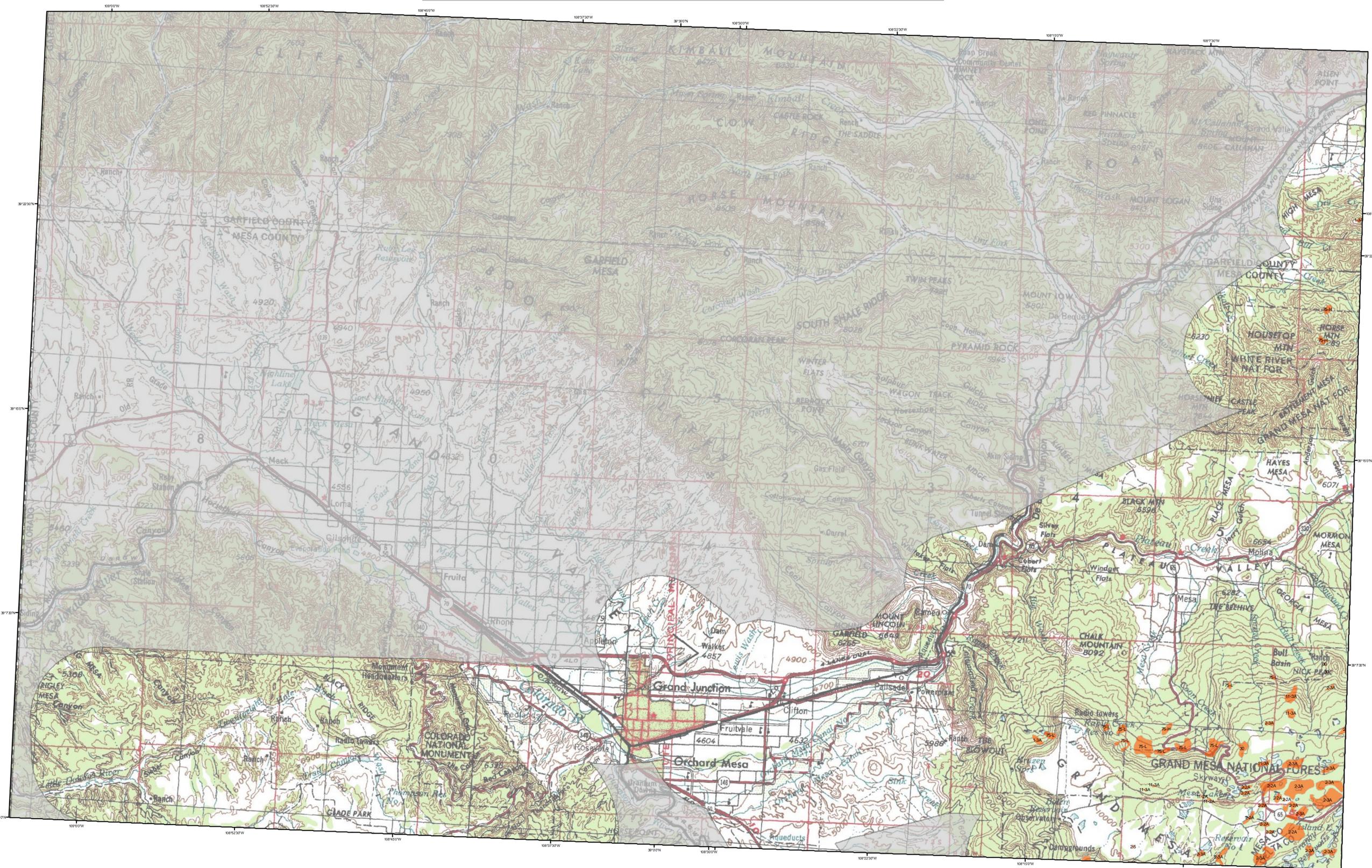


2010 Aerial Insect and Disease Survey Grand Junction and WestWater, Colorado USGS 100K TOPO!: 39108-A1 & 39109-A1



1:105,000

Legend

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 "tender" 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 "tender" 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 "tender" 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 "tender" tree. In another example: 5-2A = that on the average, an estimated three trees per acre are dead "tender" trees. A "P" 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	59	Ring-necked Puffin	Lodgepole Pine			
2	Engelmann Spruce Beetle	Engelmann Spruce	60	White pine blister rust	5-Needle Pine			
3	Mountain pine beetle	Ponderosa Pine	61	Dwarf mistletoe	Softwoods			
4	Mountain pine beetle	Lodgepole Pine	62	Elysiodesma	Ponderosa Pine			
5	Mountain pine beetle	5-Needle Pine	63	Hedysia spp. 50 & 69	All Tree Species			
6	Mountain pine beetle	Ponderosa Pine	64	Air pollution	All Tree Species			
7	Western pine beetle	White Fir	65	Chemical damage	All Tree Species			
8	Fire Engraver	Oak	66	Lophodermium prostratum	Softwoods			
9	Douglas-fir engraver beetle	Subalpine Fir	67	Rhabdocline pseudotsugae	Douglas-fir			
10	Douglas-fir engraver beetle	Douglas-fir	68	Lophodermium arcutum	Softwoods			
11	Western balsam bark beetle	Lodgepole Pine	69	Leucosticte alacosta	Softwoods			
12	Unidentified bark beetle	Ponderosa Pine	70	Lophodermium concolor	Softwoods			
13	Pine engraver	Lodgepole Pine	71	Cochlosporium	Softwoods			
14	Pine engraver	Ponderosa Pine	72	Needle cast (Hypodermataceae)	Softwoods			
15	Ponderosa pine needle miner	Lodgepole Pine	73	Unidentified disease	Softwoods			
16	Lodgepole pine needle miner	Jack Pine	74	Winter damage light	All Tree Species			
17	Jack pine budworm	Douglas-fir	75	Winter damage medium	All Tree Species			
18	Spruce budworm, light defol.	Douglas-fir	76	Winter damage heavy	All Tree Species			
19	Spruce budworm, heavy defol.	Douglas-fir	77	Pinyon black stain	Common Pinyon			
20	Douglas-fir tussock moth	Douglas-fir	78	Porcupine	Softwoods			
21	Pine butterfly	Ponderosa Pine	79	Windthrow	All Tree Species			
22	Pine looper	Ponderosa Pine	80	High water damage	All Tree Species			
23	Pine tortrix	Hardwoods	81	Avian/hoop	All Tree Species			
24	Tent caterpillars	Hardwoods	82	Aspen decline-multiple agents)	Common Pinyon			
25	Leaf beetles	Hardwoods	83	Pinyon pine mortality	Common Pinyon			
31	Oak leaf roller	Hardwoods	84	Juniper mortality (unknown agents)	Juniper			
32	Pine needle-shaft miner	Ponderosa Pine	85	Canine oak decline (unknown agents)	Limber Pine			
33	Pine needle-shaft miner	Ponderosa Pine	86	Limber pine decline-multiple agents)	Limber Pine			
34	Pine tussock moth	Ponderosa Pine	87	Unidentified defoliator	All Tree Species			
35	Pine tussock moth	Hardwoods	88	Armillaria ostoyae (Armillaria mellea)	Softwoods			
36	Canine oak leaf caterpillar	Hardwoods	89	Phytophthora cinnamomi	Softwoods			
37	Unidentified defoliator	All Tree Species	90	Phytophthora cinnamomi	Softwoods			
38	Unidentified defoliator	Hardwoods	91	Cytospora	All Tree Species			
39	Armillaria ostoyae (Armillaria mellea)	Softwoods	92	Western gall rust	Unknown			
40	Phytophthora cinnamomi	Softwoods	93	Comandra rust	Unknown			
41	Phytophthora cinnamomi	Softwoods	94	Spaciiforme rust	Lodgepole Pine			
42	Armillaria ostoyae (Armillaria mellea)	Softwoods						
43	Phytophthora cinnamomi	Softwoods						
44	Phytophthora cinnamomi	Softwoods						
45	Cytospora	All Tree Species						
46	Western gall rust	Unknown						
47	Comandra rust	Unknown						
48	Spaciiforme rust	Lodgepole Pine						
100	Unidentified defoliator (cottonwood)	Cottonwood/Poplar	105	Unidentified defoliator (hardwood)	Hardwoods			
101	Unidentified defoliator (elm)	Elm	106	Mortality (pine)	Pine			
102	Unidentified defoliator (spruce)	Spruce						
103	Unidentified defoliator (cedar)	Eastern Red Cedar						
104	Unidentified defoliator (cedar)	Eastern Red Cedar						
105	Unidentified defoliator (cedar)	Eastern Red Cedar						



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 November 1 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/>

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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/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.