporus schweinitzi	Softwoods	100	old pinon mortality	Common Piñon	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Lodosporella	Softwoods	101	road salt ip	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
36	Cytospora	All Tree Species	102	dutch elm disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Western gall rust	Unknown	103	diploids blight	Ponderosa Pine	251	Unidentified defoliator (elm)	Elm
38	Concordia rust	Unknown	104	lga harkness	Spruce, White Spruce	252	Unidentified defoliator (hardwood)	Hardwoods
39	Stainform rust	Lodgepole Pine	105	drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	300	Mortality (pine)	Pine

USGS 100K Quad - Location Map



How Aerial Surveys Are Conducted

Data represented on this map are based on aerial observations manually recorded onto a map. This procedure is considered both an art form and a form of scientific data collection, and is highly subjective. An observer only has 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 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.

Aerial surveys provide information on the current status for many causal agents, and are 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. Aerial surveys can be thought of as the first stage in a multi-stage sampling design. Other remote sensing approaches, including aerial photography, electro-optical sensors, and specially designed aerial surveys with modified flight patterns, can be used to more accurately delineate the extent and severity of a particular disturbance agent. The preceding methods are often more costly than overview surveys, and are generally reserved to address situations of sufficient environmental, economic, or political importance.

**Area surveyed by William Ciesla & Crystal Tischler
8/30 - 9/5 2006
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Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service**

DIRECT ALL INQUIRIES TO:

**Colorado State Forest Service
Colorado State University
Fort Collins, Colorado 80523**

**USDA Forest Service, Region 2
Renewable Resources
Forest Health Management
PO Box 25127
Lakewood, Colorado 80225**

*****DISCLAIMER*****

Due to the nature of aerial surveys, the data on this map will only provide rough estimates of location, intensity and the resulting trend information for agents detectable from the air. Many of the most destructive diseases are not represented on this map because these agents are not detectable from aerial surveys. The data presented on this map should only be used as a partial indicator of insect and disease activity, and should be validated on the ground for actual location and causal agent. Shaded areas show locations where tree mortality or defoliation were apparent from the air. Intensity of damage is variable and not all trees in shaded areas are dead or defoliated.

The insect and disease data represented on this map are available digitally from the USDA Forest Service, Region Two Forest Health Management group. The cooperators reserve the right to correct, update, modify or replace GIS products. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.

A data dictionary and digital copies of this map and the insect and disease data are available at: <http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>