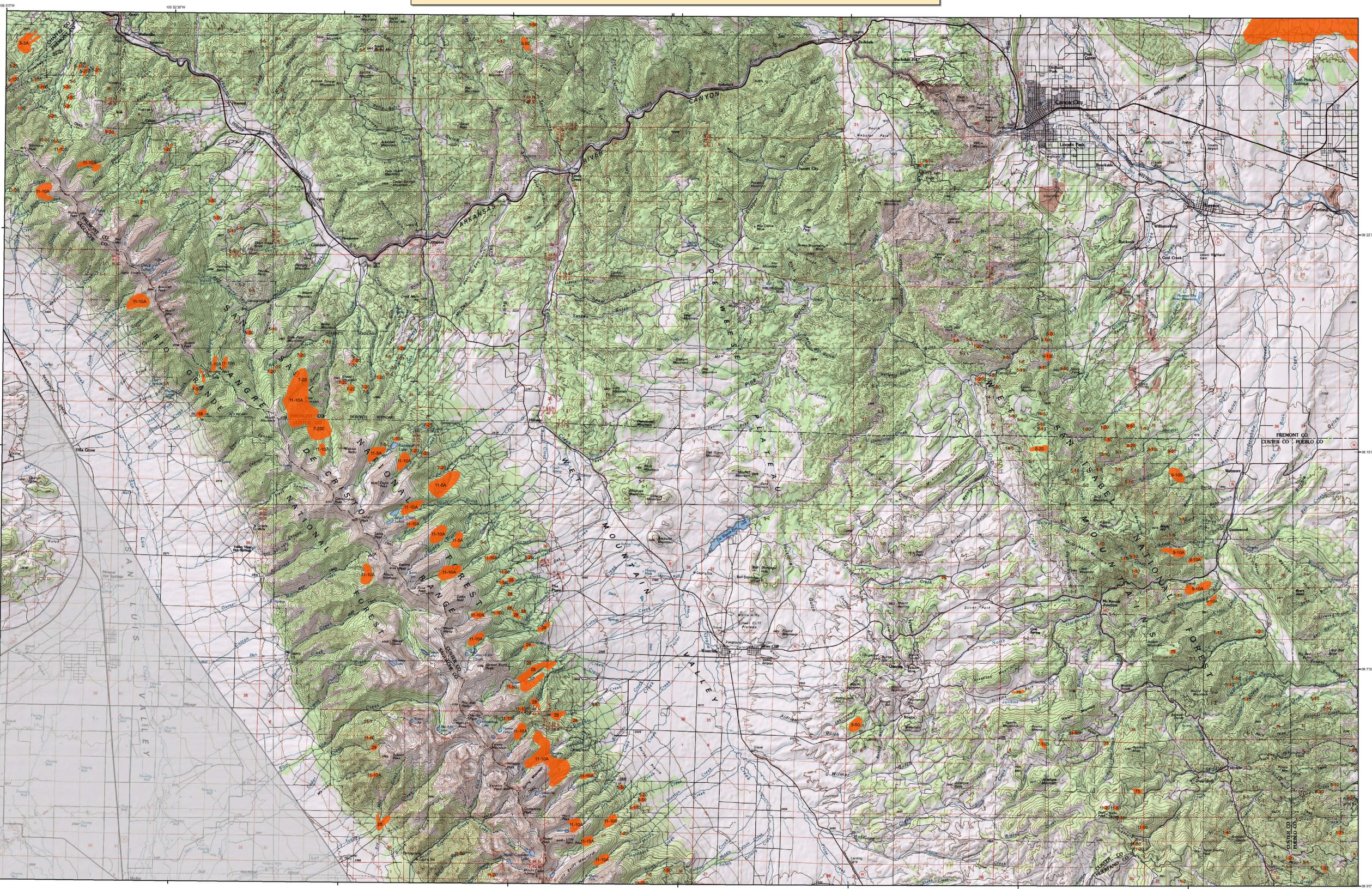


2006 Aerial Insect and Disease Survey Canon City, Colorado USGS 100K TOPO!: 38105-A1



1:100,000

Legend

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 "fader" 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 "fader" trees (or an intensity code). For example: 5-12A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "fader" 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 "fader" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "fader" 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	49	Anthracnose	Lodgepole Pine	105	Red squirrel flagging	Cottwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	50	White pine blister rust	S-Needle Pine	107	fall webworm	Cottwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	51	Emerald miner	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Elytrodema	Ponderosa Pine	109	pineewood nematode	Scotch Pine
5	Mountain pine beetle	S-Needle Pine	53	Inclusa #65, 66 & 67	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	54	Air pollution	All Tree Species	111	Ring disease	All Tree Species
7	Fir Engriever	White Fir	55	Chemical damage	All Tree Species	112	spruce Ips	White Spruce
8	Douglas fir engraver beetle	Douglas fir	56	Lophodermium pinastri	Softwoods	113	bedford chestnut borer	Oak
9	Western balsam bark beetle	Subspline Fir	57	Rhabdocline pseudotsugae	Douglas fir	114	anthracnose like foliar disease	Bur Oak
10	Unidentified bark beetle	Softwoods	58	Lophodermium arcuta	Softwoods	115	Dieback	All Tree Species
11	Pine engraver	Lodgepole Pine	59	Leucostoma acicola	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	61	Dobsonia pini	Softwoods	118	Herbicide	All Tree Species
14	Ponderosa pine needle miner	Ponderosa Pine	62	Needle cast (Hypodermataceae)	All Tree Species	119	Flagging	All Tree Species
15	Jack pine budworm	Jack Pine	63	Root Rot	All Tree Species	120	aspen tortrix	Quaking Aspen
16	Spruce budworm, light defol.	Douglas fir	64	Unidentified disease	Softwoods	121	Margosona Blight	Quaking Aspen
17	Spruce budworm, medium defol.	Douglas fir	65	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Spruce budworm, heavy defol.	Douglas fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottwood/Poplar
19	Spruce budworm, heavy defol.	Douglas fir	67	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Douglas fir tussock moth	Douglas fir	68	Diploids	Softwoods	204	Dieback (oak)	Oak
21	Pine butterfly	Ponderosa Pine	69	Common Pinyon	Softwoods	210	Mortality (cottonwood)	Cottwood/Poplar
22	Pine looper	Ponderosa Pine	70	Fir	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine tortrix	Ponderosa Pine	71	Parasitism	All Tree Species	212	Mortality (hardwood)	Hardwoods
24	Tent caterpillar	Hardwoods	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
25	Leaf beetles	Hardwoods	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Oak leaf roller	Hardwoods	74	Avulsione	All Tree Species	220	Discoloration (ash)	Ash
27	Pine needle-sheath miner	Ponderosa Pine	75	Aspen decline-multiple agent(s)	Quaking Aspen	221	Discoloration (conifer)	Softwoods
28	Pine sawflies	Ponderosa Pine	76	Pinyon pine mortality	Common Pinyon	222	Discoloration (cottonwood)	Cottwood/Poplar
29	Variable oak leaf caterpillar	Hardwoods	77	Juniper mortality-unknown agent(s)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Cankerworms	Hardwoods	78	Chambel oak decline-unknown agent(s)	Chambel Oak	224	Discoloration (hardwood)	Hardwoods
31	Unidentified defoliator	All Tree Species	79	Lumber pine decline-multiple agent(s)	Lumber Pine	225	Discoloration (oak)	Oak
32	Unidentified defoliator	Softwoods	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Armillaria ostroyae (Armillaria mellea)	Softwoods	100	old pinion mortality	Lodgepole Pine	230	Discoloration (cottonwood)	Cottwood/Poplar
34	Polyporus schweinitzi	Softwoods	101	old pinion mortality	Lodgepole Pine	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Cytospora	All Tree Species	102	road salt ip	Elm	240	Flagging (hardwood)	Hardwoods
36	Western gall rust	Unknown	103	dutch elm disease	Elm	250	Unidentified defoliator (cottonwood)	Cottwood/Poplar
37	Comandra rust	Unknown	104	ipx hantleri	Spruce, White Spruce	251	Unidentified defoliator (elm)	Elm
38	Shastacorn 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
Map Created: 12/2006
Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service

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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/ffm/aerialsurvey/>