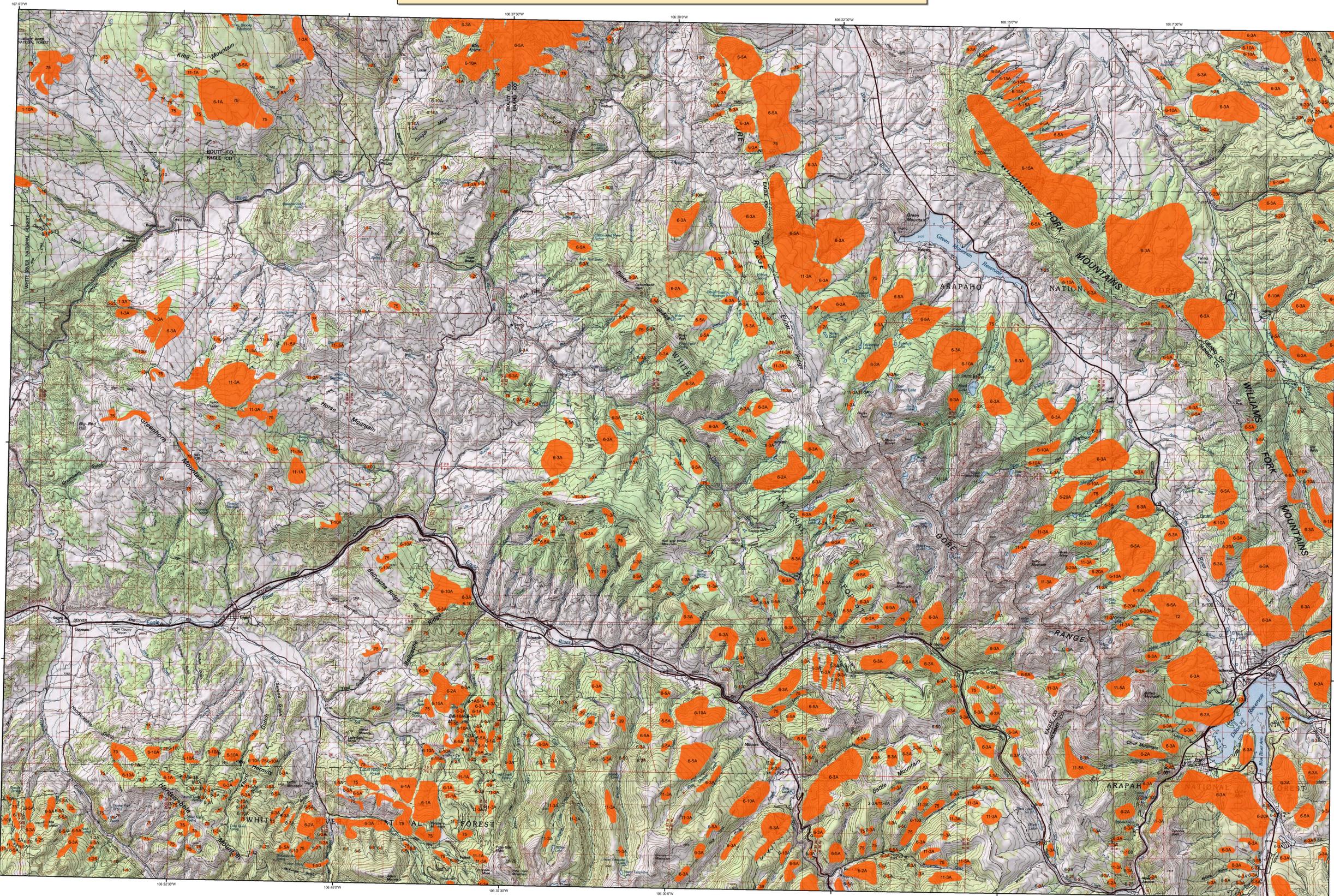
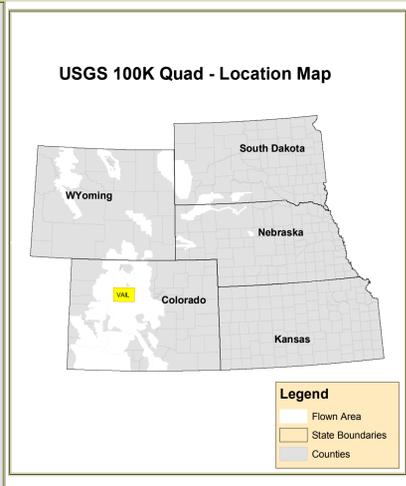


2007 Aerial Insect and Disease Survey Vail, Colorado USGS 100K DRG: 39106-E1



1:100,000

Code	Causal Agent(s)	Primary Host	Code	Causal Agent(s)	Primary Host
1	Douglas-fir beetle	Douglas-fir	106	fox squirrel flagging	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann spruce	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa pine	108	east salt	Softwoods
4	Mountain pine beetle	Lodgepole pine	109	pinewood nematode	Softwoods
5	Mountain pine beetle	5-Needle Pine	110	oak wilt	Oak
6	Western pine beetle	Ponderosa pine	111	foliage disease	All Tree Species
7	Western pine beetle	White fir	112	spruce ips	White Spruce
8	Western pine beetle	Douglas-fir	113	bedford chestnut borer	All Tree Species
9	Western pine beetle	Subalpine fir	114	anthracnose like foliar disease	Sur Oak
10	Western pine beetle	Lodgepole pine	115	Diaback	All Tree Species
11	Western balsam bark beetle	Softwoods	116	Mortality	All Tree Species
12	Western balsam bark beetle	Lodgepole pine	117	Discoloration	All Tree Species
13	Western balsam bark beetle	Jack pine	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa pine	119	Flagging	Quaking Aspen
15	Ponderosa pine needle miner	Lodgepole pine	120	aspen tottis	Quaking Aspen
16	Lodgepole pine needle miner	Jack pine	121	Marschnera Blight	Ash
17	Jack pine budworm	Douglas-fir	122	Diaback (softwood)	Cottonwood/Poplar
18	Spruce budworm, light defol.	Douglas-fir	123	Diaback (hardwood)	Hardwoods
19	Spruce budworm, medium defol.	Douglas-fir	200	Diaback (ash)	Ash
20	Spruce budworm, heavy defol.	Douglas-fir	201	Mortality (oak cottonwood)	Cottonwood/Poplar
21	Douglas-fir tussock moth	Ponderosa pine	202	Mortality (eastern cedar)	Eastern Red Cedar
22	Pine tussock moth	Jack pine	203	Mortality (hardwood)	Hardwoods
23	Pine tussock moth	Ponderosa pine	204	Mortality (spruce)	Spruce
24	Pine tussock moth	White fir	205	Discoloration (ash)	Ash
25	Leaf beetle	Hardwoods	206	Discoloration (cottonwood)	Cottonwood/Poplar
26	Oak leaf roller	Hardwoods	207	Discoloration (eastern cedar)	Eastern Red Cedar
27	Pine needle-miner	Ponderosa pine	208	Discoloration (oak)	Oak
28	Pine needle-miner	Ponderosa pine	209	Discoloration (spruce)	Spruce
29	Pine needle-miner	Ponderosa pine	210	Discoloration (larch)	Larch
30	Pine tussock moth	Ponderosa pine	211	Discoloration (fir)	Fir
31	Carline tortoise	Hardwoods	212	Discoloration (fir)	Fir
32	Variable oak leaf defoliation	Hardwoods	213	Discoloration (fir)	Fir
33	Unidentified defolator	All Tree Species	214	Discoloration (fir)	Fir
34	Heterodendron anisus (Fomes anisus)	Softwoods	215	Discoloration (fir)	Fir
35	Armillaria ostroyae (Armillaria mellea)	Softwoods	216	Discoloration (fir)	Fir
36	Polygonia salsessoides	Softwoods	217	Discoloration (fir)	Fir
37	Phomopsis	Softwoods	218	Discoloration (fir)	Fir
38	Cytospora	All Tree Species	219	Discoloration (fir)	Fir
39	Western gall rust	Unknown	220	Discoloration (fir)	Fir
40	Comandra rust	Unknown	221	Discoloration (fir)	Fir
41	Sheathlike rust	Lodgepole pine	222	Discoloration (fir)	Fir



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.

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Map Created: 01/11/2008
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/fhm/aerialsurvey/>