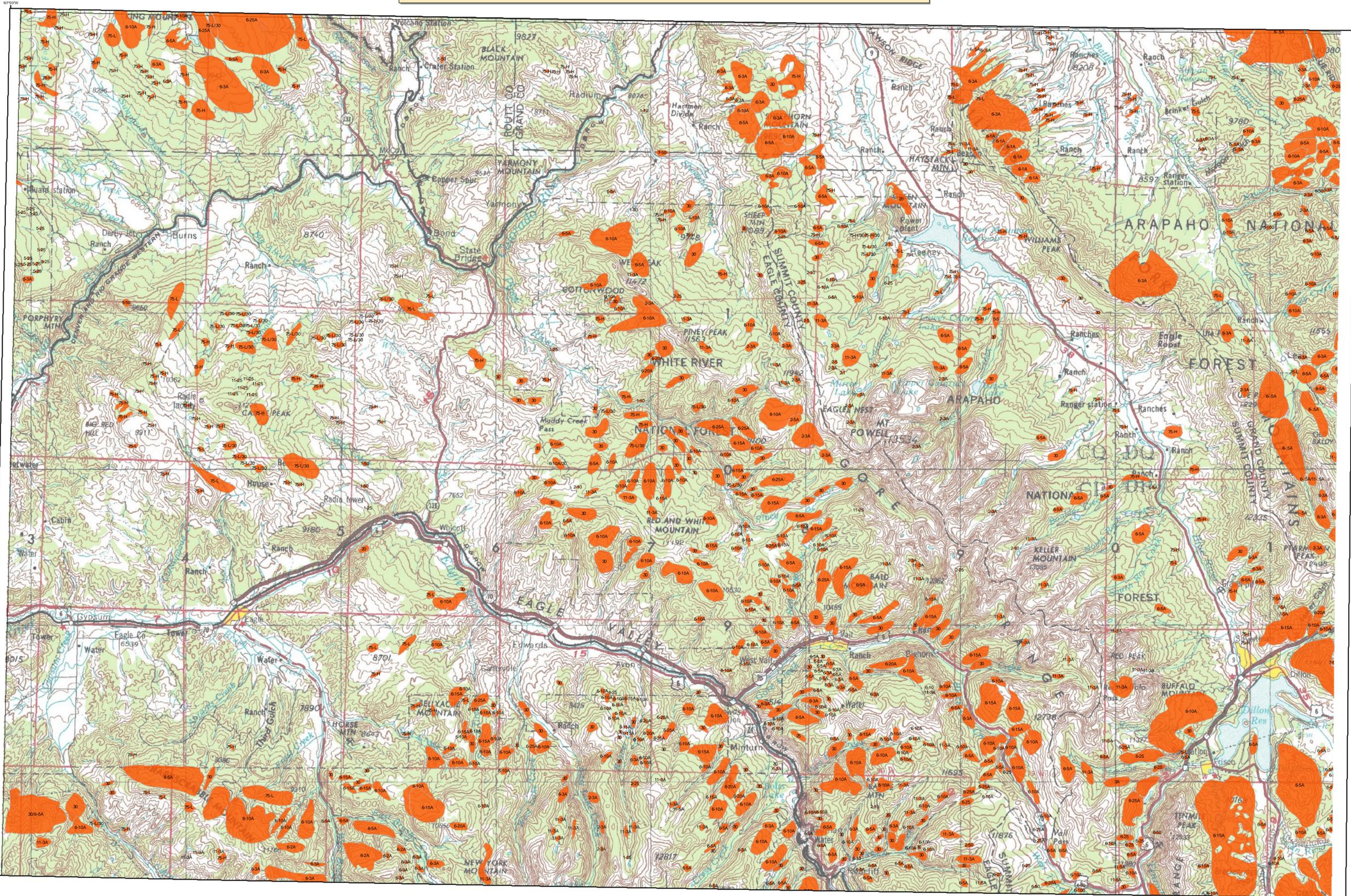


2009 Aerial Insect and Disease Survey Vail, Colorado USGS 100K DRG: 39106-E1

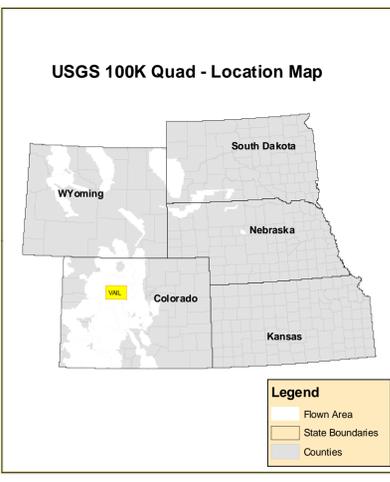


1:100,000

Legend

Use of the Number System
 Example: 5-25 = 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 Light, Moderate, and High may be used after the causal agent code. Periodically, trees per acre estimates are used after the causal agent code instead of number of dead "fader" trees (or an intensity code). For example: 5-1/2A = 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 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 "T" 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
1	Douglas fir beetle	Douglas fir	100	fox squirrel gnawing	Lodgepole Pine
2	Engelmann spruce beetle	Engelmann spruce	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Lodgepole Pine	108	oak leaf	Softwoods
4	Mountain pine beetle	Lodgepole Pine	109	pine wood nematode	Scottish Pine
5	Western pine beetle	Ponderosa Pine	110	oak wilt	All Tree Species
6	Fire engraver	White fir	111	foliage disease	White Spruce
7	Douglas fir engraver beetle	Douglas fir	112	spine tip	Oak
8	Western balsam bark beetle	Subalpine fir	113	bedford chestnut borer	All Tree Species
9	Unidentified bark beetle	Softwoods	114	anthracnose like foliar disease	Sur Oak
10	Pine engraver	Lodgepole Pine	115	Dieback	All Tree Species
11	Ponderosa pine needle miner	Ponderosa Pine	116	Mortality	All Tree Species
12	Jack pine budworm	Jack Pine	117	Discoloration	All Tree Species
13	Spruce budworm, light defol.	Douglas fir	118	Herbivory	All Tree Species
14	Spruce budworm, medium defol.	Douglas fir	119	Flagging	Quaking Aspen
15	Spruce budworm, heavy defol.	Douglas fir	120	aspen totinx	Quaking Aspen
16	Douglas fir tussock moth	Douglas fir	121	Marschneria Blight	Ash
17	Pine looper	Ponderosa Pine	200	Dieback (ash)	Ash
18	Tent caterpillars	Hardwoods	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Leaf beetles	Hardwoods	202	Dieback (hardwood)	Hardwoods
20	Oak leaf roller	Hardwoods	204	Dieback (oak)	Oak
21	Pine needle-shear miner	Ponderosa Pine	210	Mortality (old cottonwood)	Cottonwood/Poplar
22	Pine sawflies	Ponderosa Pine	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine tussock moth	Ponderosa Pine	212	Mortality (hardwood)	Hardwoods
24	Variable oak leaf defoliator	Hardwoods	213	Mortality (oak)	Oak
25	Unidentified defoliator	Hardwoods	214	Mortality (spruce)	Spruce
26	Heterobasidion annosum (Fomes annosus)	Softwoods	220	Discoloration (ash)	Ash
27	Armillaria ostroyae (Armillaria mellea)	Softwoods	221	Discoloration (cottonwood)	Cottonwood/Poplar
28	Polygona schweinitzii	Softwoods	222	Discoloration (eastern cedar)	Eastern Red Cedar
29	Phonopias	Softwoods	223	Discoloration (softwood)	Softwoods
30	Western gird rust	All Tree Species	224	Discoloration (hardwood)	Hardwoods
31	Comandra rust	Unknown	225	Discoloration (oak)	Oak
32	Stachytarax rust	Lodgepole Pine	226	Discoloration (spruce)	Spruce
33			230	Herbivore (cottonwood)	Cottonwood/Poplar
34			231	Herbivore (eastern cedar)	Eastern Red Cedar
35			240	Flagging (hardwood)	Hardwoods
36			250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37			251	Unidentified defoliator (elm)	Elm
38			252	Unidentified defoliator (hardwood)	Hardwoods
39			300	Mortality (pine)	Pine



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 December 3 2009
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/fhm/aerialsurvey/>

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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/qia/accuracyassessment.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.