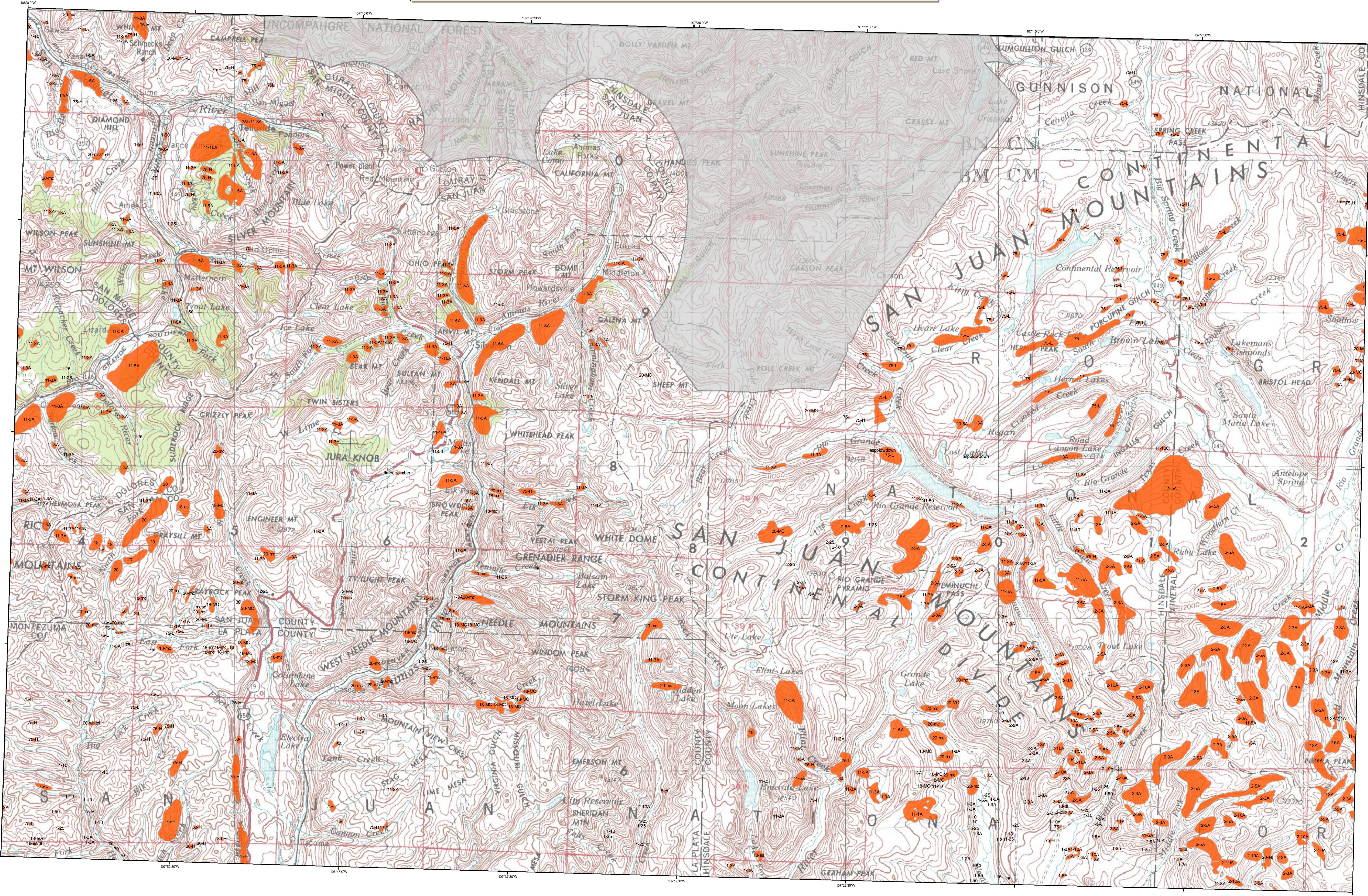


**\*\*DRAFT\*\***

**2008 Aerial Insect and Disease Survey  
Silverton, Colorado  
USGS 100K TOPO! 37107-E1**

**\*\*DRAFT\*\***



1:100,000

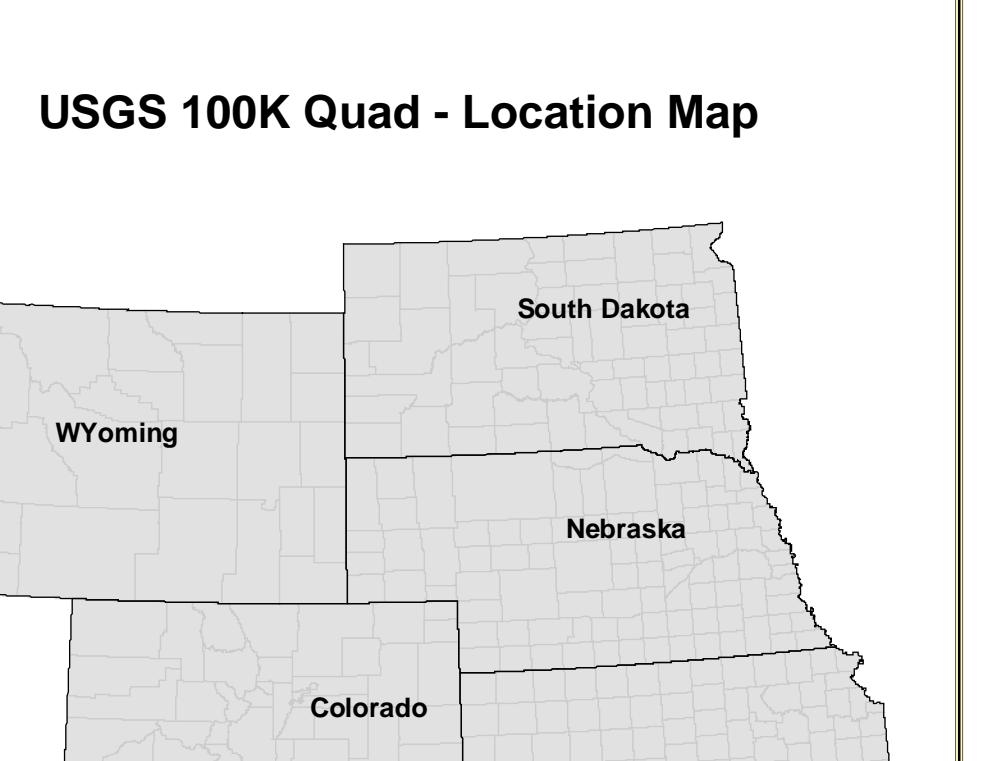
Legend	Causal Agent(s)	Not Flown
	Use the first number system	

Example: 5-25 - The first number before the dash is its 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 Light, Moderate, and High may be used after the causal agent code. Periodically, trees per acreage estimates are used after the causal agent code instead of the 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 tree. The causal agent code is separated from the intensity code - 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	Atriplex	Lodgepole Pine	105	fox squirrel flagging	Cottonwood/Poplar
2	Mountain pine beetle	Engelmann Spruce	50	Artemesia	Spruce/Balsam Fir	106	flagging	Cottonwood/Poplar
3	Pine needle miner	Ponderosa Pine	51	Dwarf mistletoe	Spruce	108	road salt	Spruce
4	Mountain pine beetle	Lodgepole Pine	52	Elytrichodes	Ponderosa Pine	109	pineweed nematode	Spruce
5	Western pine beetle	Lodgepole Pine	53	All Tree Species	Balsam Fir	110	soil	Spruce
6	Fire Engraver	Ponderosa Pine	54	Air pollutants	All Tree Species	111	silage disease	Spruce
7	White fir borer	White Fir	55	Chionodiplosis	All Tree Species	112	spruce soot	Spruce
8	Western spruce beetle	Subalpine Fir	56	Hemlock woolly adelgid	Spruce	113	tar spot	Spruce
9	Western bark beetle	Subalpine Fir	57	Rhabdophaga pseudotussae	Spruce	114	anthracnose like foliar disease	Bur Oak
10	Western spruce beetle	Subalpine Fir	58	Lophodermella arcuata	Spruce	115	Dieback	All Tree Species
11	Western bark beetle	Subalpine Fir	59	Lophodermella arcuata	Spruce	116	Dieback	All Tree Species
12	Unidentified bark beetle	Lodgepole Pine	60	Lophodermella concolor	Spruce	117	Discoloration	All Tree Species
13	Unidentified bark beetle	Lodgepole Pine	61	Lophodermella concolor	Spruce	118	Dieback	All Tree Species
14	Pine engraver	Ponderosa Pine	62	Leptothrix castaneae	Spruce	119	Dieback	All Tree Species
15	Ponderosa pine needle miner	Ponderosa Pine	63	Root Rot	All Tree Species	120	expert tortrix	All Tree Species
16	Ponderosa pine needle miner	Ponderosa Pine	64	Unidentified disease	Spruce	121	Marsannina blight	All Tree Species
17	Jack pine borer	Jack Pine	65	Winter damage heavy	All Tree Species	122	Quaking Aspen	Quaking Aspen
18	Spruce budworm, light defol.	Douglas-fir	66	Winter damage heavy	All Tree Species	123	Quaking Aspen	Quaking Aspen
19	Spruce budworm, heavy defol.	Douglas-fir	67	Worm damage	All Tree Species	201	Dieback (cottonwood)	Ash
20	Douglas-fir tussock moth	Douglas-fir	68	Worm damage	All Tree Species	202	Dieback (hardwood)	Hardwood
21	Pine borer	Ponderosa Pine	69	Pryzon black stain	Common Pinyon	203	Dieback (poplar)	Poplar
22	Pine borer	Ponderosa Pine	70	Fire	All Tree Species	210	Mortality (old cottonwood)	Eastern Red Cedar
23	Pine borer	Ponderosa Pine	71	Girdling	All Tree Species	211	Mortality (eastern cedar)	Hardwoods
24	Pine borers	Ponderosa Pine	72	Windthrow	All Tree Species	212	Mortality (cottonwood)	Hardwoods
25	Pine borers	Ponderosa Pine	73	High water damage	All Tree Species	213	Mortality (spruce)	Oak
26	Pine borers	Ponderosa Pine	74	Avalanche	All Tree Species	214	Discoloration (ash)	Spruce
27	Pine borers	Ponderosa Pine	75	Multiple-multiple agents	Common Pinyon	220	Discoloration (ash)	Ash
28	Pine borers	Ponderosa Pine	76	Pinyon pine mortality	Common Pinyon	221	Discoloration (cottonwood)	Hardwoods
29	Pine borers	Ponderosa Pine	77	Pinyon mortality (uncommon agents)	Gambel Oak	222	Discoloration (eastern cedar)	Cottonwood/Poplar
30	Pine borers	Ponderosa Pine	78	Gambel oak decline-uncommon agents	Gambel Oak	223	Discoloration (eastern cedar)	Eastern Red Cedars
31	Carnekeborre	Hardwoods	79	Linber pine decline-multiple agents	Liner Pine	224	Discoloration (oak)	Hardwoods
32	Unidentified defolator	Hardwoods	80	Hail damage	All Tree Species	225	Discoloration (spruce)	Oak
33	Leaf beetles	Hardwoods	81	Shaded leaf polygony	Common Pinyon	231	Herbicide (eastern cedar)	Eastern Red Cedar
34	Oak leaf roller	Hardwoods	82	Old pines	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
35	Pine needle-sheath miner	Ponderosa Pine	83	Old soft lps	Elm	241	Flagging (cottonwood)	Cottonwood/Poplar
36	Pine needle-sheath miner	Ponderosa Pine	84	103 dipodia blight	Ponderosa Pine	251	Unidentified defolator (elm)	Elm
37	Carnekeborre	Hardwoods	85	Unknown	White Spruce	252	Unidentified defolator (hardwood)	Hardwoods
38	Unidentified caterpillar	Hardwoods	86	Unknown	Narrowleaf Cottonwood	253	Mortality (pine)	Pine
39	Unidentified defolator	All Tree Species	87	104 los humens				
40	Asterolecanium annosum (Fomes annosus)	Schwarzs	88	105 drought killed narrow leaf cottonwood				
41	Asterolecanium annosum (Fomes annosus)	Schwarzs	89					
42	Asphondyliaparvula (Amillaria mellea)	Schwarzs	90					
43	Polytopus schwedleri	Schwarzs	91					
44	Phomopsis	Schwarzs	92					
45	All Tree Species	Schwarzs	93					
46	Western gall rust	Unknown	94					
47	Comandra rust	Unknown	95					
48	Strobiforme rust	Lodgepole Pine	96					

### 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 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.

### 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 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/>

**Area surveyed by  
Map Created:  
Projection: UTM NAD83 Zone 13  
Author: J. Ross, USDA Forest Service**