

2009 Aerial Insect and Disease Survey Yellowstone National Park N, Wyoming USGS 100K DRG: 44110-E1

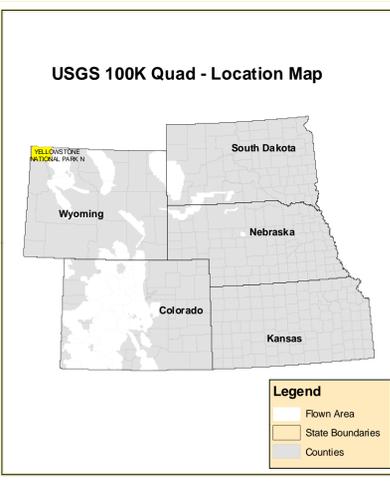


1:100,000

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 "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 acre 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	Code	Causal Agent	Primary Host
1	Douglas fir beetle	Douglas fir	50	White pine blister rust	Lodgepole Pine	107	fall webworm	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann spruce	51	Dwarf mistletoe	Softwoods	108	road salt	Softwoods
3	Mountain pine beetle	Lodgepole Pine	52	Erythrina	Ponderosa Pine	109	pinecone nematode	Scots Pine
4	Mountain pine beetle	5-Needle Pine	53	Indusoid 50, 50 & 63	All Tree Species	110	oak wilt	Oak
5	Western pine beetle	Ponderosa Pine	54	Air pollutants	All Tree Species	111	trifoliate disease	All Tree Species
6	Fire engraver	White Fir	55	Chemical damage	White Spruce	112	spruce die	White Spruce
7	Fire engraver	Douglas fir	56	Lophodermium pinastri	Softwoods	113	isolated chestnut borer	Oak
8	Douglas fir engraver beetle	Subalpine Fir	57	Rhabdocline pseudotsugae	Douglas fir	114	anthracnose like foliar disease	Bur Oak
9	Western balsam bark beetle	Softwoods	58	Lophodermium concolor	Softwoods	115	Dieback	All Tree Species
10	Undersized bark beetle	Lodgepole Pine	59	Lecanostoma acicola	Softwoods	116	Mortality	All Tree Species
11	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
12	Pine engraver	Lodgepole Pine	61	Coturnicopa pini	Softwoods	118	Herbicide	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	62	Needle cast (hypodermataceae)	Softwoods	119	Flagging	All Tree Species
14	Jack pine budworm	Jack Pine	63	Root Rot	All Tree Species	120	aspen tortrix	Quaking Aspen
15	Spine budworm, light defol.	Douglas fir	64	Undersized disease	Softwoods	121	Mensonia blight	Quaking Aspen
16	Spine budworm, medium defol.	Douglas fir	65	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
17	Spine budworm, heavy defol.	Douglas fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
18	Douglas fir tussock moth	Douglas fir	67	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
19	Pine butterfly	Ponderosa Pine	68	Diploids	All Tree Species	204	Dieback (oak)	Oak
20	Pine looper	Ponderosa Pine	69	Prionus black stain	Common Prunus	210	Mortality (oak cottonwood)	Cottonwood/Poplar
21	Pine tortrix	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
22	Tank caterpillars	Hardwoods	71	Panurgine	All Tree Species	212	Mortality (hardwood)	Oak
23	Leaf beetles	Hardwoods	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
24	Oak leaf roller	Hardwoods	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
25	Pine needle-shaft miner	Ponderosa Pine	74	Aspen decline-multiple agents	Quaking Aspen	220	Discoloration (ash)	Ash
26	Pine tussock moth	Ponderosa Pine	75	Aspen decline-multiple agents	Quaking Aspen	221	Discoloration (cottonwood)	Softwoods
27	Variable oak leaf caterpillar	Hardwoods	76	Prionus pine mortality	Common Prunus	222	Discoloration (cottonwood)	Cottonwood/Poplar
28	Undersized defoliator	All Tree Species	77	Juniper mortality-unknown agent(s)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
29	Herobasidion annosum (Fomes annosus)	Softwoods	78	Gambel oak decline-unknown agent(s)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
30	Armillaria ostroyae (Armillaria mellea)	Softwoods	79	Limbic pine decline-multiple agent(s)	Limbic Pine	225	Discoloration (oak)	Oak
31	Polyponia schweinitzi	Softwoods	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
32	Phomopsis	Softwoods	81	Unknown polygon	Common Prunus	227	Herbicide (cottonwood)	Cottonwood/Poplar
33	Cytospora	All Tree Species	100	old prison mortality	Lodgepole Pine	231	Herbicide (eastern cedar)	Eastern Red Cedar
34	Western gall rust	Unknown	101	old mill top	Elm	240	Flagging (hardwood)	Hardwoods
35	Comandra rust	Unknown	102	alutich elm disease	Elm	250	Undersized defoliator (cottonwood)	Cottonwood/Poplar
36	Stactaform rust	Lodgepole Pine	103	spaldia blight	Ponderosa Pine	251	Undersized defoliator (oak)	Oak
			104	ice burn(s)	Spruce, White Spruce	252	Undersized defoliator (hardwood)	Hardwoods
			105	drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	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.

Map Created December 8 2009
Projection: UTM NAD83 Zone 13
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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.