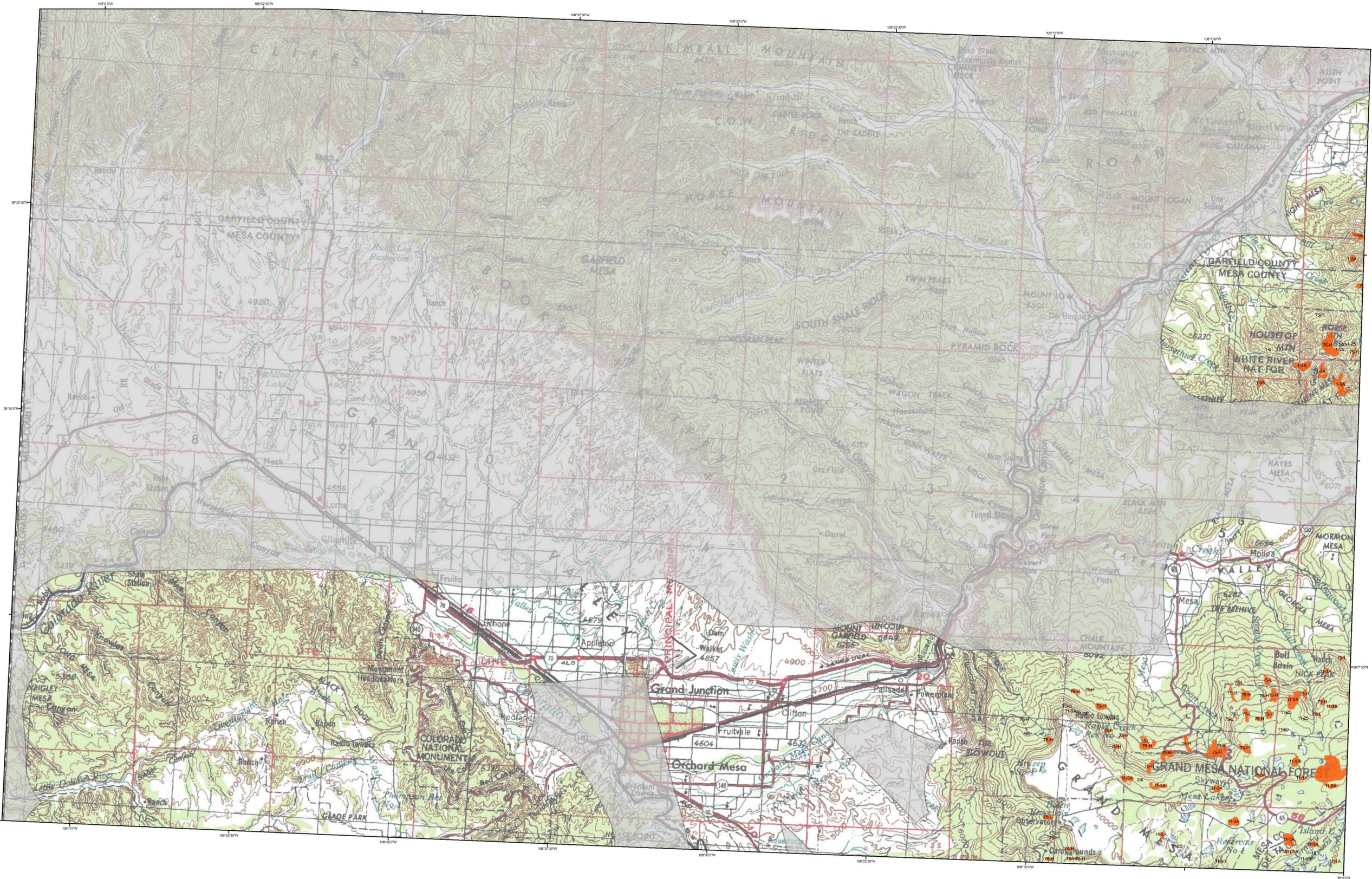


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2008 Aerial Insect and Disease Survey Grand Junction and WestWater, Colorado USGS 100K TOPO!: 39108-A1 & 39109-A1

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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 "ladder" 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 acre estimates are used after the causal agent code instead of number of dead "ladder" 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 "ladder" 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 "ladder" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "ladder" 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	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	59	Ring-necked Puffin	Logan Pine	102	Soybean Rust	Cottonwood
2	Engelmann Spruce Beetle	Engelmann Spruce	60	White pine blister rust	5-Needle Pine	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	61	Dwarf mistletoe	Softwoods	108	red oak	Softwoods
4	Mountain pine beetle	Logan Pine	62	Elyrodemia	Ponderosa Pine	109	pinewood nematode	Scotch Pine
5	Mountain pine beetle	5-Needle Pine	63	Isodora	All Tree Species	110	oak wilt	Oak
6	Mountain pine beetle	Ponderosa Pine	64	Air pollution	All Tree Species	111	rotting disease	All Tree Species
7	Western pine beetle	White Fir	65	Chemical damage	All Tree Species	112	spruce ips	White Spruce
8	Fire Engraver	Douglas-fir	66	Lophodermium prostratum	Softwoods	113	bedford chestnut borer	Oak
9	Douglas-fir engraver beetle	Subalpine Fir	67	Rhabdocline pseudotsugae	Douglas-fir	114	anthracnose like foliar disease	Bur Oak
10	Western balsam bark beetle	Softwoods	68	Lophodermium arcaudae	Softwoods	115	Diabrotica	All Tree Species
11	Unidentified bark beetle	Logan Pine	69	Leucosticte acicola	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	70	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Logan Pine	71	Cotoneaster pine	Softwoods	118	Hepaticae	All Tree Species
14	Pine engraver	Ponderosa Pine	72	Needle cast (Hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Logan Pine	73	Unidentified disease	All Tree Species	120	Aspen decline	Quaking Aspen
16	Logan pine needle miner	Ponderosa Pine	74	Winter damage light	All Tree Species	121	Manrossiana blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	75	Winter damage medium	All Tree Species	200	Diabrotica (oak)	Ash
18	Spruce budworm, light defol.	Douglas-fir	76	Winter damage heavy	All Tree Species	201	Diabrotica (cottonwood)	Cottonwood/Poplar
19	Spruce budworm, medium defol.	Douglas-fir	77	Winter damage very heavy	All Tree Species	202	Diabrotica (hardwood)	Hardwoods
20	Spruce budworm, heavy defol.	Douglas-fir	78	Pinon black stain	Common Pinon	204	Diabrotica (oak)	Oak
21	Douglas-fir tussock moth	Douglas-fir	79	Pinon pine mortality	Common Pinon	210	Mortality (old cottonwood)	Cottonwood/Poplar
22	Pine butterfly	Ponderosa Pine	80	Leaf damage	Softwoods	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine looper	Ponderosa Pine	81	Porcupine	Softwoods	212	Mortality (hardwood)	Hardwoods
24	Pine looper	Hardwoods	82	Windthrow	All Tree Species	213	Mortality (spruce)	Spruce
25	Leaf beetles	Hardwoods	83	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Pine tortrix	Hardwoods	84	Avian	All Tree Species	220	Discoloration (ash)	Ash
27	Pine needle-shaft miner	Ponderosa Pine	85	Aspen decline-multiple agents)	Softwoods	221	Discoloration (cedar)	Softwoods
28	Pine needle-shaft miner	Ponderosa Pine	86	Pinon pine mortality	Common Pinon	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Pine needle-shaft miner	Hardwoods	87	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Western gall rust	Unknown	88	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
31	Comandra rust	Unknown	89	Limber pine decline-multiple agents)	Limber Pine	225	Discoloration (oak)	Oak
32	Spaciiforme rust	Logan Pine	90	Unidentified defoliator	Common Pinon	226	Flagging (hardwood)	Hardwoods
33	Unidentified defoliator	All Tree Species	91	Unidentified defoliator	Logan Pine	230	Hepaticae (eastern cedar)	Eastern Red Cedar
34	Unidentified defoliator	Hardwoods	92	Old pinon mortality	Common Pinon	231	Flagging (hardwood)	Hardwoods
35	Armillaria ostoyae (Armillaria mellea)	Softwoods	93	Need cast (ip)	Logan Pine	232	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
36	Phytophthora cinnamomi	Softwoods	94	slab elm disease	Elm	233	Unidentified defoliator (elm)	Elm
37	Phytophthora cinnamomi	Softwoods	95	slab elm disease	Elm	234	Unidentified defoliator (hardwood)	Hardwoods
38	Cytospora	All Tree Species	96	los hunters	Spruce, White Spruce	300	Mortality (ipin)	Pine
39	Western gall rust	Unknown	97	straight killed narrow leaf cottonwood	Narrowleaf Cottonwood			
40	Comandra rust	Unknown						
41	Spaciiforme rust	Logan Pine						

USGS 100K Quad - Location Map



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.

Area surveyed by
Map created:
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/>