

# 2005 Aerial Insect and Disease Survey Douglas, Wyoming USGS 100K TOPO!: 42105-E1



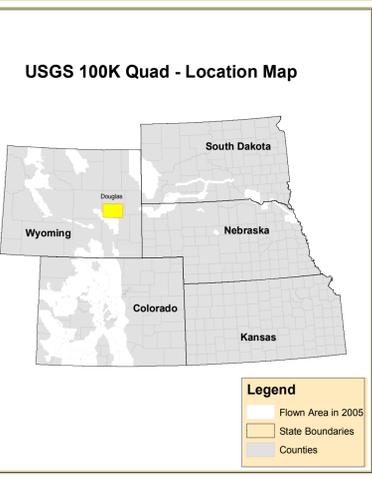
1:100,000

**Legend**

**Causal Agent(s)**      **Not Flown in 2005**

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 "fader" 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 "fader" trees (or an intensity code). For example: 5-1(A) = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "fader" 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 "fader" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "fader" 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	89	Anthracnose	Lodgepole Pine	100	For Insected Flagging	Cottonwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	90	White pine blister rust	5-Needle Pine	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	91	Oak wilt	Softwoods	108	road kill	Softwoods
4	Mountain pine beetle	Lodgepole Pine	92	Elytrodema	Ponderosa Pine	109	pinewood nematode	Softwoods
5	Mountain pine beetle	5-Needle Pine	93	Includes #92, 95 & 99	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	94	Air pollutants	All Tree Species	111	foliar disease	All Tree Species
7	Fire Engulfer	White Fir	95	Chemical damage	All Tree Species	112	spring ice	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	96	Lophodermium praeusti	Softwoods	113	bedford chestnut borer	Oak
11	Western balsam bark beetle	Subalpine Fir	97	Rhabdocline pseudotsugae	Douglas-fir	114	andracnose like foliar disease	Bur Oak
12	Unidentified bark beetle	Softwoods	98	Lophodermium arcauata	Softwoods	115	Daback	All Tree Species
13	Pine engraver	Lodgepole Pine	99	Lophodermium arcauata	Softwoods	116	Mortality	All Tree Species
14	Pine engraver	Ponderosa Pine	100	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	101	Cotyledonella pin	Softwoods	118	Heterolepis	All Tree Species
16	Ponderosa pine needle miner	Ponderosa Pine	102	Needle cast (Hypodermataceae)	Softwoods	119	Flagging	All Tree Species
17	Jack pine budworm	Jack Pine	103	Root Rot	All Tree Species	120	aspen tortix	Quaking Aspen
18	Spruce budworm, light defol.	Douglas-fir	104	Unidentified disease	Softwoods	121	Mansuetina blight	Quaking Aspen
19	Spruce budworm, medium defol.	Douglas-fir	105	Winter damage light	All Tree Species	200	Daback (ash)	Ash
20	Spruce budworm, heavy defol.	Douglas-fir	106	Winter damage medium	All Tree Species	201	Daback (cottonwood)	Cottonwood/Poplar
21	Douglas-fir tussock moth	Douglas-fir	107	Winter damage heavy	All Tree Species	202	Daback (hardwood)	Hardwoods
22	Pine butterfly	Ponderosa Pine	108	Diptera	Softwoods	204	Daback (oak)	Oak
23	Pine looper	Ponderosa Pine	109	Prionid black stain	Common Prinson	210	Mortality (old cottonwood)	Cottonwood/Poplar
27	Pine tortix	Ponderosa Pine	110	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
28	Leaf caterpillars	Hardwoods	111	Pineapple	Softwoods	212	Mortality (hardwood)	Hardwoods
29	Leaf beetles	Hardwoods	112	Windthrow	All Tree Species	213	Mortality (oak)	Oak
31	Oak leaf roller	Hardwoods	113	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
34	Pine needle-shaft miner	Ponderosa Pine	114	Avian/hoop	All Tree Species	220	Discoloration (ash)	Ash
35	Pine sawflies	Ponderosa Pine	115	Aspen decline-multiple agents)	Quaking Aspen	221	Discoloration (conifer)	Softwoods
36	Pine tussock moth	Ponderosa Pine	116	Prion pine mortality	Common Prinson	222	Discoloration (cottonwood)	Cottonwood/Poplar
37	Cankers/worms	Hardwoods	117	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
38	Variable oak leaf caterpillar	Hardwoods	118	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
39	Unidentified defoliator	All Tree Species	119	Lumber pine decline-multiple agents)	Lumber Pine	225	Discoloration (oak)	Oak
41	Halestidation anemum (Fomes anemus)	Softwoods	120	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
42	Armillaria costarum (Armillaria mellea)	Softwoods	121	Unknown polygon	Unknown	231	Heterolepis (eastern cedar)	Eastern Red Cedar
43	Polygona sawnwood	Softwoods	122	old prison mortality	Common Prinson	230	Harbison (eastern cedar)	Eastern Red Cedar
44	Phomopsis	Softwoods	123	east fall top	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
45	Cytospora	All Tree Species	124	slush aim disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
46	Western gall rust	Unknown	125	skidida light	Ponderosa Pine	261	Unidentified defoliator (elm)	Elm
47	Comandra rust	Unknown	126	los huerter	Spruce, White Spruce	280	Unidentified defoliator (hardwood)	Hardwoods
48	Stachytarax rust	Lodgepole Pine	127	straght 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 Erik Johnson & Bob Cain 7/11 - 7/15 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/>