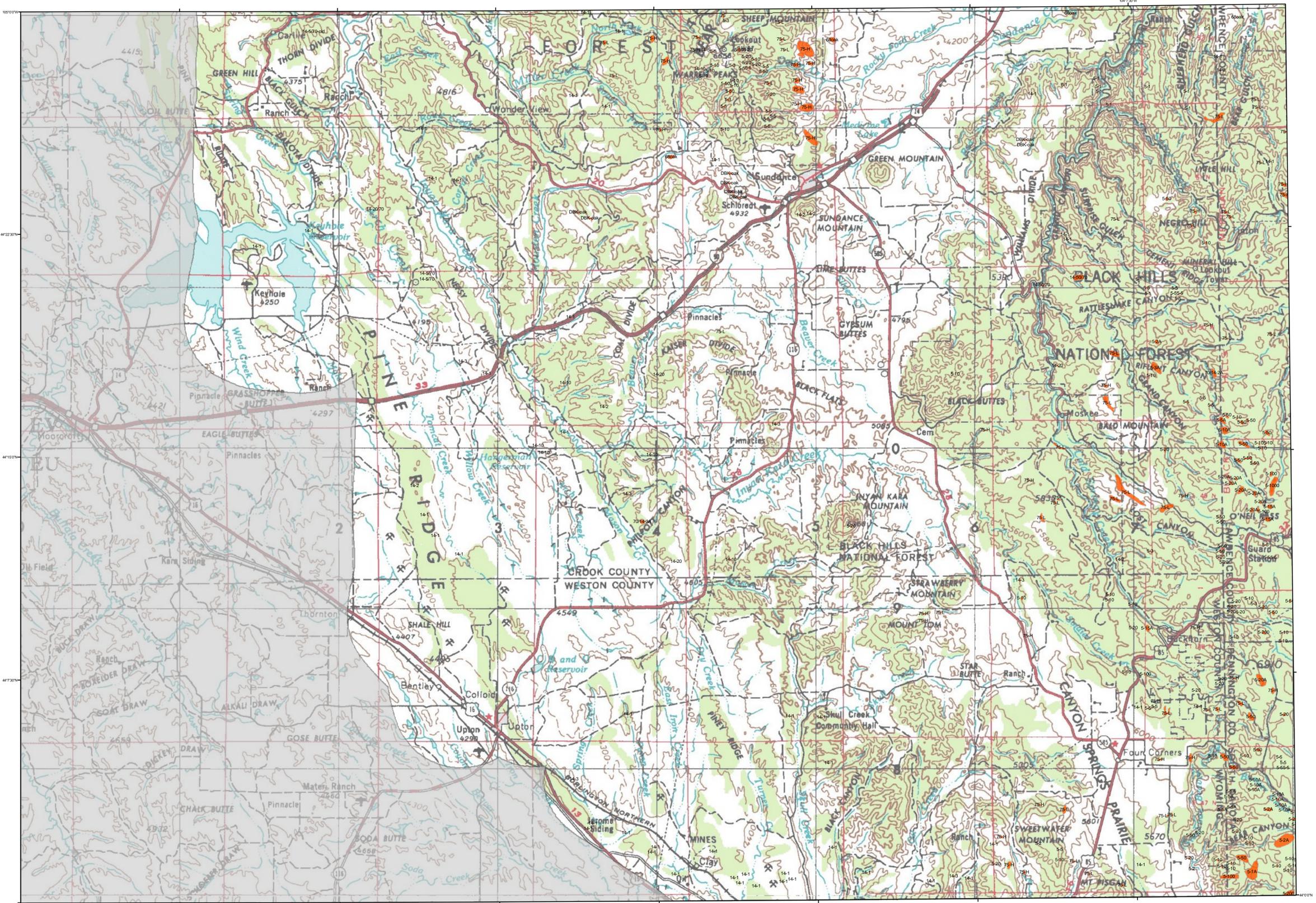


2008 Aerial Insect and Disease Survey Sundance, Wyoming USGS 100K TOPO! 44104-A1

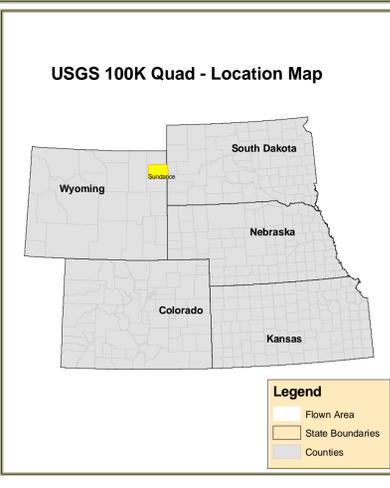
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1:100,000

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	53	Altiplexis	Lodgepole Pine
2	Engelmann spruce beetle	Engelmann Spruce	54	White pine blister rust	Sitka Spruce
3	Mountain pine beetle	Ponderosa Pine	55	Dwarf mistletoe	Softwoods
4	Mountain pine beetle	Lodgepole Pine	56	Elysiptoma	Ponderosa Pine
5	Mountain pine beetle	5-Needle Pine	57	Includes #55, 56 & 58	All Tree Species
6	Western pine beetle	Ponderosa Pine	58	Aspen decline	All Tree Species
7	White Pine	White Pine	59	Chemical damage	All Tree Species
8	White Pine	White Pine	60	Lophodermium concolor	Softwoods
9	White Pine	White Pine	61	Lophodermium pinastri	Softwoods
10	Douglas-fir engraver beetle	Douglas-fir	62	Rhabdocline pseudotsugae	Softwoods
11	Western balsam bark beetle	Subalpine Fir	63	Lophodermium arcuta	Softwoods
12	Unidentified bark beetle	Softwoods	64	Luzoniana asiatica	Softwoods
13	Pine engraver	Lodgepole Pine	65	Lophodermium concolor	Softwoods
14	Pine engraver	Ponderosa Pine	66	Diplodia	Softwoods
15	Ponderosa pine needle miner	Lodgepole Pine	67	Winter damage light	All Tree Species
16	Lodgepole pine needle miner	Ponderosa Pine	68	Winter damage medium	All Tree Species
17	Jack pine budworm	Jack Pine	69	Winter damage heavy	All Tree Species
18	Spruce budworm, light defol.	Douglas-fir	70	Pinus black stain	Common Pinon
19	Spruce budworm, medium defol.	Douglas-fir	71	Fire	All Tree Species
20	Spruce budworm, heavy defol.	Douglas-fir	72	Platanus	Softwoods
21	Douglas-fir tussock moth	Douglas-fir	73	Windthrow	All Tree Species
22	Pine butterfly	Ponderosa Pine	74	High water damage	All Tree Species
23	Pine looper	Ponderosa Pine	75	Avicula	All Tree Species
24	Pine tortrix	Ponderosa Pine	76	Aspen decline-multiple agents	Quaking Aspen
25	Forest tent caterpillar	Softwoods	77	Prison pine mortality	Common Pinon
26	Leaf beetles	Hardwoods	78	Juniper mortality-unknown agents	Juniper
27	Oak leaf roller	Hardwoods	79	Limber pine decline-multiple agents	Limber Pine
28	Pine needle-bleed miner	Ponderosa Pine	80	Hail damage	All Tree Species
29	Pine sawflies	Ponderosa Pine	81	Unknown polyton	Common Pinon
30	Pine tussock moth	Ponderosa Pine	82	100 old prison mortality	Unknown
31	Carleweaver	Hardwoods	83	road salt top	Lodgepole Pine
32	Unidentified defoliator	Hardwoods	84	102 dutch elm disease	Elm
33	Unidentified defoliator	Hardwoods	85	103 ipsoida blight	Ponderosa Pine
34	Heterobasidion annosum (Fomes annosus)	Softwoods	86	104 fox hurricane	Sitka Spruce
35	Amelara costusae (Amelara melae)	Softwoods	87	105 drought killed narrow leaf cottonwood	Narrowleaf Cottonwood
36	Poryporus schweinitzi	Softwoods			
37	Phomopsis	Softwoods			
38	Cytospora	All Tree Species			
39	Western gall rust	Unknown			
40	Coniella rust	Unknown			
41	Stalotiform 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 Bill Schaupp & Al Dymerski
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/>