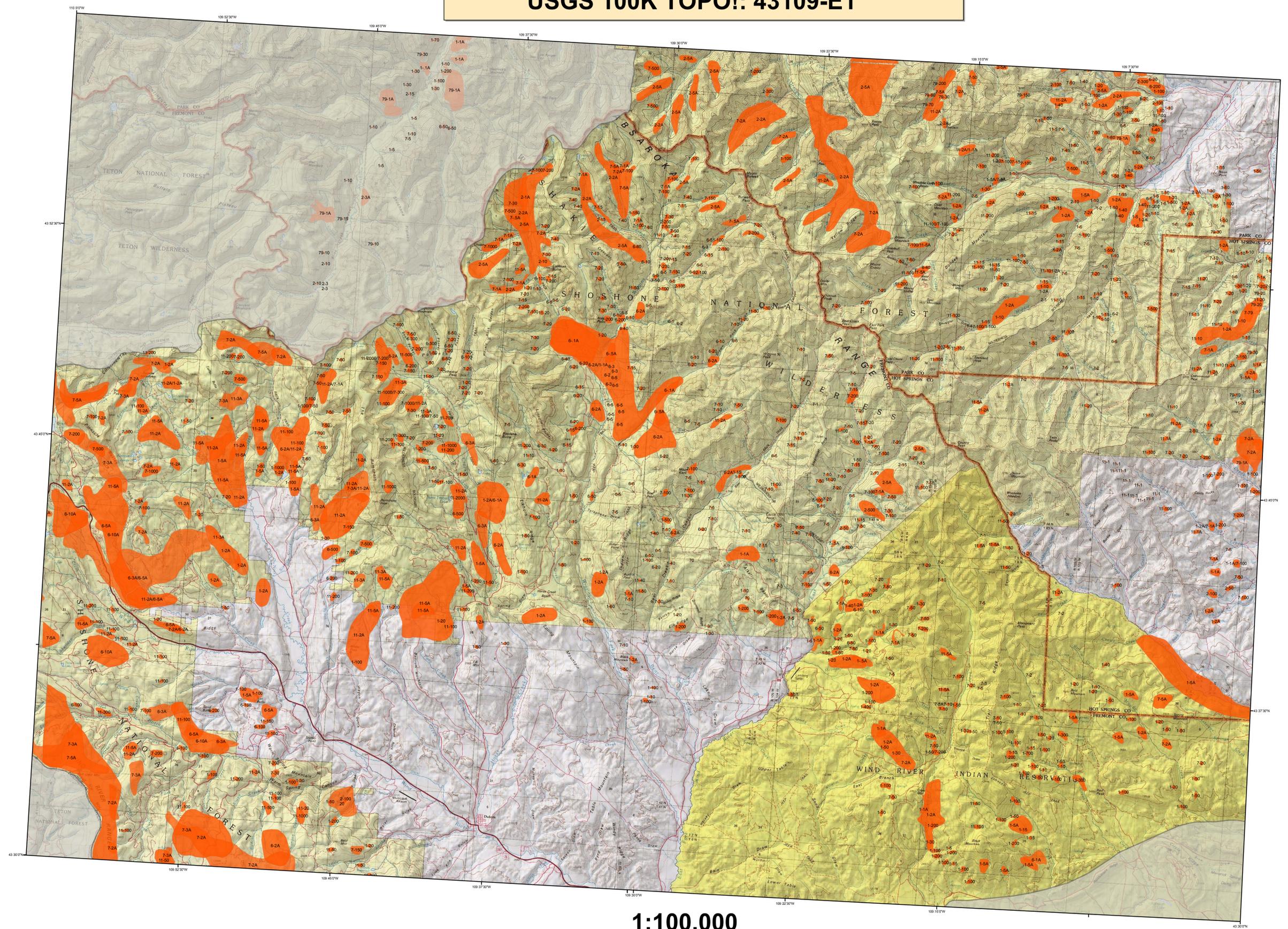


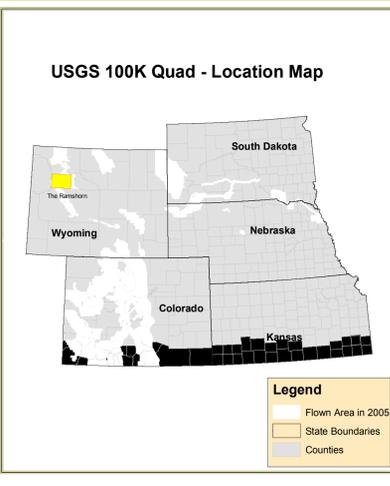
# 2005 Aerial Insect and Disease Survey The Ramshorn, Wyoming USGS 100K TOPO!: 43109-E1



**Legend**

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 acre estimates are used after the causal agent code instead of number of dead "fader" trees (or an intensity code). For example: 5-10L = 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	50	White pine blister rust	Softwoods	107	leaf webworm	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	51	White pine sawfly	Softwoods	108	road salt	Softwoods
3	Mountain pine beetle	Ponderosa Pine	52	White pine sawfly	Softwoods	109	ground nematode	Softwoods
4	Mountain pine beetle	Ponderosa Pine	53	Insects #05, 06 & 08	All Tree Species	110	oak wilt	Oak
5	Western pine beetle	Ponderosa Pine	54	Air pollutants	All Tree Species	111	foliar disease	All Tree Species
6	White fir	White Fir	55	Chemical damage	All Tree Species	112	spruce bud	White Spruce
7	White fir engraver	White Fir	56	Lophodermium pinastri	Softwoods	113	western chestnut borer	Bur Oak
8	Western balsam bark beetle	Softwoods	57	Rhabdocline pseudotsugae	Douglas-fir	114	anthracnose like foliar disease	All Tree Species
9	Unidentified bark beetle	Softwoods	58	Lophodermium arcuta	Softwoods	115	Debrack	All Tree Species
10	Pine engraver	Lodgepole Pine	59	Laricobotrys acicola	Softwoods	116	Mortality	All Tree Species
11	Unidentified bark beetle	Lodgepole Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
12	Pine engraver	Ponderosa Pine	61	Cochlostoma pini	Softwoods	118	Herbicide	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	62	Needle cast (Hypodermatidae)	Softwoods	119	Flagging	All Tree Species
14	Pine engraver	Ponderosa Pine	63	Root Rot	All Tree Species	120	aspen thirix	Quaking Aspen
15	Ponderosa pine needle miner	Lodgepole Pine	64	Unidentified disease	Softwoods	121	Mesomela blight	Quaking Aspen
16	Jack pine budworm	Jack Pine	65	Winter damage light	All Tree Species	200	Debrack (ash)	Ash
17	Spruce budworm, light defol.	Douglas-fir	66	Winter damage medium	All Tree Species	201	Debrack (cottonwood)	Cottonwood/Poplar
18	Spruce budworm, heavy defol.	Douglas-fir	67	Winter damage heavy	All Tree Species	202	Debrack (hardwood)	Hardwoods
19	Douglas-fir tussock moth	Douglas-fir	68	Diptera	Softwoods	204	Debrack (oak)	Oak
20	Pine butterfly	Ponderosa Pine	69	Prion black stain	Common Prion	210	Mortality (old cottonwood)	Cottonwood/Poplar
21	Pine looper	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
22	Pine tortrix	Softwoods	71	Fire	All Tree Species	212	Mortality (spruce)	Spruce
23	Leaf caterpillar	Hardwoods	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
24	Leaf beetles	Hardwoods	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
25	Oak leaf roller	Hardwoods	74	Avalanche	All Tree Species	220	Discoloration (ash)	Ash
26	Pine needle-shaft miner	Ponderosa Pine	75	Aspen decline-multiple agents)	Quaking Aspen	221	Discoloration (conifer)	Softwoods
27	Pine sawfly	Ponderosa Pine	76	Prion pine mortality	Common Prion	222	Discoloration (cottonwood)	Cottonwood/Poplar
28	Pine bark moth	Hardwoods	77	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
29	Variable oak leaf caterpillar	All Tree Species	78	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
30	Cankermoss	Hardwoods	79	Limber pine decline-multiple agents)	Limber Pine	225	Discoloration (oak)	Oak
31	Unidentified defoliator	All Tree Species	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
32	Heterodactylus annosus (Fomes annosus)	Softwoods	81	Unknown	Unknown	230	Herbicide (cottonwood)	Cottonwood/Poplar
33	Armbria ostryae (Armbria melaleuca)	Softwoods	82	Unknown	Unknown	231	Mortality (eastern cedar)	Eastern Red Cedar
34	Polyphaga sawtooth	Softwoods	100	old pinon mortality	Common Prion	240	Flagging (hardwood)	Hardwoods
35	Phomopsis	Softwoods	101	red leaf tip	Lodgepole Pine	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
36	Cytospora	All Tree Species	102	slutch elm disease	Elm	251	Unidentified defoliator (spruce)	Softwoods
37	Western gall rust	Unknown	103	spindle tip	Ponderosa Pine	252	Unidentified defoliator (elm)	Elm
38	Comandra rust	Unknown	104	hurd	Spruce, White Spruce	253	Unidentified defoliator (hardwood)	Hardwoods
39	Strobiliform rust	Lodgepole Pine	105	drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	300	Mortality (pine)	Pine



**1:100,000**

**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  
7/27-8/5 2005  
Map Created: 02-06  
Projection: UTM NAD83 Zone 13  
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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/>