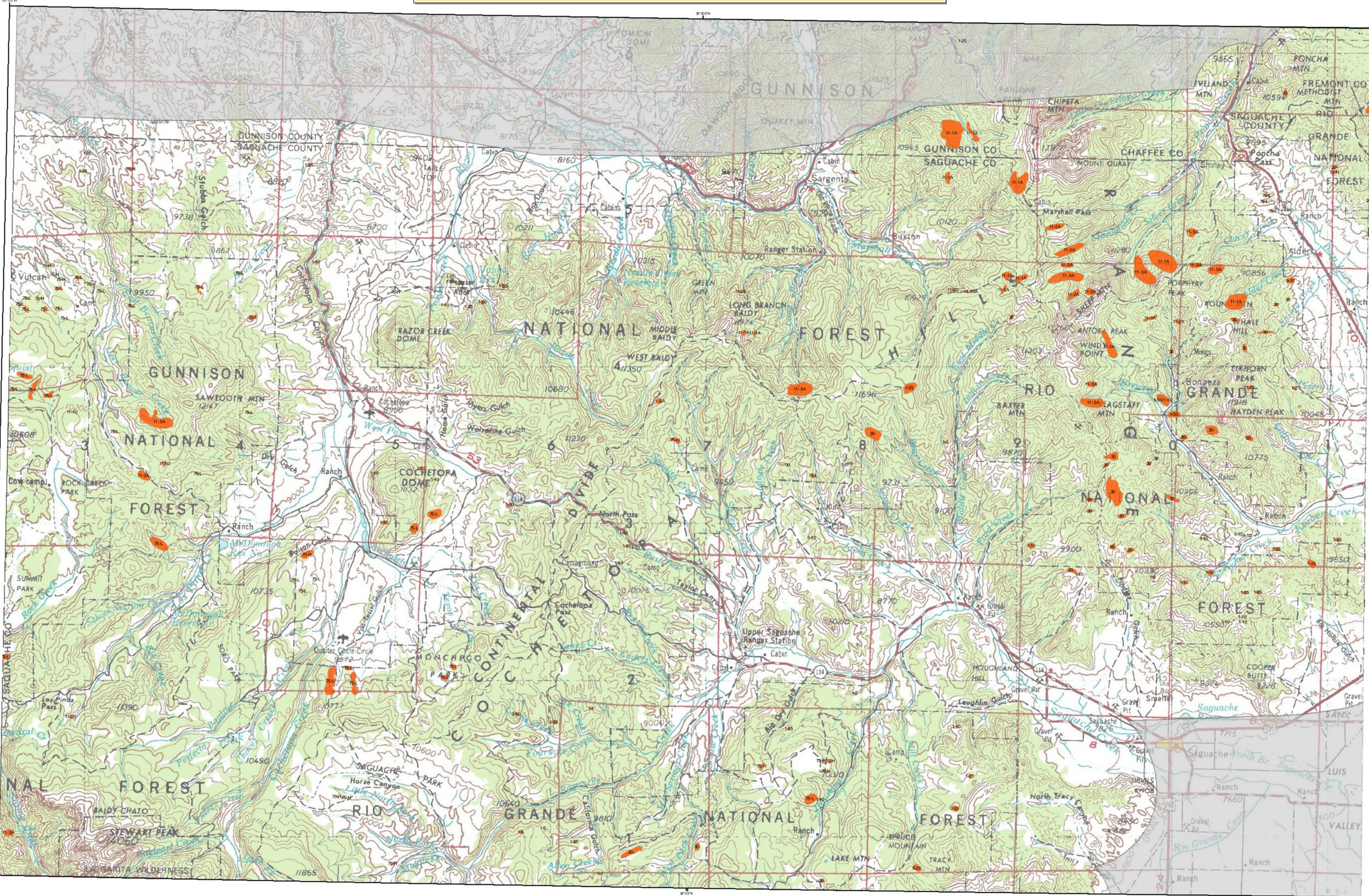


2010 Aerial Insect and Disease Survey Saguache, Colorado USGS 100K TOPO!: 38106-A1

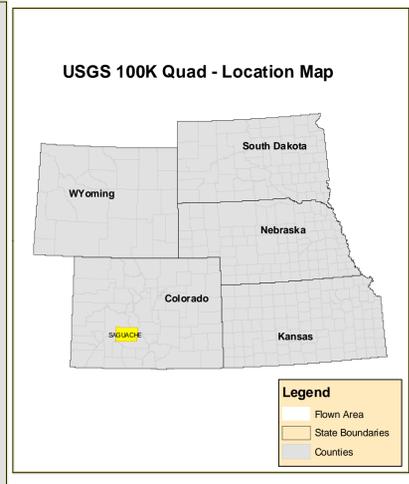
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1:100,000

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	105	Box squirrel flagging	Cottontwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	107	fall webworm	Cottontwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	109	pinewood nematode	Scottish Pine
5	Needle scale	White Fir	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	111	oak disease	All Tree Species
7	Fire Enginer	White Fir	112	spruce ips	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	113	tree-killing bark beetle	Oak
9	Western balsam bark beetle	Subalpine Fir	114	anthracnose like foliar disease	Bur Oak
10	Unidentified bark beetle	Softwoods	115	Dieback	All Tree Species
11	Pine engraver	Lodgepole Pine	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	118	Heterostyly	All Tree Species
14	Ponderosa pine needle-miner	Ponderosa Pine	119	Flagging	All Tree Species
15	Lodgepole pine needle-miner	Lodgepole Pine	120	spine totini	Quaking Aspen
16	Jack pine budworm	Jack Pine	121	Matsucosia Blight	Oak
17	Spruce budworm, light defol.	Douglas-fir	122	Dieback (oak)	Ash
18	Spruce budworm, medium defol.	Douglas-fir	200	Dieback (hardwood)	Cottontwood/Poplar
19	Spruce budworm, heavy defol.	Douglas-fir	201	Dieback (oak)	Oak
20	Douglas-fir tussock moth	Douglas-fir	202	Mortality (oak)	Eastern Red Cedar
21	Pine butterfly	Ponderosa Pine	203	Mortality (spruce)	Spruce
22	Pine looper	Common Piñon	204	Discoloration (ash)	Ash
23	Pine tortrix	Hardwoods	205	Discoloration (cottonwood)	Cottontwood/Poplar
24	Tent caterpillars	Hardwoods	206	Discoloration (eastern cedar)	Eastern Red Cedar
25	Leaf beetles	Hardwoods	207	Discoloration (hardwood)	Hardwoods
26	Oak leaf roller	Hardwoods	208	Discoloration (oak)	Oak
27	Pine needle-sheath miner	Ponderosa Pine	209	Discoloration (spruce)	Spruce
28	Pine sawflies	Ponderosa Pine	210	Heterostyly (cottonwood)	Cottontwood/Poplar
29	Pine tussock moth	Ponderosa Pine	211	Mortality (eastern cedar)	Eastern Red Cedar
30	Carpenorhynchus	Hardwoods	212	Mortality (oak)	Oak
31	Variable oak leaf caterpillar	Hardwoods	213	High water damage	Spruce
32	Unidentified defoliator	Softwoods	214	Discoloration (ash)	Ash
33	Heterostyly artemisia (Formos artemisia)	All Tree Species	215	Discoloration (cottonwood)	Cottontwood/Poplar
34	Artemisia ostryae (Artemisia melica)	Softwoods	216	Discoloration (eastern cedar)	Eastern Red Cedar
35	Polyporus schweinitzii	Softwoods	217	Discoloration (oak)	Oak
36	Phytophthora	Softwoods	218	Discoloration (spruce)	Spruce
37	Cytospora	All Tree Species	219	Heterostyly (cottonwood)	Cottontwood/Poplar
38	Western gall rust	Unknown	220	Heterostyly (eastern cedar)	Eastern Red Cedar
39	Comandra rust	Unknown	221	Flagging (hardwood)	Hardwood
40	Stachytarax rust	Lodgepole Pine	222	Unidentified defoliator (cottonwood)	Cottontwood/Poplar
41			223	Unidentified defoliator (oak)	Oak
42			224	Unidentified defoliator (spruce)	Spruce
43			225	Unidentified defoliator (hardwood)	Hardwoods
44			226	Mortality (pine)	Pine
45			227		
46			228		
47			229		
48			230		



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.

Map Created July 30 2010
Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service

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/fhn/aerialsurvey/>

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

Forest Health Protection (FHP) and its partners strive to maintain an accurate Aerial Detection Survey (ADS) Dataset, but due to the conditions under which the data are collected, FHP and its partners shall not be held responsible for missing or inaccurate data. ADS are not intended to replace more specific information. An accuracy assessment has not been done for this dataset; however, ground checks are completed in accordance with local and national guidelines <http://www.fs.fed.us/foresthealth/aviation/qualityassurance.shtml>. Maps and data may be updated without notice. Please cite "USDA Forest Service, Forest Health Protection and its partners" as the source of this data in maps and publications.

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.