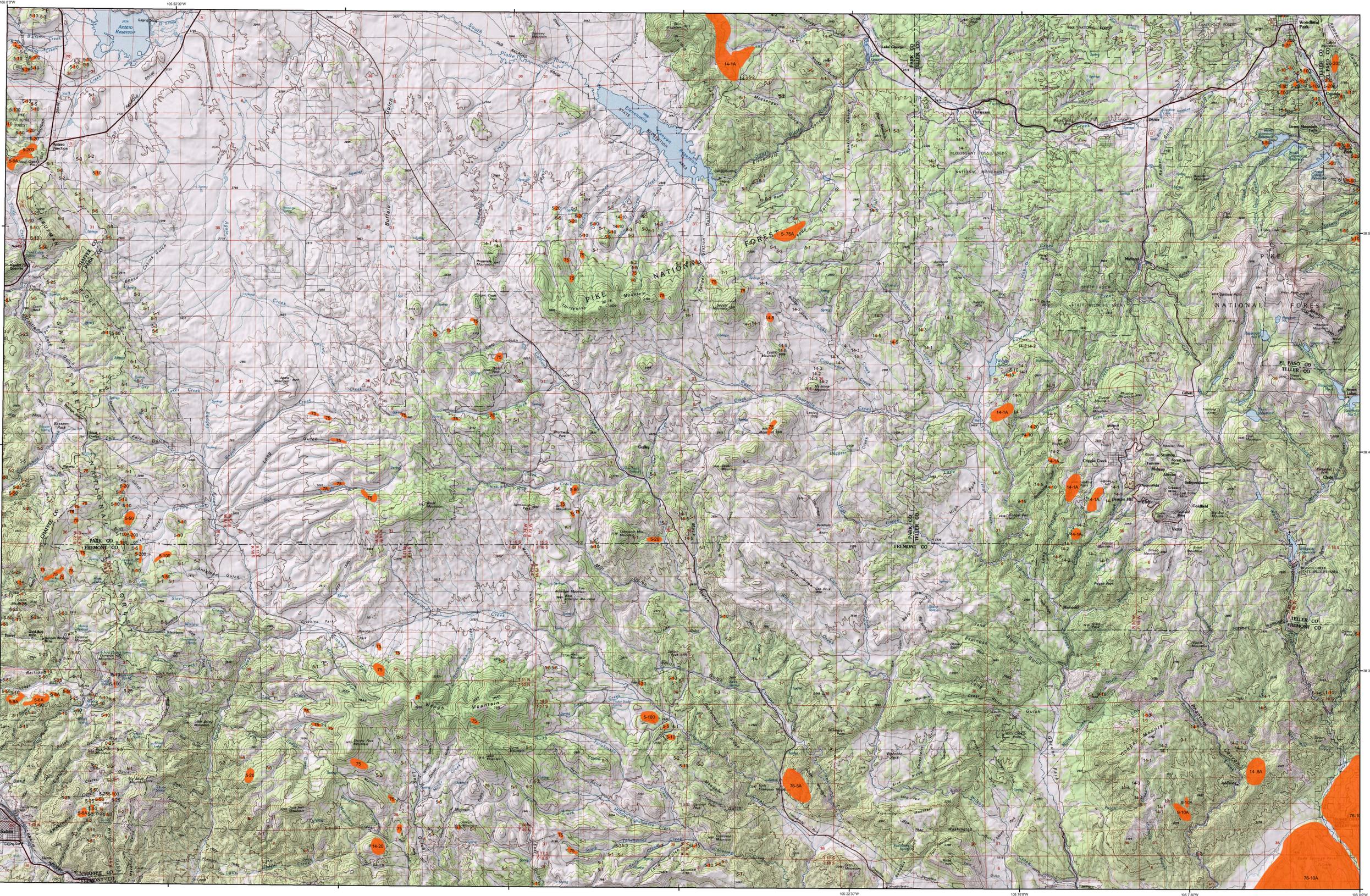
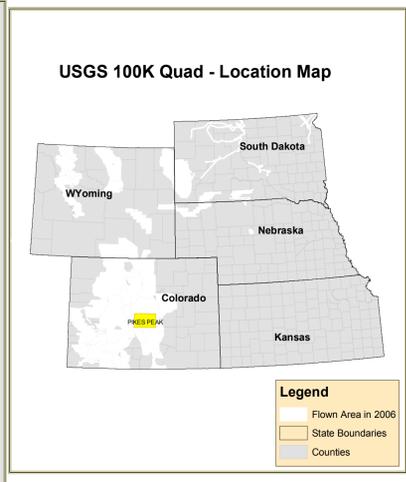


2006 Aerial Insect and Disease Survey Pikes Peak, Colorado USGS 100K TOPO!: 38105-E1



1:100,000

Legend		Causal Agent(s)	Not Flown in 2006		
<p>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: 5-120A = 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.</p>					
Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas fir beetle	Douglas-fir	100	fox squirrel flagging	Cottwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	107	fall webworm	Cottwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	108	grass tick	Softwoods
4	Mountain pine beetle	Lodgepole Pine	109	pinewood nematode	Scottish Pine
5	Mountain pine beetle	5-Needle Pine	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	111	ring-neck disease	All Tree Species
7	Fire Engulver	White Fir	112	spuce tip	White Spruce
8	Douglas fir engraver beetle	Douglas-fir	113	bellied sirenium borer	Oak
9	Fire Engulver	Subalpine Fir	114	anthracnose like foliar disease	Bur Oak
10	Western balsam bark beetle	Unidentified bark beetle	115	Dieback	All Tree Species
11	Unidentified bark beetle	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Lodgepole Pine	117	Discoloration	All Tree Species
13	Pine engraver	Ponderosa Pine	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	120	aspen tortix	Quaking Aspen
16	Ponderosa pine needle miner	Ponderosa Pine	121	Margosia Blight	Cottwood/Poplar
17	Jack pine budworm	Jack Pine	200	Dieback (ash)	Ash
18	Spine budworm, light defol.	Douglas-fir	201	Dieback (cottonwood)	Cottwood/Poplar
19	Spine budworm, medium defol.	Douglas-fir	202	Dieback (hardwood)	Hardwoods
20	Spine budworm, heavy defol.	Douglas-fir	204	Dieback (oak)	Oak
21	Douglas fir tussock moth	Douglas-fir	210	Mortality (old cottonwood)	Cottwood/Poplar
22	Pine butterfly	Ponderosa Pine	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine butterfly	Ponderosa Pine	212	Mortality (hardwood)	Hardwoods
24	Pine butterfly	Ponderosa Pine	213	Mortality (oak)	Oak
25	Pine needle-beetle miner	Hardwoods	214	Mortality (spruce)	Spruce
26	Pine needle-beetle miner	Hardwoods	220	Discoloration (ash)	Ash
27	Pine needle-beetle miner	Hardwoods	221	Discoloration (cottonwood)	Cottwood/Poplar
28	Leaf beetles	Hardwoods	222	Discoloration (eastern cedar)	Eastern Red Cedar
29	Oak leaf roller	Hardwoods	224	Discoloration (hardwood)	Hardwoods
30	Pine needle-beetle miner	Hardwoods	225	Discoloration (oak)	Oak
31	Pine tussock moth	Ponderosa Pine	226	Discoloration (spruce)	Spruce
32	Cankerworms	Hardwoods	227	Discoloration (eastern cedar)	Eastern Red Cedar
33	Variable oak leaf caterpillar	All Tree Species	228	Discoloration (hardwood)	Hardwoods
34	Unidentified defoliator	All Tree Species	229	Discoloration (oak)	Oak
35	Heterostichus amarus (Fomes annosus)	Softwoods	230	Hail damage	All Tree Species
36	Armillaria ostoyae (Armillaria mellea)	Softwoods	231	Herbicide (cottonwood)	Cottwood/Poplar
37	Polyporus schweinitzi	Softwoods	232	Herbicide (eastern cedar)	Eastern Red Cedar
38	Lathropia	Softwoods	240	Flagging (hardwood)	Hardwoods
39	Cytospora	All Tree Species	250	Unidentified defoliator (cottonwood)	Cottwood/Poplar
40	Western gall rust	Unknown	251	Unidentified defoliator (elm)	Elm
41	Comandra rust	Lodgepole Pine	252	Unidentified defoliator (hardwood)	Hardwoods
42	Stachytarax rust	Lodgepole Pine	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.

**Area surveyed by William Ciesla & Crystal Tischler
8/22 - 8/29 2006
Map Created: 12/2006
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/fmaerialsurvey/>