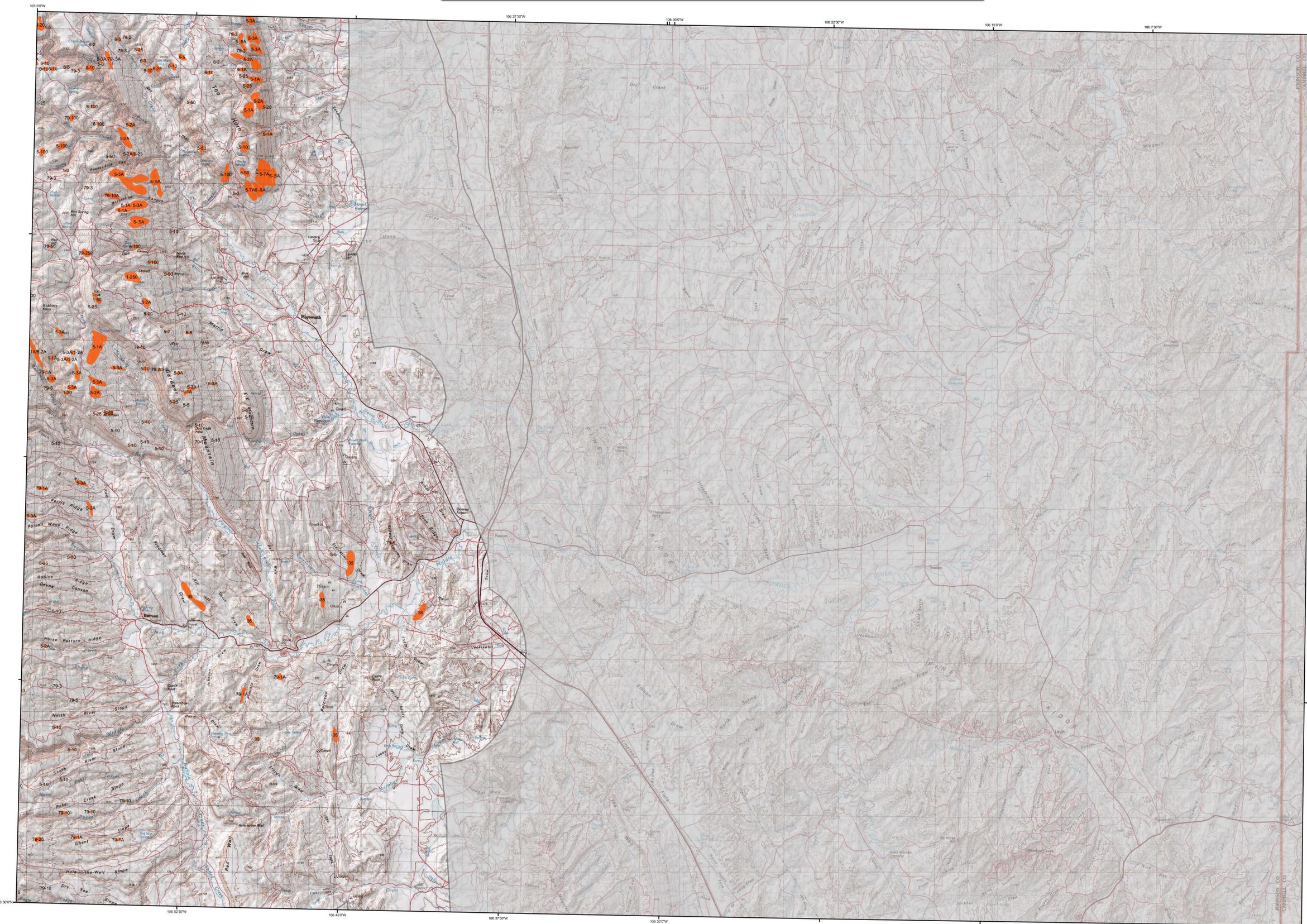
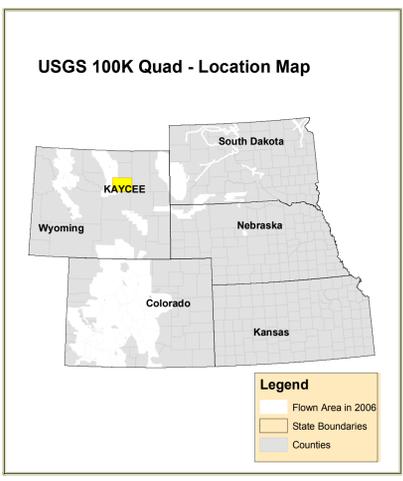


2006 Aerial Insect and Disease Survey Kaycee, Wyoming USGS 100K TOPO!: 43106-E1



1:100,000

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	49	Atropella	Lodgepole Pine
2	Engelmann spruce beetle	Engelmann spruce	50	White pine blister rust	Lodgepole Pine
3	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Erythronium	Ponderosa Pine
5	Mountain pine beetle	5-Needle Pine	53	Inclusus #55, 05 & 05	All Tree Species
6	Western pine beetle	Ponderosa Pine	54	Air pollutants	All Tree Species
7	Pine engraver	White fir	55	Rhizodermis spargane	Softwoods
8	Douglas-fir engraver beetle	Douglas-fir	56	Lophodermium pinastri	Softwoods
9	Western balsam bark beetle	Softwoods	57	Rhizodermis spargane	Softwoods
10	Unidentified bark beetle	Softwoods	58	Lophodermium arcuta	Softwoods
11	Pine engraver	Lodgepole Pine	59	Lophodermium arcuta	Softwoods
12	Pine engraver	Ponderosa Pine	60	Lophodermium arcuta	Softwoods
13	Pine engraver	Lodgepole Pine	61	Dobsonia pini	Softwoods
14	Pine engraver	Ponderosa Pine	62	Heckia cast (Hymenoptera)	Softwoods
15	Ponderosa pine needle miner	Lodgepole Pine	63	Root Rot	All Tree Species
16	Lodgepole pine needle miner	Ponderosa Pine	64	Unidentified disease	Softwoods
17	Jack pine budworm	Jack Pine	65	Winter damage light	All Tree Species
18	Spruce budworm, light defol.	Douglas-fir	66	Winter damage medium	All Tree Species
19	Spruce budworm, medium defol.	Douglas-fir	67	Winter damage heavy	All Tree Species
20	Spruce budworm, heavy defol.	Douglas-fir	68	Diplodia	Softwoods
21	Douglas-fir bark moth	Ponderosa Pine	69	Pinyon black stain	Common Pinyon
22	Pine looper	Ponderosa Pine	70	Fire	All Tree Species
23	Pine tortrix	Ponderosa Pine	71	Flaccus	Softwoods
24	Tree skeletonizer	Hardwoods	72	Windthrow	All Tree Species
25	Leaf miner	Hardwoods	73	High water damage	All Tree Species
26	Oak leaf roller	Hardwoods	74	Avellana	All Tree Species
27	Pine needle-bark miner	Ponderosa Pine	75	Aspen decline-multiple agents	Quaking Aspen
28	Pine sawflies	Ponderosa Pine	76	Pinyon pine mortality	Common Pinyon
29	Pine sawfly	Hardwoods	77	Juniper mortality-unknown agents	Juniper
30	Cankerworms	Hardwoods	78	Juniper mortality-unknown agents	Juniper
31	Variable oak leaf caterpillar	All Tree Species	79	Limon oak decline-multiple agents	Limber Oak
32	Unidentified defoliator	All Tree Species	80	Hail damage	All Tree Species
33	Heterobasidion annosum (Fomes annosus)	Softwoods	81	Unknow	Unknow
34	Amelara exydra (Amelara nerioides)	Softwoods	82	Unknow	Unknow
35	Polyphrus schweinitzi	Softwoods	83	Unknow	Unknow
36	Phomopsis	Softwoods	84	Unknow	Unknow
37	Cytospora	All Tree Species	85	Unknow	Unknow
38	Western gall rust	Unknow	86	Unknow	Unknow
39	Canadensis rust	Unknow	87	Unknow	Unknow
40	Shaliforme rust	Lodgepole Pine	88	Unknow	Unknow



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 Al Dymerski & Brian Howell 07/26/2006
Erik Johnson & Al Dymerski 07/18 - 07/21 2006
Map Created: 01/10/2007
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/>