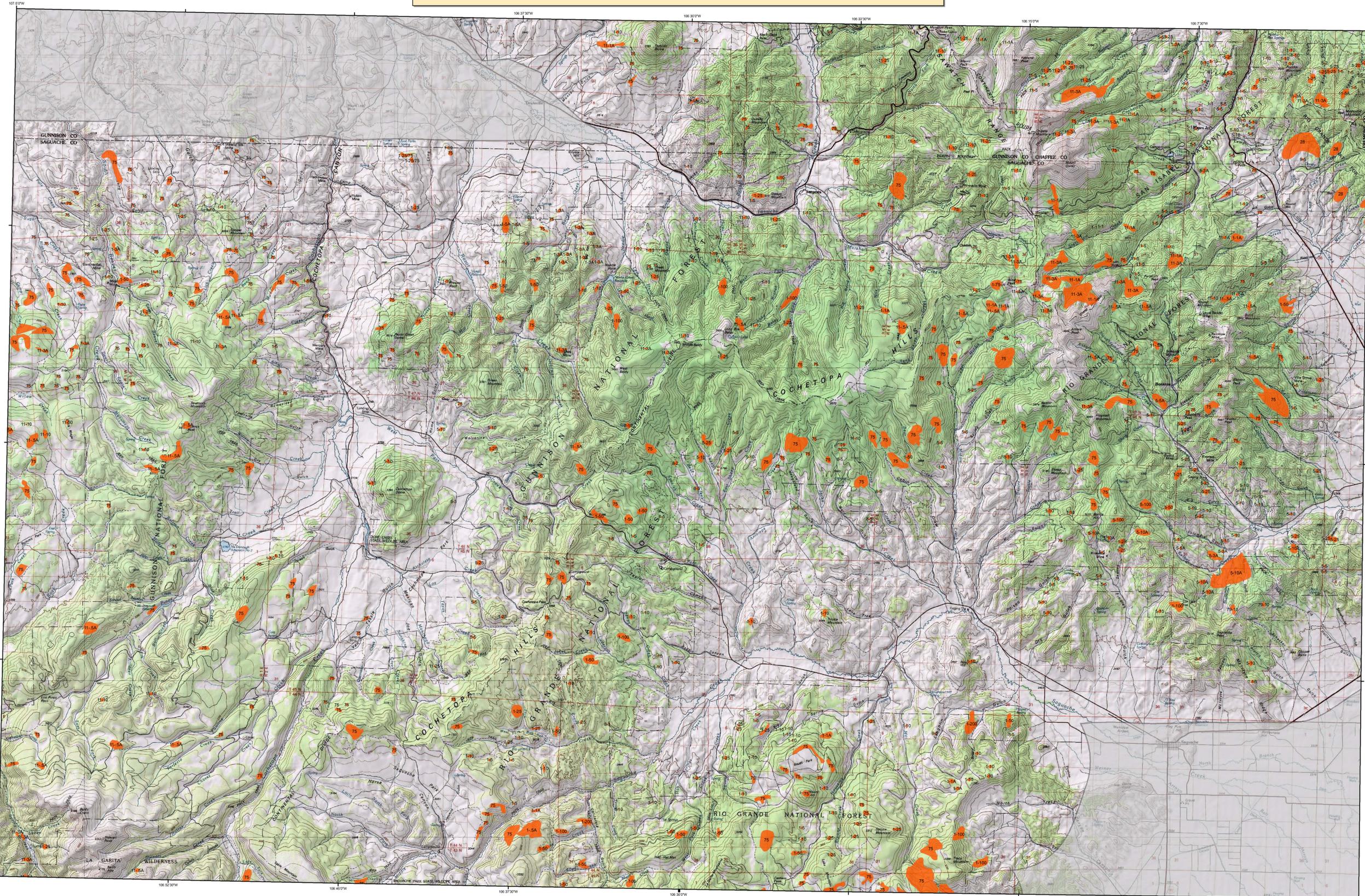


# 2007 Aerial Insect and Disease Survey Saguache, Colorado USGS 100K TOPO!: 38106-A1



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 "faded" 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 "faded" trees (or an intensity code). For example: 5-125A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "faded" 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 "faded" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "faded" 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	Alphitobius	Lodgepole Pine	106	fox squirrel flagging	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	41	White pine blister rust	5-Needle Pine	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	42	Dwarf mistletoe	Softwoods	108	east salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	43	Elytrodium	Ponderosa Pine	109	pinewood nematode	Scottish Pine
5	Needle scale	5-Needle Pine	44	Inclusus #95, 95 & 95	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	45	As polibatus	All Tree Species	111	oak wilt	All Tree Species
7	Fire Engulver	White Fir	46	Chemical damage	All Tree Species	112	spine tip	White Spruce
8	Douglas fir engraver beetle	Douglas fir	47	Lophodermium pinastri	Softwoods	113	beetled chestnut borer	Oak
9	Western balsam bark beetle	Subalpine Fir	48	Rhabdocline pseudotsugae	Douglas fir	114	anthracnose like foliar disease	Bur Oak
10	Unidentified bark beetle	Softwoods	49	Lophodermella arcuta	Softwoods	115	Dieback	All Tree Species
11	Spine budworm, light defol.	Douglas fir	50	Leucostoma acicola	Softwoods	116	Mortality	All Tree Species
12	Spine budworm, medium defol.	Douglas fir	51	Lophodermella concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	52	Dobsonia	Softwoods	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	53	Needle cast (Hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Ponderosa pine needle-miner	Lodgepole Pine	54	Root rot	All Tree Species	120	aspen tortix	Quaking Aspen
16	Lodgepole pine needle-miner	Ponderosa Pine	55	Winter damage light	All Tree Species	121	Marsipora Blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	56	Winter damage medium	All Tree Species	200	Dieback (ash)	Ash
18	Spine budworm, heavy defol.	Douglas fir	57	Winter damage heavy	All Tree Species	201	Dieback (hardwood)	Hardwoods
19	Spine budworm, medium defol.	Douglas fir	58	Diplota	Softwoods	202	Dieback (oak)	Oak
20	Douglas fir tussock moth	Douglas fir	59	Pinus black stain	Common Pinon	210	Mortality (old cottonwood)	Cottonwood/Poplar
21	Pine butterfly	Ponderosa Pine	60	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
22	Pine looper	Hardwoods	61	Parusine	Softwoods	212	Mortality (hardwood)	Hardwoods
23	Pine tortix	Hardwoods	62	Windthrow	All Tree Species	213	Mortality (oak)	Oak
24	Tent caterpillar	Hardwoods	63	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
25	Leaf beetles	Hardwoods	64	Avianiche	All Tree Species	220	Discoloration (ash)	Ash
26	Oak leaf roller	Hardwoods	65	Juniper mortality-multiple agents)	Quaking Aspen	221	Discoloration (cottonwood)	Cottonwood/Poplar
27	Pine needle-steam miner	Ponderosa Pine	66	Limber pine mortality	Limber Pine	222	Discoloration (eastern cedar)	Eastern Red Cedar
28	Variable oak leaf defolator	All Tree Species	67	Juniper mortality-unknown agents)	Juniper	223	Discoloration (hardwood)	Hardwoods
29	Unidentified defolator	All Tree Species	68	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (spruce)	Spruce
30	Heterobasidium annosum (Fomes annosus)	Softwoods	69	Unknown polygon	Unknown	230	Herbicide (cottonwood)	Cottonwood/Poplar
31	Armillaria ostoyae (Armillaria mellea)	Softwoods	70	old pinion mortality	Common Pinon	231	Herbicide (eastern cedar)	Eastern Red Cedar
32	Polyporus schweinitzi	Softwoods	71	road salt top	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
33	Leptomyces	Softwoods	72	cutch elm disease	Elm	250	Unidentified defolator (cottonwood)	Cottonwood/Poplar
34	Cytospora	All Tree Species	73	spike oak blight	Ponderosa Pine	251	Unidentified defolator (elm)	Elm
35	Western gall rust	Unknown	74	Spurce, White Spruce	Spruce, White Spruce	252	Mortality (pine)	Pine
36	Comandra rust	Unknown	75	straght killed narrow leaf cottonwood	Narrowleaf Cottonwood			
37	Starthorned rust	Lodgepole 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 Brian Howell and Pat Ahern

Map Created: 01/11/2008

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/>