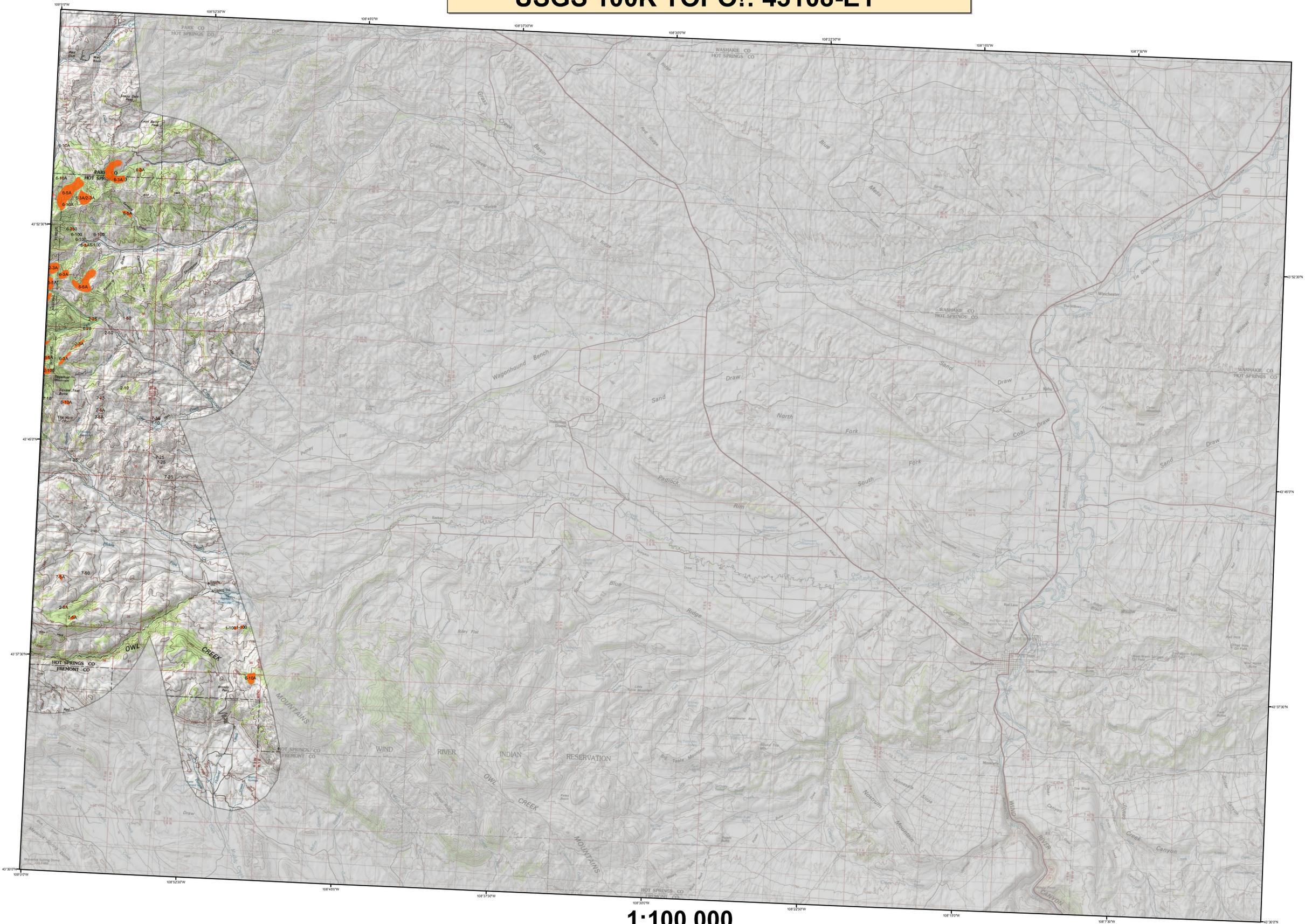
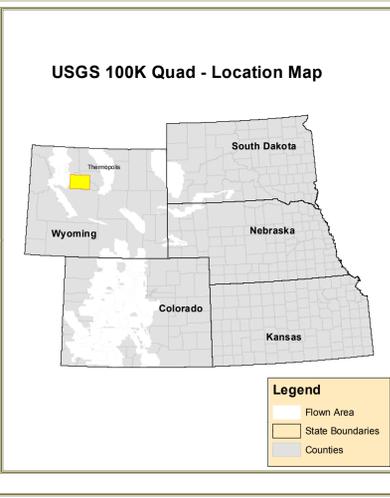


2011 Aerial Insect and Disease Survey Thermopolis, Wyoming USGS 100K TOPO!: 43108-E1



1:100,000

Legend		Causal Agent(s)	Not Flown			
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 "faded" 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 "faded" trees (or an intensity code). For example: 5-1/2A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "faded" 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 "faded" tree. In another example: 5-2A = that on the average, an estimated three trees per acre are dead "faded" 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	
1	Causal Agent	Douglas fir	49	Atypical	Lodgepole Pine	
2	Engelmann Spruce Beetle	Engelmann Spruce	48	Statactiforme rust	Lodgepole Pine	
3	Blue Spruce Ips	Blue Spruce	50	White pine blister rust	S-Needle Pine	
4	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods	
5	Mountain pine beetle	Lodgepole Pine	52	Elytridemia	Ponderosa Pine	
6	Mountain pine beetle	S-Needle Pine	53	Includes #65, #66 & #68	All Tree Species	
7	Western pine beetle	Ponderosa Pine	54	Air pollution	All Tree Species	
8	Western pine beetle	White Fir	55	Chemical damage	All Tree Species	
9	Fir Enginer	Douglas fir	56	Lophodermium pinastri	Softwoods	
10	Douglas fir engraver beetle	Subalpine Fir	57	Rhododionneouscorticagae	Douglas fir	
11	Western balsam bark beetle	Softwoods	58	Lophodermium arcuta	Softwoods	
12	Unidentified bark beetle	Lodgepole Pine	59	Lecanosticella acicola	Softwoods	
13	Pine engraver	Lodgepole Pine	60	Lophodermium concolor	Softwoods	
14	Pine engraver	Lodgepole Pine	61	Dofthistoma pini	Softwoods	
15	Ponderosa pine needle miner	Lodgepole Pine	62	Needle cast (Hypochochytrium)	Softwoods	
16	Lodgepole pine needle miner	Ponderosa Pine	63	Root Rot	All Tree Species	
17	Jack pine budworm	Jack Pine	64	Unidentified disease	Softwoods	
18	Spruce budworm, light defol.	Douglas fir	65	Winter damage light	All Tree Species	
19	Spruce budworm, medium defol.	Douglas fir	66	Winter damage medium	All Tree Species	
20	Spruce budworm, heavy defol.	Douglas fir	67	Winter damage heavy	All Tree Species	
21	Douglas fir bark moth	Douglas fir	68	Dipodia	Softwoods	
22	Pine butterfly	Ponderosa Pine	69	Pinon black stain	Common Pinon	
23	Pine looper	Ponderosa Pine	70	Fire	All Tree Species	
24	Pinus tortrix	Ponderosa Pine	71	Porcupine	Softwoods	
25	Tent caterpillars	Hardwoods	72	Windthrow	All Tree Species	
26	Leaf beetles	Hardwoods	73	High water damage	All Tree Species	
27	Aspen defoliation	Quaking Aspen	74	Avalanche	All Tree Species	
28	Oak leaf roller	Hardwoods	75	Aspen decline-multiple agents(s)	Quaking Aspen	
29	Pine needle-shed miner	Ponderosa Pine	76	Pinon pine mortality	Common Pinon	
30	Pine sawflies	Ponderosa Pine	77	Juniper mortality-unknown agents(s)	Juniper	
31	White bark beetle	Ponderosa Pine	78	Cambial oak decline-unknown agents(s)	Cambial Oak	
32	Carionworms	Hardwoods	79	Limer pine decline-multiple agents(s)	Limer Pine	
33	Unidentified defoliator	All Tree Species	80	Hail damage	All Tree Species	
34	Cottonwood Decline/mortality	Cottonwood	81	Unknown polygon	Unknown	
35	Heliothis annosum (Fomes annosus)	Softwoods	82	Unknown Pinon	Common Pinon	
36	Amelaraia stysiae (Amelaraia mellea)	Softwoods	83	101 road salt lip	Lodgepole Pine	
37	Thromopsis	Softwoods	84	102 insect disease	Elm	
38	Unidentified defoliator	All Tree Species	85	103 dipodia blight	Ponderosa Pine	
39	Cystospora	Unknown	86	104 drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	
40	Western gall rust	Unknown	87	105	Mortality (spr)	Pine
41	Domatid rust	Unknown	88	106	fat squirrel fagging	Cottonwood/Poplar
42			89	107	fat weeborn	Cottonwood/Poplar
43			90	108	rod eat	Softwood
44			91	109	pinewood nematode	Scottish Pine
45			92	110	oak wilt	Oak
46			93	111	foliage disease	All Tree Species
47			94	112	spruce ips	White Spruce
48			95	113	bedford chestnut borer	Oak
49			96	114	anthracnose like foliar disease	Bur Oak
50			97	115	dieback	All Tree Species
51			98	116	Mortality	All Tree Species
52			99	117	Discoloration	All Tree Species
53			100	118	dieback	All Tree Species
54			101	119	Flagging	All Tree Species
55			102	120	open barbs	Quaking Aspen
56			103	121	Manssonia Blight	Quaking Aspen
57			104	122	Dieback (ash)	Ash
58			105	123	dieback (cottonwood)	Cottonwood/Poplar
59			106	124	dieback (hardwood)	Hardwoods
60			107	125	dieback (eastern cedar)	Eastern Red Cedar
61			108	126	Mortality (eastern cedar)	Oak
62			109	127	Mortality (oak)	Oak
63			110	128	Mortality (western cedar)	Spruce
64			111	129	Discoloration (oak)	Oak
65			112	130	Discoloration (ash)	Ash
66			113	131	Discoloration (cedar)	Softwoods
67			114	132	Discoloration (cottonwood)	Cottonwood/Poplar
68			115	133	Discoloration (eastern cedar)	Eastern Red Cedar
69			116	134	Discoloration (hardwood)	Hardwoods
70			117	135	Flagging (hardwood)	Oak
71			118	136	Mortality (hardwood)	Oak
72			119	137	Mortality (softwood)	Softwood
73			120	138	Mortality (western cedar)	Eastern Red Cedar
74			121	139	Mortality (oak)	Oak
75			122	140	Mortality (cedar)	Softwood
76			123	141	Mortality (cedar)	Softwood
77			124	142	Mortality (cedar)	Softwood
78			125	143	Mortality (cedar)	Softwood
79			126	144	Mortality (cedar)	Softwood
80			127	145	Mortality (cedar)	Softwood
81			128	146	Mortality (cedar)	Softwood
82			129	147	Mortality (cedar)	Softwood
83			130	148	Mortality (cedar)	Softwood
84			131	149	Mortality (cedar)	Softwood
85			132	150	Mortality (cedar)	Softwood
86			133	151	Mortality (cedar)	Softwood
87			134	152	Mortality (cedar)	Softwood
88			135	153	Mortality (cedar)	Softwood
89			136	154	Mortality (cedar)	Softwood
90			137	155	Mortality (cedar)	Softwood
91			138	156	Mortality (cedar)	Softwood
92			139	157	Mortality (cedar)	Softwood
93			140	158	Mortality (cedar)	Softwood
94			141	159	Mortality (cedar)	Softwood
95			142	160	Mortality (cedar)	Softwood
96			143	161	Mortality (cedar)	Softwood
97			144	162	Mortality (cedar)	Softwood
98			145	163	Mortality (cedar)	Softwood
99			146	164	Mortality (cedar)	Softwood
100			147	165	Mortality (cedar)	Softwood



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 1 2011
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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Renewable Resources
Forest Health Management
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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/aviationqualityassurance.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.

*****DISCLAIMER*****