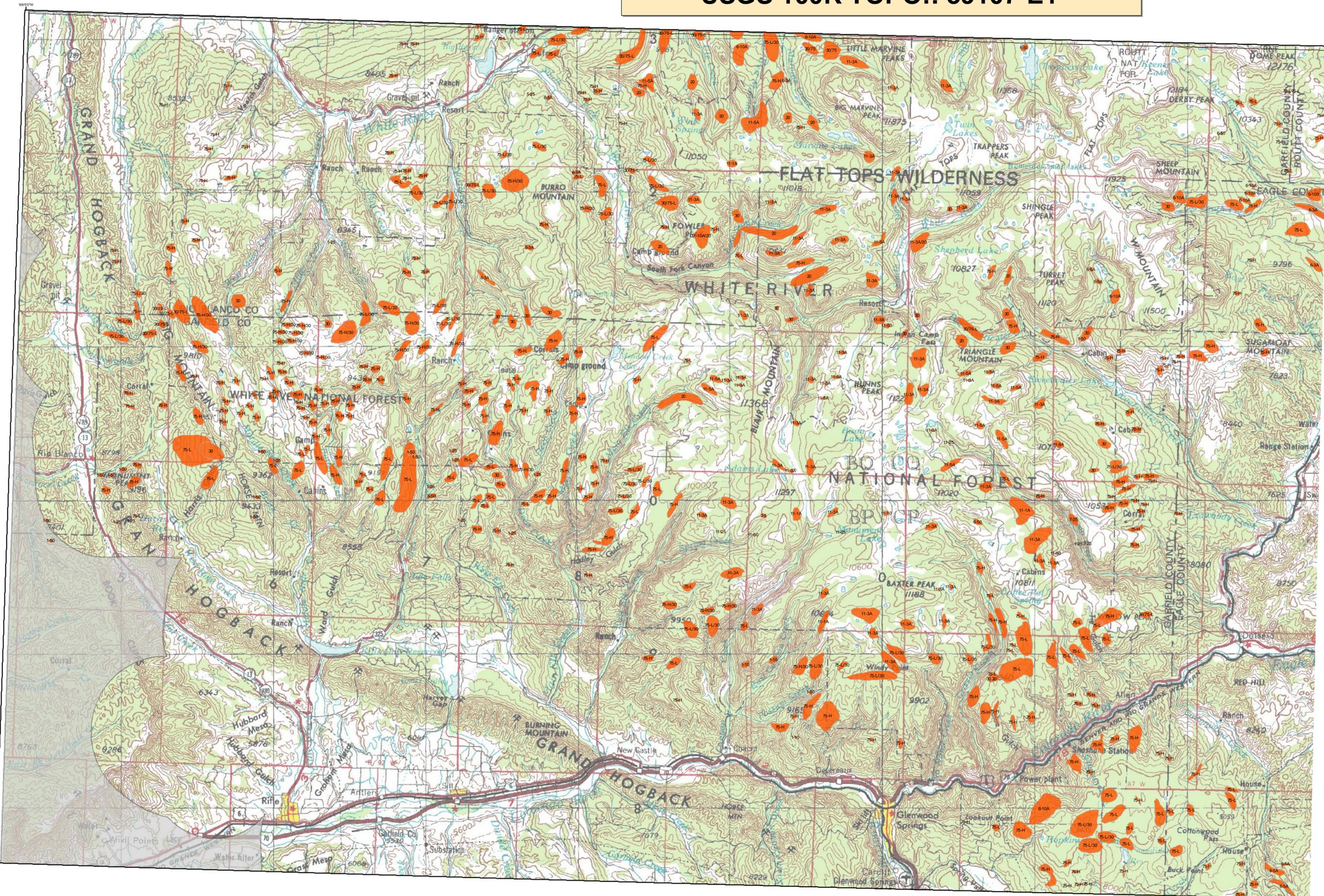


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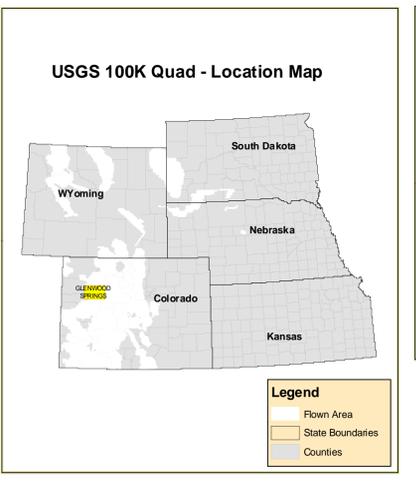


1:100,000

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 acre estimates are used after the causal agent code instead of number of dead "fader" trees (or an intensity code). For example: 5-1/22A = 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	100	Tox squirrel flagging	Cottonwood Poplar	201	Diabrotica (ash)	Ash
2	Engelmann spruce beetle	Engelmann Spruce	101	fall webworm	Cottonwood Poplar	202	Diabrotica (hardwood)	Hardwoods
3	Mountain pine beetle	Ponderosa Pine	102	red hickory	Softwoods	203	Diabrotica (cottonwood)	Cottonwood Poplar
4	Mountain pine beetle	Lodgepole Pine	103	pine wood nematode	Softwoods	204	Diabrotica (oak)	Oak
5	Needle pine beetle	5-Needle Pine	104	oak wilt	Oak	205	Discoloration (ash)	Ash
6	Western pine beetle	Ponderosa Pine	105	oak wilt	Oak	206	Discoloration (cottonwood)	Cottonwood Poplar
7	White fir	White Fir	106	oak wilt	Oak	207	Discoloration (eastern cedar)	Eastern Red Cedar
8	Douglas-fir engraver beetle	Douglas-fir	107	oak wilt	Oak	208	Discoloration (hardwood)	Hardwoods
9	Western balsam bark beetle	Sitka Spruce	108	oak wilt	Oak	209	Discoloration (spruce)	Spruce
10	Unidentified bark beetle	Softwoods	109	oak wilt	Oak	210	Discoloration (cedar)	Eastern Red Cedar
11	Pine engraver	Lodgepole Pine	110	oak wilt	Oak	211	Discoloration (cedar)	Eastern Red Cedar
12	Pine engraver	Ponderosa Pine	111	oak wilt	Oak	212	Discoloration (cedar)	Eastern Red Cedar
13	Pine engraver	Lodgepole Pine	112	oak wilt	Oak	213	Discoloration (cedar)	Eastern Red Cedar
14	Pine engraver	Ponderosa Pine	113	oak wilt	Oak	214	Discoloration (cedar)	Eastern Red Cedar
15	Pine engraver	Lodgepole Pine	114	oak wilt	Oak	215	Discoloration (cedar)	Eastern Red Cedar
16	Pine engraver	Ponderosa Pine	115	oak wilt	Oak	216	Discoloration (cedar)	Eastern Red Cedar
17	Jack pine budworm	Jack Pine	116	oak wilt	Oak	217	Discoloration (cedar)	Eastern Red Cedar
18	Spruce budworm, light defol.	Douglas-fir	117	oak wilt	Oak	218	Discoloration (cedar)	Eastern Red Cedar
19	Spruce budworm, medium defol.	Douglas-fir	118	oak wilt	Oak	219	Discoloration (cedar)	Eastern Red Cedar
20	Spruce budworm, heavy defol.	Douglas-fir	119	oak wilt	Oak	220	Discoloration (cedar)	Eastern Red Cedar
21	Douglas-fir tussock moth	Douglas-fir	120	oak wilt	Oak	221	Discoloration (cedar)	Eastern Red Cedar
22	Pine butterfly	Ponderosa Pine	121	oak wilt	Oak	222	Discoloration (cedar)	Eastern Red Cedar
23	Tent caterpillars	Hardwoods	122	oak wilt	Oak	223	Discoloration (cedar)	Eastern Red Cedar
24	Leaf beetles	Hardwoods	123	oak wilt	Oak	224	Discoloration (cedar)	Eastern Red Cedar
25	Leaf beetles	Hardwoods	124	oak wilt	Oak	225	Discoloration (cedar)	Eastern Red Cedar
26	Pine needle-shaft miner	Ponderosa Pine	125	oak wilt	Oak	226	Discoloration (cedar)	Eastern Red Cedar
27	Pine sawflies	Ponderosa Pine	126	oak wilt	Oak	227	Discoloration (cedar)	Eastern Red Cedar
28	Pine sawflies	Ponderosa Pine	127	oak wilt	Oak	228	Discoloration (cedar)	Eastern Red Cedar
29	Variable oak leaf caterpillar	Hardwoods	128	oak wilt	Oak	229	Discoloration (cedar)	Eastern Red Cedar
30	Unidentified defoliator	All Tree Species	129	oak wilt	Oak	230	Discoloration (cedar)	Eastern Red Cedar
31	Heterodactylus anomus (Fomes annosus)	Softwoods	130	oak wilt	Oak	231	Discoloration (cedar)	Eastern Red Cedar
32	Armillaria ostroyae (Armillaria mellea)	Softwoods	131	oak wilt	Oak	232	Discoloration (cedar)	Eastern Red Cedar
33	Polytopora schweinitzii	Softwoods	132	oak wilt	Oak	233	Discoloration (cedar)	Eastern Red Cedar
34	Phomopsis	All Tree Species	133	oak wilt	Oak	234	Discoloration (cedar)	Eastern Red Cedar
35	Cytospora	All Tree Species	134	oak wilt	Oak	235	Discoloration (cedar)	Eastern Red Cedar
36	Western girdler	Unknown	135	oak wilt	Oak	236	Discoloration (cedar)	Eastern Red Cedar
37	Concordia rust	Unknown	136	oak wilt	Oak	237	Discoloration (cedar)	Eastern Red Cedar
38	Stackpole rust	Lodgepole Pine	137	oak wilt	Oak	238	Discoloration (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 December 18 2009
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/fhm/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.