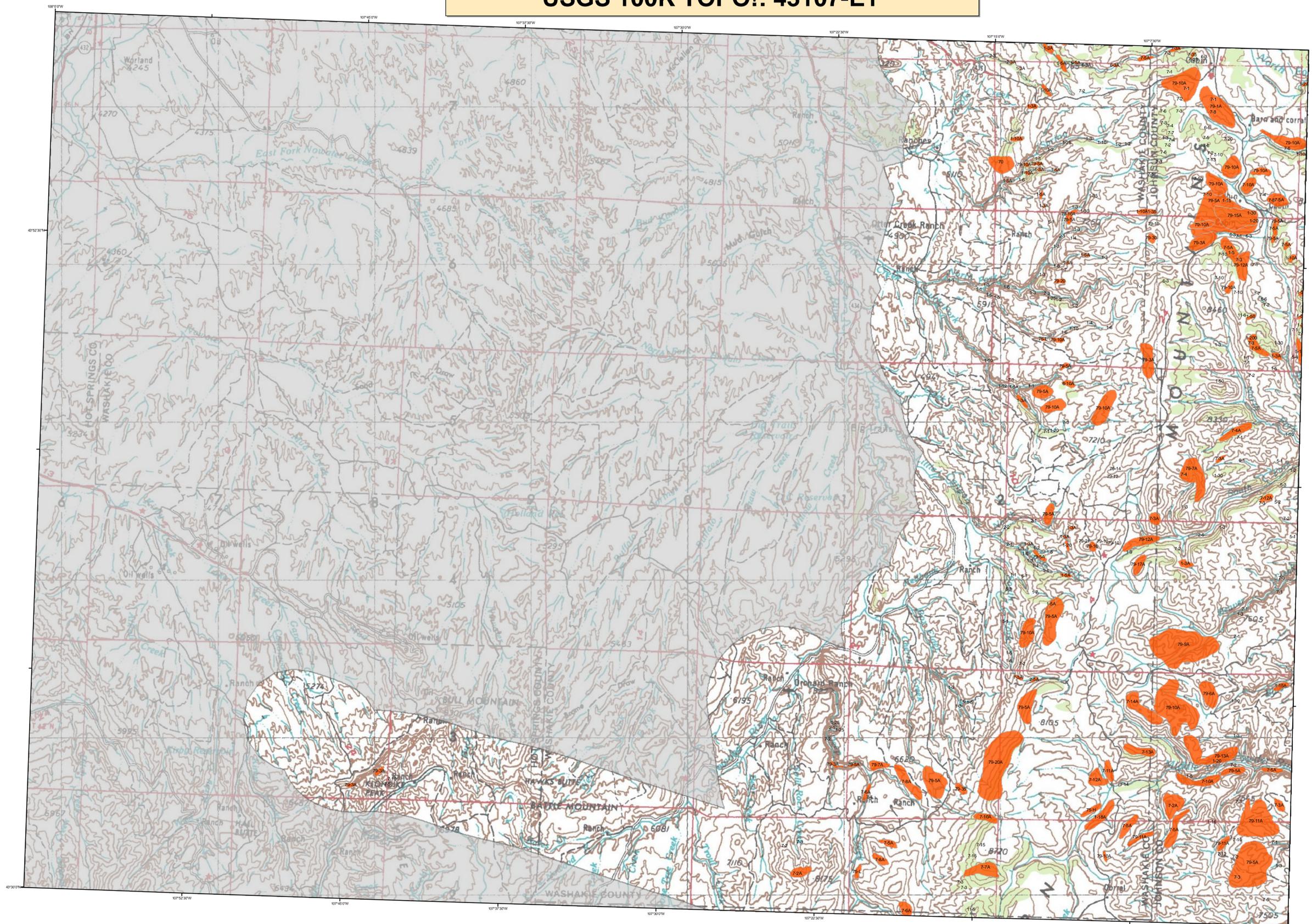


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2008 Aerial Insect and Disease Survey Nowater Creek, Wyoming USGS 100K TOPO!: 43107-E1

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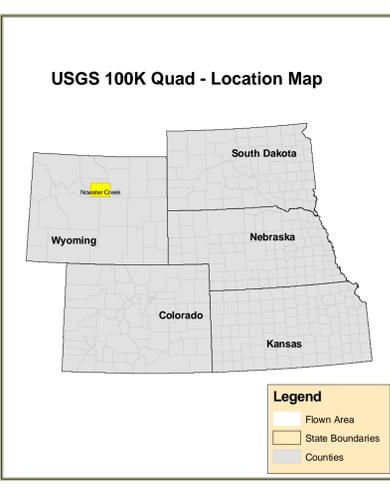


1:100,000

Legend

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 acreage 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 "7" 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
1	Douglas fir beetle	Douglas fir	100	Rox squirrel flagging	Cottwood/Poplar
2	Englemann spruce beetle	Englemann spruce	101	fall webworm	Cottwood/Poplar
3	Mountain pine beetle	Ponderosa pine	102	road salt	Softwoods
4	Mountain pine beetle	Lodgepole pine	103	pine wood nematode	Scotch pine
5	Mountain pine beetle	White pine	104	oak wilt	Oak
6	Western pine beetle	Ponderosa pine	105	foliage disease	All Tree Species
7	Pine engraver	White fir	106	chemical damage	White spruce
8	Pine engraver	Douglas fir	107	wellhead chestnut borer	Oak
9	Western balsam bark beetle	Subsino fir	108	anthracnose like foliar disease	Bur Oak
10	Unidentified bark beetle	Softwoods	109	Diaback	All Tree Species
11	Pine engraver	Lodgepole pine	110	Mortality	All Tree Species
12	Pine engraver	Lodgepole pine	111	Discoloration	All Tree Species
13	Ponderosa pine needle miner	Lodgepole pine	112	Herbicide	All Tree Species
14	Lodgepole pine needle miner	Softwoods	113	Flagging	All Tree Species
15	Jack pine budworm	Jack pine	114	120 aspen tortrix	Quaking Aspen
16	Spruce budworm, light defol.	Douglas fir	115	Marsdenia Blight	Quaking Aspen
17	Spruce budworm, medium defol.	Douglas fir	116	Diaback (cottonwood)	Cottwood/Poplar
18	Spruce budworm, heavy defol.	Douglas fir	117	Diaback (oak)	Hardwoods
19	Douglas fir tussock moth	Douglas fir	118	Diaback (oak)	Oak
20	Pine butterfly	Ponderosa pine	119	Mortality (oak)	Oak
21	Pine looper	Ponderosa pine	120	Discoloration (spruce)	Spruce
22	Pine looper	Ponderosa pine	121	Discoloration (cedar)	Eastern Red Cedar
23	Tent caterpillars	Hardwoods	122	Discoloration (hardwood)	Hardwoods
24	Leaf beetles	Hardwoods	123	Discoloration (western cedar)	Western Red Cedar
25	Oak leaf roller	Hardwoods	124	Mortality (spruce)	Spruce
26	Pine needle-shaft miner	Ponderosa pine	125	Discoloration (cedar)	Eastern Red Cedar
27	Pine sawflies	Ponderosa pine	126	Discoloration (oak)	Oak
28	Pine tussock moth	Ponderosa pine	127	Discoloration (spruce)	Spruce
29	Cantharids	Hardwoods	128	Herbicide (cottonwood)	Cottwood/Poplar
30	Variable oak leaf caterpillar	All Tree Species	129	Mortality (eastern cedar)	Oak
31	Heterodendron antronum (Fomes antronum)	Softwoods	130	Mortality (oak)	Oak
32	Armillaria ostroyae (Armillaria mellea)	Softwoods	131	Discoloration (spruce)	Spruce
33	Rhizospora schweitzii	Softwoods	132	Herbicide (eastern cedar)	Eastern Red Cedar
34	Phomopsis	Softwoods	133	Flagging (hardwood)	Hardwoods
35	Cytospora	All Tree Species	134	Unidentified defoliator (cottonwood)	Cottwood/Poplar
36	Western gall rust	Unknown	135	Unidentified defoliator (elm)	Elm
37	Comandra rust	Unknown	136	Unidentified defoliator (hardwood)	Hardwoods
38	Strobilomyces rust	Lodgepole pine	137	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
Map Created:
Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service**

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Cheyenne, Wyoming 82002

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Forest Health Management
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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/>