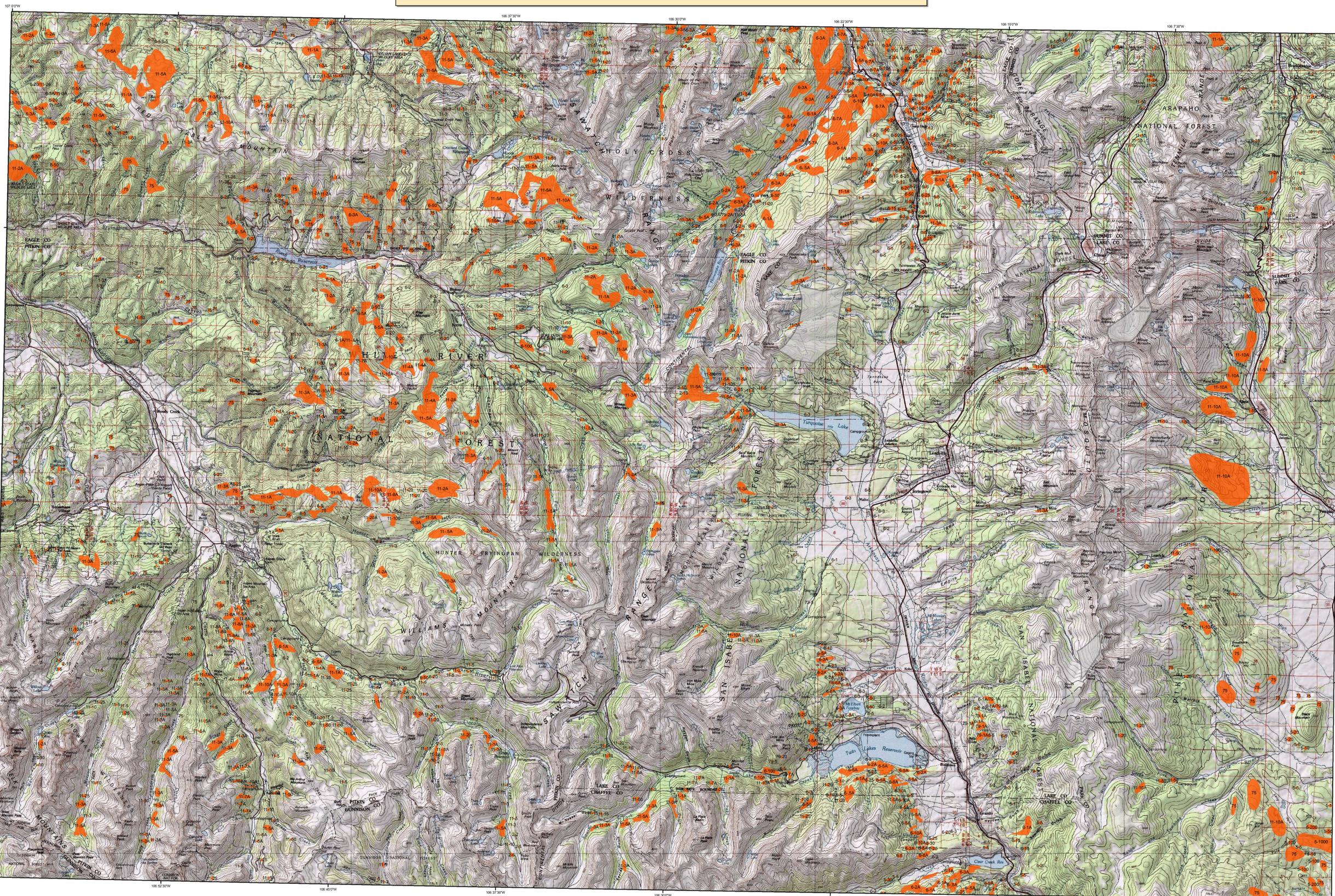


2006 Aerial Insect and Disease Survey Leadville, Colorado USGS 100K TOPO!: 39106-A1

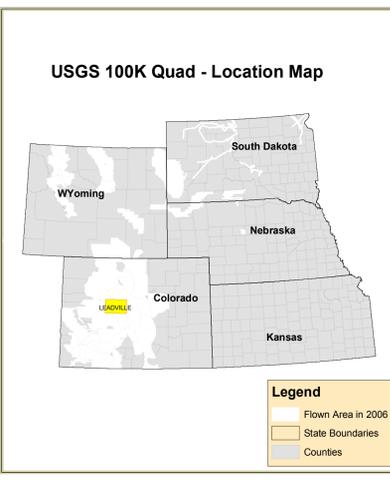


1:100,000

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 "fader" 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 "fader" 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 "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 "." 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	80	Arthropod	Lodgepole Pine	102	Ice-crown flagging	Cottwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	81	White pine blister rust	5-Needle Pine	107	fall weevorm	Cottwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	82	Dwarf mistletoe	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	83	Eurostema	Ponderosa Pine	109	greenwood nematode	Scots Pine
5	Mountain pine beetle	5-Needle Pine	84	Includes #90, 95 & 99	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	85	Air pollution	All Tree Species	111	ring-barked disease	All Tree Species
7	Fir Engraver	White Fir	86	Chemical damage	All Tree Species	112	spruce ips	White Spruce
8	Douglas fir engraver beetle	Douglas fir	87	Lophodermium pinastri	Softwoods	113	swelled chestnut borer	Oak
9	Western bark beetle	Subalpine Fir	88	Rhabdocne pseudotsugae	Douglas fir	114	anthracnose leaf blotch disease	Bur Oak
10	Unidentified bark beetle	Softwoods	89	Lophodermium arcuta	Softwoods	115	Diaback	All Tree Species
11	Pine engraver	Lodgepole Pine	90	Leucostoma acicola	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	91	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	92	Daktariopsis sp.	Softwoods	118	Heterobasium	All Tree Species
14	Pine engraver	Ponderosa Pine	93	Needle cast (hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Lodgepole pine needle miner	Lodgepole Pine	94	Root Rot	All Tree Species	120	aspen tortix	Quaking Aspen
16	Lodgepole pine needle miner	Ponderosa Pine	95	Undersized disease	Softwoods	121	Marsdenia Blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	96	Winter damage light	All Tree Species	200	Diaback (ash)	Ash
18	Spruce budworm, light defol.	Douglas fir	97	Winter damage medium	All Tree Species	201	Diaback (cottonwood)	Cottwood/Poplar
19	Spruce budworm, medium defol.	Douglas fir	98	Winter damage heavy	All Tree Species	202	Diaback (hardwood)	Hardwoods
20	Spruce budworm, heavy defol.	Douglas fir	99	Winter damage severe	All Tree Species	204	Diaback (oak)	Oak
21	Douglas fir tussock moth	Douglas fir	100	Prionus bark stain	Common Piñon	210	Mortality (red cottonwood)	Cottwood/Poplar
22	Pine Butterfly	Ponderosa Pine	101	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine looper	Ponderosa Pine	102	Fire	All Tree Species	212	Mortality (hardwood)	Hardwoods
24	Leaf beetles	Hardwoods	103	Fire	All Tree Species	213	Mortality (oak)	Oak
25	Leaf beetles	Hardwoods	104	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Oak leaf roller	Hardwoods	105	Avalanche	All Tree Species	220	Discoloration (ash)	Ash
27	Pine needle-sheath miner	Ponderosa Pine	106	Aspen decline-multiple agent(s)	Quaking Aspen	221	Discoloration (conifer)	Softwoods
28	Pine tussock moth	Ponderosa Pine	107	Prionus bark stain	Common Piñon	222	Discoloration (cottonwood)	Cottwood/Poplar
29	Pine sawflies	Ponderosa Pine	108	Juniper mortality-unknown agent(s)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Pine tussock moth	Ponderosa Pine	109	Juniper mortality-unknown agent(s)	Juniper	224	Discoloration (hardwood)	Hardwoods
31	Variable oak leaf defoliation	Hardwoods	110	Lumber pine decline-multiple agent(s)	Lumber Pine	225	Discoloration (oak)	Oak
32	Unidentified defolator	All Tree Species	111	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Heterobasium annosum (Pines annosus)	Softwoods	112	Unknown pathogen	Common Piñon	227	Heterobasium (cottonwood)	Cottwood/Poplar
34	Armillaria ostroyae (Armillaria mellea)	Softwoods	113	Old pinon mortality	Lodgepole Pine	231	Heterobasium (eastern cedar)	Eastern Red Cedar
35	Polygonum softweaver	Softwoods	114	Old slash tip	Softwoods	240	Flagging (hardwood)	Hardwoods
36	Polygonum softweaver	Softwoods	115	Old slash tip	Softwoods	250	Unidentified defolator (cottonwood)	Cottwood/Poplar
37	Phomopsis	All Tree Species	116	Old slash tip	Softwoods	251	Unidentified defolator (elm)	Elm
38	Cytospora	All Tree Species	117	Old slash tip	Softwoods	252	Unidentified defolator (hardwood)	Hardwoods
39	Western gall rust	Unknown	118	Old slash tip	Softwoods	300	Mortality (pine)	Pine
40	Coniochaeta rust	Lodgepole Pine	119	Old slash tip	Softwoods			
41	Strobilomyces rust	Lodgepole Pine	120	Old slash tip	Softwoods			



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 Pat Ahern & Kelly Rogers 09/19 - 09/20 2006
Erik Johnson & Pat Ahern 07/24 - 07/31 2006
Map Created: 01/03/2007
Projection: UTM NAD83 Zone 13
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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/>