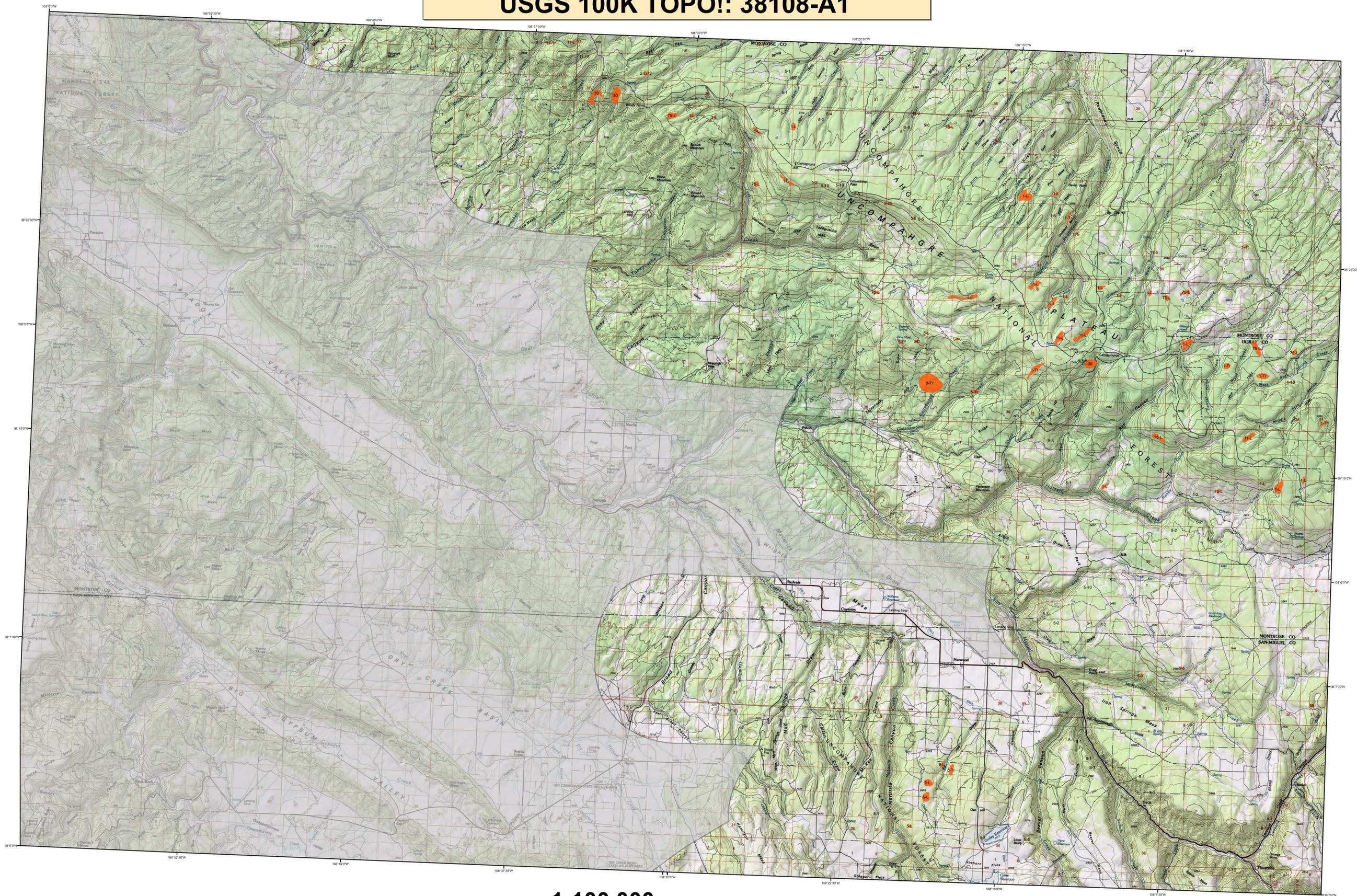
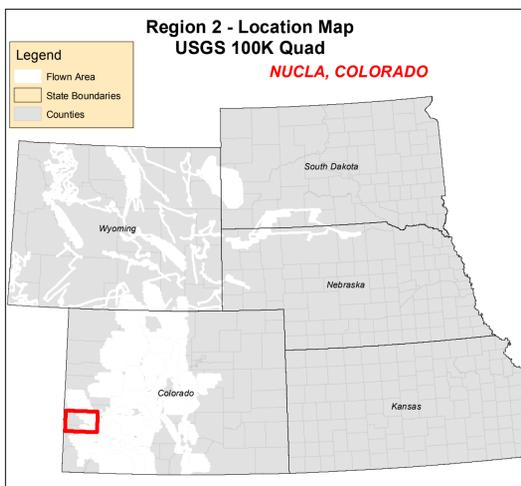


2014 Aerial Insect and Disease Survey NUCLA, COLORADO USGS 100K TOPO!: 38108-A1



1:100,000

Code	Causal Agent(s)	Primary Host	Code	Causal Agent(s)	Primary Host
1	Chickadee beetle	Douglas fir	48	Stalactiform rust	Lodgepole Pine
2	Engelmann spruce beetle	Engelmann spruce	107	fall webworm	Cottonwood Poplar
3	Blue spruce tip	Blue spruce	108	red sawfly	Softwoods
5	Mountain pine beetle	Ponderosa Pine	109	pine wood nematode	Scotch Pine
7	Mountain pine beetle	Sitka spruce	110	oak wilt	Oak
8	Western pine beetle	Ponderosa Pine	111	shot hole disease	All Tree Species
9	Fir engraver	White fir	112	spruce ips	White Spruce
10	Douglas fir engraver beetle	Douglas fir	113	baseline chestnut borer	Oak
11	Western balsam bark beetle	Subalpine fir	114	anthracnose like foliar disease	Bur Oak
12	Unidentified bark beetle	Softwoods	115	Dieback	All Tree Species
13	Pine engraver	Lodgepole Pine	116	Mortality	All Tree Species
14	Pine engraver	Ponderosa Pine	117	Discoloration	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	118	Herbicide	All Tree Species
16	Lodgepole pine needle miner	Ponderosa Pine	119	Flagging	All Tree Species
17	Jack pine budworm	Jack pine	120	aspen tortrix	Quaking Aspen
18	Spruce budworm, light defol.	Douglas fir	121	Marsdenia Blight	Quaking Aspen
19	Spruce budworm, medium defol.	All Tree Species	200	Dieback (ash)	Ash
20	Spruce budworm, heavy defol.	All Tree Species	201	Dieback (cottonwood)	Cottonwood Poplar
22	Douglas fir tussock moth	Douglas fir	202	Dieback (hardwood)	Hardwoods
23	Pine butterfly	Douglas fir	204	Dieback (oak)	Oak
26	Pine looper	Ponderosa Pine	210	Mortality (oak cottonwood)	Cottonwood Poplar
27	Pine tortrix	Ponderosa Pine	211	Mortality (eastern cedar)	Eastern Red Cedar
28	Tent caterpillars	Hardwoods	212	Mortality (hardwood)	Hardwoods
29	Leaf beetles	Hardwoods	213	Mortality (spruce)	Spruce
30	Aspen defoliation	Hardwoods	214	Mortality (spruce)	Ash
33	Oak leaf roller	Hardwoods	215	High water damage	All Tree Species
34	Pine needle sheath miner	Ponderosa Pine	221	Discoloration (cottonwood)	Softwoods
35	Pine sawflies	Ponderosa Pine	222	Discoloration (cottonwood)	Cottonwood Poplar
36	Pine tussock moth	Ponderosa Pine	223	Discoloration (eastern cedar)	Eastern Red Cedar
37	Cankermite	Hardwoods	224	Discoloration (hardwood)	Hardwoods
38	Variable oak leaf caterpillar	Hardwoods	225	Discoloration (oak)	Oak
39	Unidentified defoliator	All Tree Species	228	Discoloration (spruce)	Spruce
40	Cottonwood Decline/Mortality	Softwoods	230	Herbicide (cottonwood)	Cottonwood Poplar
41	Heterobasidion annosum (Fomes annosus)	Softwoods	231	Herbicide (eastern cedar)	Eastern Red Cedar
42	Amillaria totiposa (Amillaria mellea)	Softwoods	240	Flagging (hardwood)	Hardwoods
44	Phomopsis	Softwoods	251	Unidentified defoliator (elm)	Cottonwood Poplar
45	Cytospora	All Tree Species	252	Unidentified defoliator (elm)	Elm
46	Western gall rust	Unknown	253	Unidentified defoliator (hardwood)	Hardwoods
47	Comandra rust	Unknown	300	Mortality (spruce)	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: 2/9/2015
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/fm/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/ads/qualityassurance.html>). 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 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.