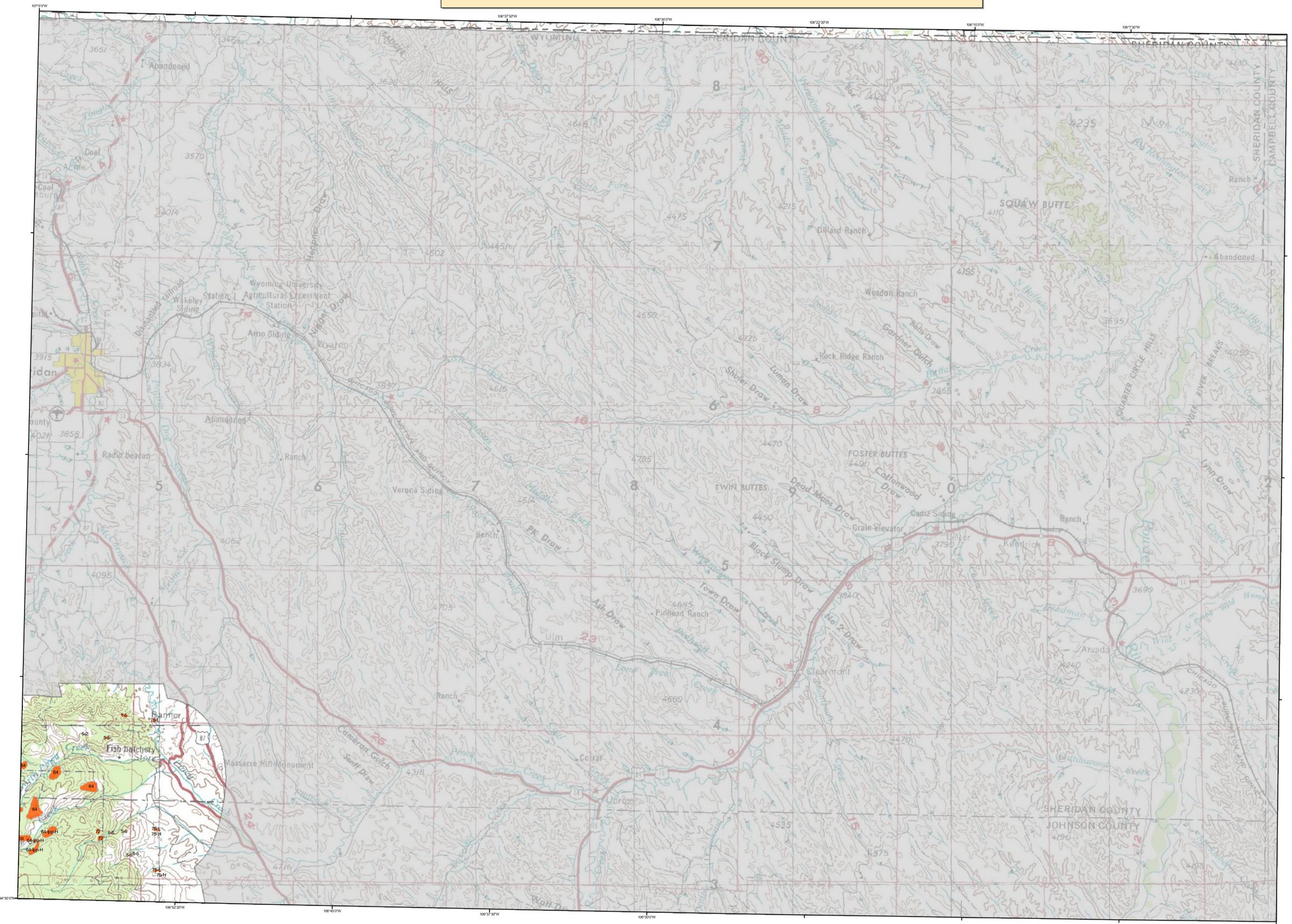


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2008 Aerial Insect and Disease Survey Sheridan, Wyoming USGS 100K TOPO!: 44106-E1

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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 acreage estimates are used after the causal agent code instead of number of dead "faded" 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 "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: 5-3a = that on the average, an estimated three trees per acre are dead "faded" 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	48	Anoplophora	Lodgepole Pine
2	Engelmann Spruce Beetle	Engelmann Spruce	49	White pine blister rust	Lodgepole Pine
3	Mountain pine beetle	Ponderosa Pine	50	Dwarf mistletoe	Softwoods
4	Mountain pine beetle	Lodgepole Pine	51	Elytomyia	Ponderosa Pine
5	Mountain pine beetle	5-Needle Pine	52	Inulepis #65, 68 & 69	All Tree Species
6	Mountain pine beetle	Ponderosa Pine	53	Ar subulana	All Tree Species
7	Western pine beetle	White Fir	54	Chemical damage	All Tree Species
8	White fir engraver	Douglas-fir	55	Lophodermium pinastri	Softwoods
9	Douglas-fir engraver beetle	Subalpine Fir	56	Rhabdoline piceobrevigae	Douglas-fir
10	Western balsam bark beetle	Softwoods	57	Lophodermium arcutum	Softwoods
11	Undersized bark beetle	Softwoods	58	Lecanosticca aculeata	Softwoods
12	Pine engraver	Lodgepole Pine	59	Lecanosticca aculeata	Softwoods
13	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods
14	Pine engraver	Lodgepole Pine	61	Dufrenoyia pini	Softwoods
15	Ponderosa pine needle miner	Ponderosa Pine	62	Heedle cast (Hypodematocae)	Softwoods
16	Lodgepole pine needle miner	Jack Pine	63	Root Rot	All Tree Species
17	Jack pine budworm	Douglas-fir	64	Unidentified disease	All Tree Species
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	Pine looper	Douglas-fir	68	Diplolela	Softwoods
22	Douglas-fir tussock moth	Ponderosa Pine	69	Pinus black stain	Common Pinon
23	Pine butterfly	Ponderosa Pine	70	Fire	All Tree Species
24	Pine tortrix	Softwoods	71	Ponopine	All Tree Species
25	Leaf sawfly	Hardwoods	72	Wintrow	All Tree Species
26	Leaf beetles	Hardwoods	73	High water damage	All Tree Species
27	Oak leaf miner	All Tree Species	74	Avellana	All Tree Species
28	Pine needle-shaft miner	Ponderosa Pine	75	Aspen decline-multiple agents)	Quaking Aspen
29	Pine sawflies	Ponderosa Pine	76	Juniper mortality	Common Pinon
30	Pine sawflies	Hardwoods	77	Juniper mortality-unknown agents)	Juniper
31	Cankermowers	Hardwoods	78	Gambel oak decline-unknown agents)	Gambel Oak
32	Variable oak leaf sawfly	All Tree Species	79	Lumber pine decline-multiple agents)	Lumber Pine
33	Unidentified defoliator	Softwoods	80	Hail damage	All Tree Species
34	Heterobasidion annosum (Fomes annosus)	Softwoods	81	Unknown polygon	Common Pinon
35	Amelara corymb (Amelara melles)	Softwoods	100	old pinon mortality	Lodgepole Pine
36	Polygonus schweinitzi	Softwoods	101	road salt spg	Elm
37	Polygonus schweinitzi	All Tree Species	102	dutch elm disease	Elm
38	Phoradendron	Unknown	103	diplolela blight	Ponderosa Pine
39	Cytospora	Unknown	104	los horridus	Spruce White Spruce
40	Western gall rust	Lodgepole Pine	105	drought killed narrow leaf cottonwood	Narrowleaf Cottonwood
41	Shabdoma rust	Lodgepole Pine			
42	Shabdoma rust	Lodgepole Pine			
43	Shabdoma rust	Lodgepole Pine			
44	Shabdoma rust	Lodgepole Pine			
45	Shabdoma rust	Lodgepole Pine			
46	Shabdoma rust	Lodgepole Pine			
47	Shabdoma rust	Lodgepole Pine			
48	Shabdoma rust	Lodgepole Pine			
49	Shabdoma rust	Lodgepole Pine			
50	Shabdoma rust	Lodgepole 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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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/>