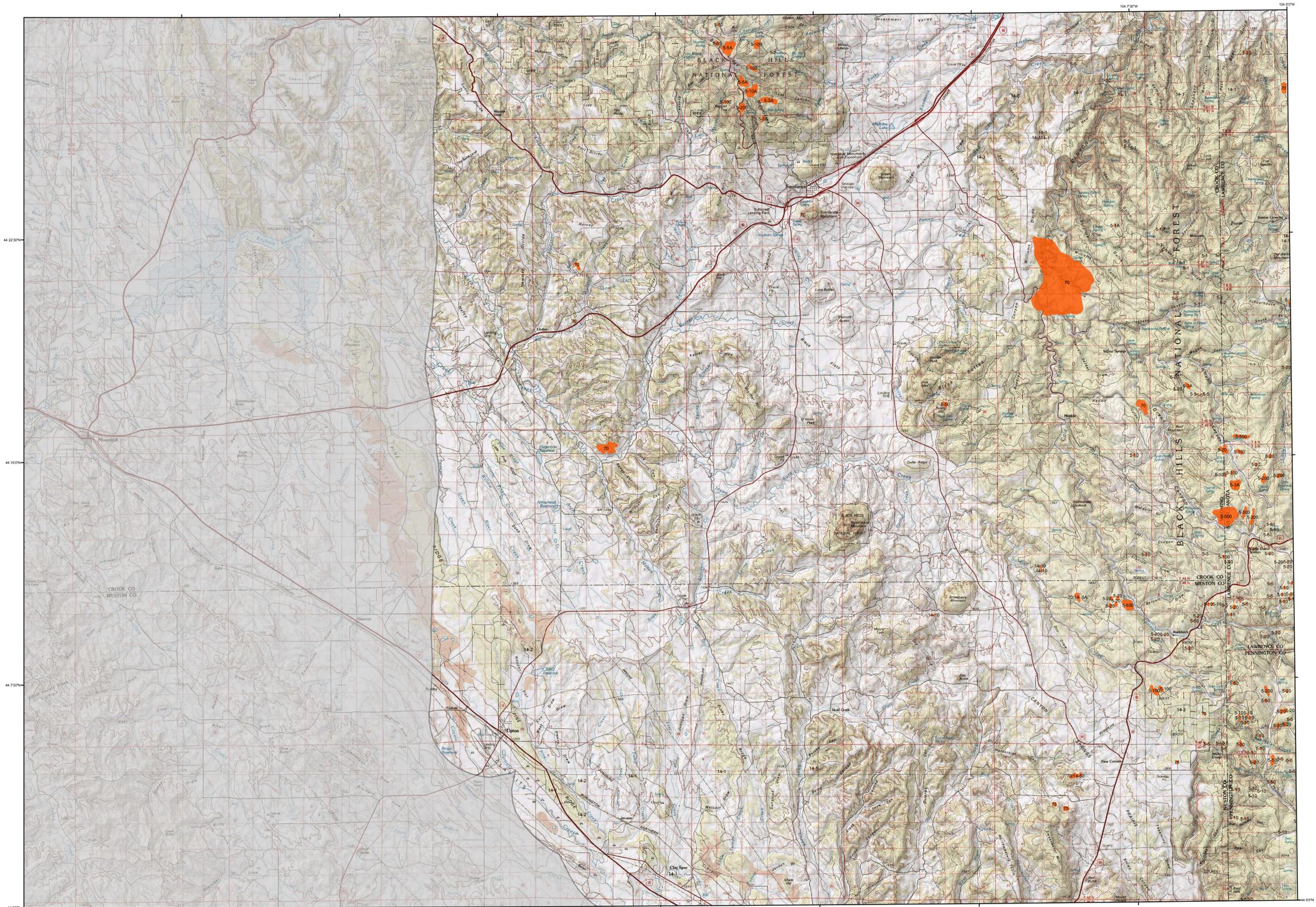
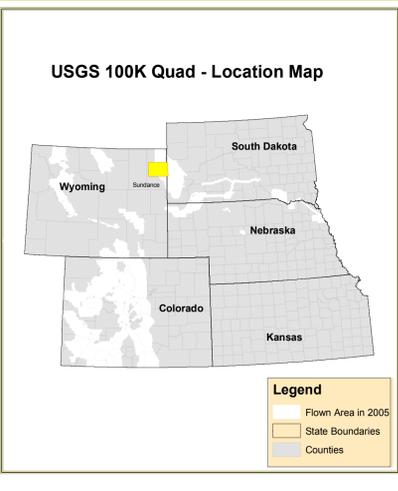


2005 Aerial Insect and Disease Survey Sundance, Wyoming USGS 100K TOPO! 44104-A1



1:100,000

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	49	Anthracis	Lodgepole Pine	106	Box squirrel flagging	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	50	White pine blister rust	Sitka Spruce	107	Box squirrel flagging	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods	108	Road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Elysiacoma	Ponderosa Pine	109	Pinewood nematode	Scots Pine
5	Mountain pine beetle	5-Needle Pine	53	Includes #55, 55 & 59	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	54	Air pollutants	All Tree Species	111	foliage disease	All Tree Species
7	White fir	White Fir	55	Chemical damage	All Tree Species	112	spruce ips	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	56	Lophodermium praeurti	Softwoods	113	twined chestnut borer	Oak
9	Western balsam bark beetle	Subalpine Fir	57	Rhizodonia pseudotulaga	Douglas-fir	114	anthracnose like foliar disease	River Oak
10	Unidentified bark beetle	Softwoods	58	Lophodermium arcuta	Softwoods	115	Dieback	All Tree Species
11	Pine engraver	Lodgepole Pine	59	Lecanostoma siccata	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	61	Dobsonia pini	Softwoods	118	Herbicide	All Tree Species
14	Lodgepole pine needle miner	Ponderosa Pine	62	Basidic cast (Hyphodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Jack pine budworm	Jack Pine	63	Root Rot	All Tree Species	120	aspen tortrix	Quaking Aspen
16	Spruce budworm, light defol.	Douglas-fir	64	Unidentified disease	Softwoods	121	Mansonia Blight	Quaking Aspen
17	Spruce budworm, medium defol.	Douglas-fir	65	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Spruce budworm, heavy defol.	Douglas-fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Douglas-fir tussock moth	Douglas-fir	67	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Pine butterfly	Ponderosa Pine	68	Diploids	Softwood	204	Dieback (oak)	Oak
21	Pine looper	Ponderosa Pine	69	Pinon black stain	Common Pinon	210	Mortality (oak cottonwood)	Cottonwood/Poplar
22	Pine tortrix	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Leaf beetles	Hardwoods	71	Parasite	All Tree Species	212	Mortality (hardwood)	Hardwoods
24	Oak leaf roller	Hardwoods	72	Wintrow	All Tree Species	213	Mortality (oak)	Oak
25	Pine needle-beetle miner	Ponderosa Pine	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Pine sawflies	Ponderosa Pine	74	Avulsion	All Tree Species	220	Discoloration (ash)	Softwoods
27	Pine tussock moth	Ponderosa Pine	75	Aspen decline-multiple agents)	Quaking Aspen	221	Discoloration (conifer)	Softwoods
28	Cankerworms	Hardwoods	76	Pinon pine mortality	Common Pinon	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Unidentified defoliator	All Tree Species	77	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Heterobasidion annosum (Fomes annosus)	Softwoods	78	Limber pine decline-multiple agents)	Limber Pine	224	Discoloration (hardwood)	Hardwoods
31	Amelara cotyloae (Amelara melae)	Softwoods	79	Limber pine decline-multiple agents)	Limber Pine	225	Discoloration (oak)	Oak
32	Poyponus schweinfeltii	Softwoods	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Phomopsis	Softwoods	81	Unkown	Unkown	230	Herbicide (cottonwood)	Cottonwood/Poplar
34	Cytospora	All Tree Species	82	100 old pinon mortality	Common Pinon	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Western gall rust	Unkown	100	road salt lga	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
36	Conioidia rust	Lodgepole Pine	101	102 dutch elm disease	Ponderosa Pine	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Stalactiform rust	Lodgepole Pine	103	103 ipidolia blight	Elm	251	Unidentified defoliator (elm)	Elm
			104	104 box hurt	Spruce, White Spruce	252	Unidentified defoliator (hardwood)	Hardwoods
			105	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; 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 9/6 - 9/9 2005
Map Created: 01-06
Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service

DIRECT ALL INQUIRIES TO:

Wyoming State Forestry Division
 1100 West 22nd Street
 Cheyenne, Wyoming 82002

USDA Forest Service, Region 2
 Renewable Resources
 Forest Health Management
 PO Box 25127
 Lakewood, Colorado 80225

****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/>