

# 2007 Aerial Insect and Disease Survey Walsenburg, Colorado USGS 100K TOPO!: 37104-E1



1:100,000

## Legend

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

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 acreage estimates are used after the causal agent code instead of number of dead "ladder" trees (or an intensity code). For example: 5-120A = 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
1	Douglas-fir beetle	Douglas-fir	106	fox squirrel feasting	Cottonwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	107	fall weevorn	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	109	pinewood nematode	Scots Pine
5	Mountain pine beetle	5-Needle Pine	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	111	slings disease	All Tree Species
7	Fire Engraver	White Fir	112	snout ips	White Spruce
8	Fire Engraver	White Fir	113	woolred chestnut borer	Oak
9	Douglas-fir engraver beetle	Substrone Fir	114	anthracnose like foliar disease	Bur Oak
10	Western balsam bark beetle	Softwoods	115	Dieback	All Tree Species
11	Unidentified bark beetle	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Lodgepole Pine	117	Discoloration	All Tree Species
13	Pine engraver	Ponderosa Pine	118	Mortality	All Tree Species
14	Pine engraver	Lodgepole Pine	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Ponderosa Pine	120	aspen tortix	Quaking Aspen
16	Lodgepole pine needle miner	Ponderosa Pine	121	Marsdenia Blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	200	Dieback (ash)	Ash
18	Spruce budworm, light defol.	Douglas-fir	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Spruce budworm, medium defol.	Douglas-fir	202	Dieback (hardwood)	Hardwoods
20	Spruce budworm, heavy defol.	Douglas-fir	203	Dieback (oak)	Oak
21	Spruce budworm, heavy defol.	Douglas-fir	204	Mortality (old cottonwood)	Eastern Red Cedar
22	Spruce budworm, heavy defol.	Douglas-fir	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine Buttery	Ponderosa Pine	212	Mortality (hardwood)	Hardwoods
24	Pine looper	Ponderosa Pine	213	Mortality (oak)	Oak
25	Pine tortix	Hardwoods	214	Mortality (spruce)	Spruce
26	Tank caterpillars	Hardwoods	220	Discoloration (ash)	Ash
27	Leaf beetles	Hardwoods	221	Discoloration (cotton)	Softwoods
28	Oak leaf roller	Hardwoods	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Pine needle-sheath miner	Ponderosa Pine	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Pine tussock moth	Ponderosa Pine	224	Discoloration (hardwood)	Hardwoods
31	Variable oak caterpillar	Hardwoods	225	Discoloration (oak)	Oak
32	Unidentified defoliator	All Tree Species	226	Discoloration (spruce)	Spruce
33	Heterobasidion annosum (Pines annosus)	All Tree Species	230	Herbicide (cottonwood)	Cottonwood/Poplar
34	Armillaria ostroyae (Amillaria mellea)	Softwoods	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Polyporus schweinitzi	Softwoods	240	Flagging (hardwood)	Hardwoods
36	Phytophthora	All Tree Species	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Cytospora	All Tree Species	251	Unidentified defoliator (elm)	Elm
38	Western gall rust	Unknown	252	Unidentified defoliator (hardwood)	Hardwoods
39	Coniophora rust	Unknown	300	Mortality (pine)	Pine
40	Stainform rust	Lodgepole Pine			

## USGS 100K Quad - Location Map



**Legend**  
 Flown Area  
 State Boundaries  
 Counties

## 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 William Ciesla  
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 Projection: UTM NAD83 Zone 13  
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\*\*\*\*\*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/>