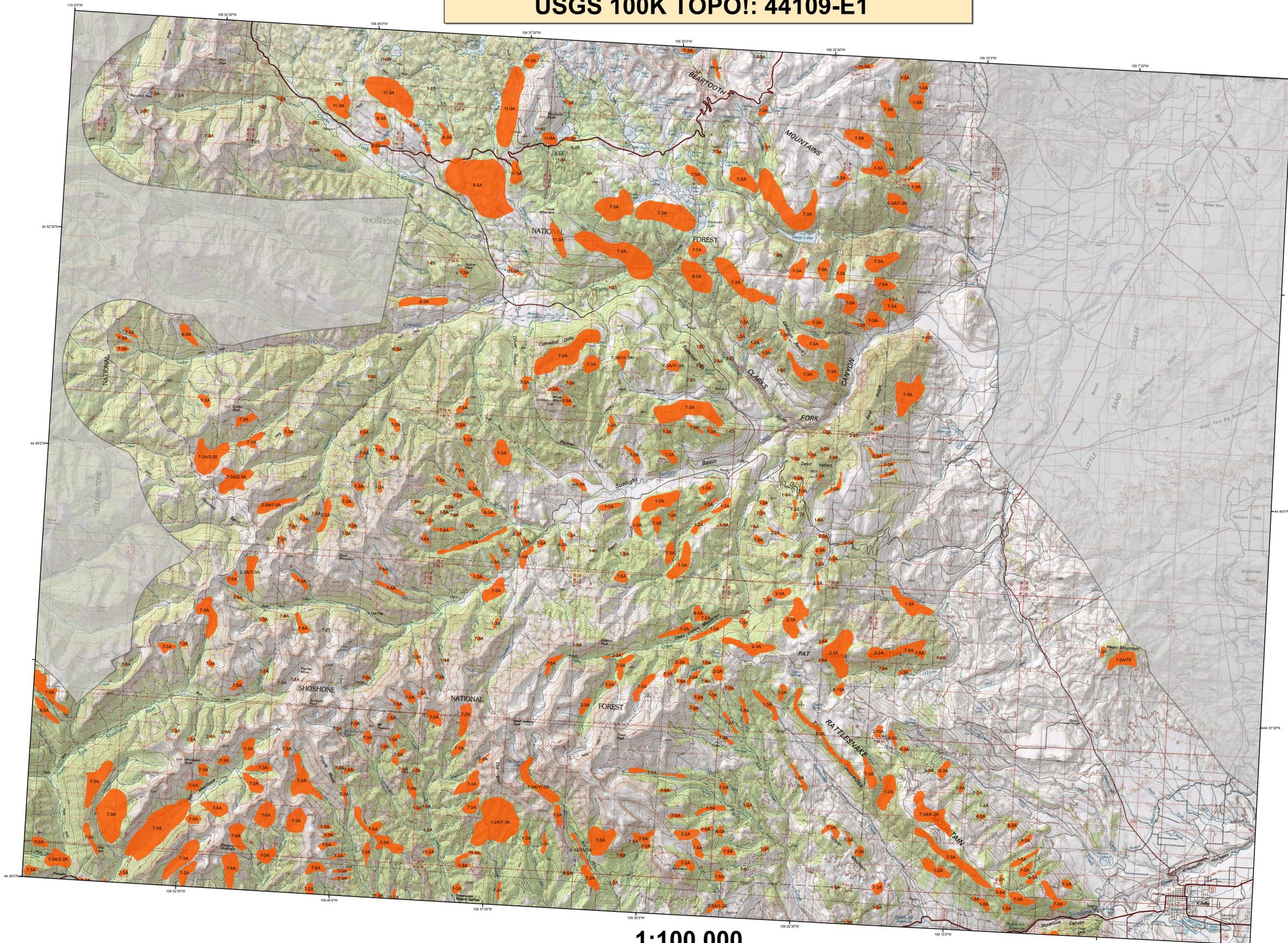


2007 Aerial Insect and Disease Survey Cody, Wyoming USGS 100K TOPO!: 44109-E1



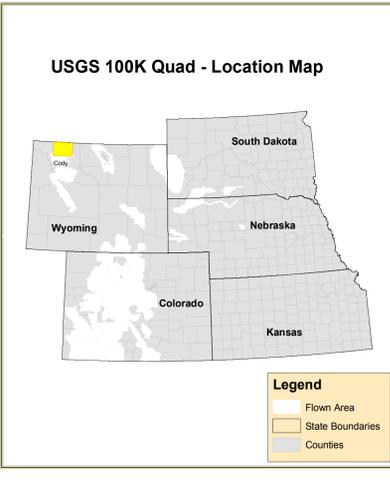
1:100,000

Legend

Causal Agent(s) (Orange box) **Not Flown** (Grey box)

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 "ladder" trees in the polygon or point. When recent dead trees are not counted, an intensity code of L, 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 "ladder" 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 "ladder" 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 "ladder" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "ladder" 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	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	42	Aspen/	Lodgepole Pine	101	Eastern Redcedar	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	43	White pine blister rust	5-Needle Pine	102	fall webworm	Softwoods
3	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods	103	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Elymus	Ponderosa Pine	104	powdermill nematode	Scotch Pine
5	Mountain pine beetle	5-Needle Pine	53	Includes #05, 05 & 08	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	54	Air pollution	All Tree Species	111	foliage disease	All Tree Species
7	White fir	White Fir	55	Chemical damage	All Tree Species	112	spruce ice	White Spruce
8	White fir	White Fir	56	Chemical damage	All Tree Species	113	twined chestnut borer	Oak
9	White fir	White Fir	57	Rhizodermis pseudotulaga	Softwoods	114	anthracnose like foliar disease	Bur Oak
10	Douglas-fir engraver beetle	Douglas-fir	58	Lophodermium prostratum	Softwoods	115	Mortality	All Tree Species
11	Western balsam bark beetle	Subalpine Fir	59	Lophodermium arcuta	Softwoods	116	Mortality	All Tree Species
12	Unidentified bark beetle	Lodgepole Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	61	Dolichotoma sp.	Softwoods	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	62	Needle cast (Hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	63	Root Rot	All Tree Species	120	Aspen tortrix	Quaking Aspen
16	Lodgepole pine needle miner	Ponderosa Pine	64	Unidentified disease	Softwoods	121	Marsdenia Blight	Quaking Aspen
17	Jack pine budworm, light defol.	Jack Pine	65	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Jack pine budworm, medium defol.	Douglas-fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Jack pine budworm, heavy defol.	Douglas-fir	67	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Douglas-fir tussock moth	Douglas-fir	68	Diptera	Softwoods	204	Dieback (oak)	Oak
21	Pine butterfly	Ponderosa Pine	69	Prion black stain	Common Pinon	210	Mortality (east cottonwood)	Cottonwood/Poplar
22	Pine looper	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Leaf sawflies	Hardwoods	71	Parasite	Softwoods	212	Mortality (hardwood)	Oak
24	Leaf sawflies	Hardwoods	72	Windthrow	All Tree Species	213	Mortality (spruce)	Spruce
25	Oak leaf miner	Hardwoods	73	High water damage	All Tree Species	214	Mortality (spruce)	Ash
26	Pine needle-shaft miner	Ponderosa Pine	74	Avalanche	All Tree Species	220	Discoloration (ash)	Softwoods
27	Pine tussock moth	Ponderosa Pine	75	Aspen decline-multiple agents)	Quaking Aspen	221	Discoloration (conifer)	Cottonwood/Poplar
28	Pine tussock moth	Ponderosa Pine	76	Pinon pine mortality	Common Pinon	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Carleworms	Hardwoods	77	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Variable oak leaf caterpillar	Hardwoods	78	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
31	Unidentified defoliator	All Tree Species	79	Limber pine decline-multiple agents)	Limber Pine	225	Discoloration (oak)	Oak
32	Heterobasidion annosum (Fomes annosus)	Softwoods	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Amelara estropae (Amelara melae)	Softwoods	81	Lincoln polygon	Common Pinon	227	Herbicide (cottonwood)	Cottonwood/Poplar
34	Polyborus schweinfurthi	Softwoods	100	old pinon mortality	Lodgepole Pine	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Thomaspis	Softwoods	101	road salt top	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
36	Cytospora	All Tree Species	102	dutch elm disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Western gall rust	Unknown	103	ipsoida blight	Ponderosa Pine	251	Unidentified defoliator (elm)	Elm
38	Conandra rust	Unknown	104	los hurtos	Spruce, White Spruce	252	Unidentified defoliator (hardwood)	Hardwoods
39	Stalactiform rust	Lodgepole Pine	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 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 AI Dymerski
Map Created: 12/30/2007
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/>