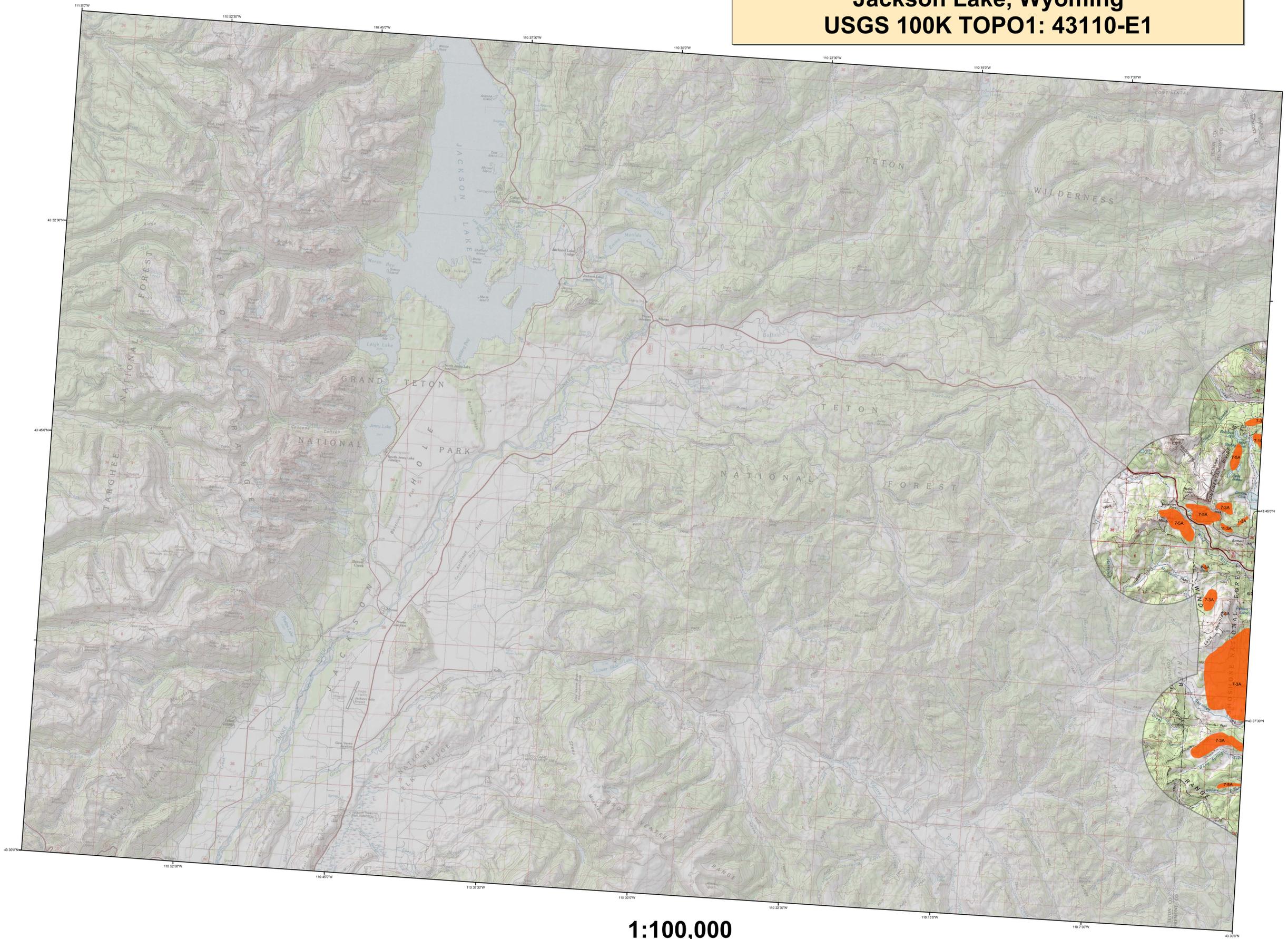
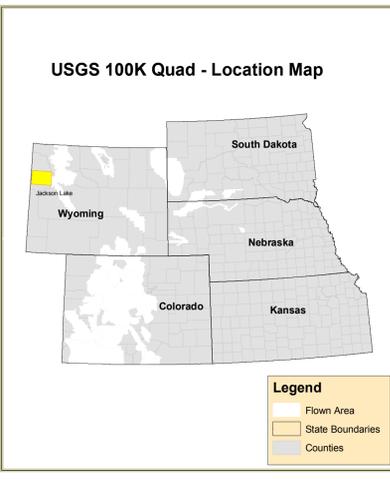


2007 Aerial Insect and Disease Survey Jackson Lake, Wyoming USGS 100K TOPO1: 43110-E1



1:100,000

Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	40	Aspen dieback	Lodgepole Pine	102	Rox squirrel flagging	Cottonwood/Poplar
2	Engelmann spruce beetle	Engelmann Spruce	50	White pine blister rust	5-Needle Pine	107	fall sawworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	61	Dwarf mistletoe	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	62	Erythronium	Ponderosa Pine	109	pinewood nematode	Scots Pine
5	Mountain pine beetle	5-Needle Pine	63	Inclusus #55, 55 & 55	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	64	Air pollution	All Tree Species	111	hollis disease	All Tree Species
7	Fire engraver	White Fir	65	Chemical damage	All Tree Species	112	spruce ips	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	66	Lophodermium pinastri	Softwoods	113	woolred chestnut borer	Oak
9	Western balsam bark beetle	Subalpine Fir	67	Rhabdocline pseudotsugae	Douglas-fir	114	ambrosia like leaf disease	Bur Oak
10	Unidentified bark beetle	Lodgepole Pine	68	Lophodermium aculeata	Softwoods	115	Diaback	All Tree Species
11	Pine engraver	Lodgepole Pine	69	Lusitanica aculeata	Softwoods	116	Mortality	All Tree Species
12	Pine engraver	Ponderosa Pine	70	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Ponderosa pine needle miner	Lodgepole Pine	71	Dichotoma jun	Softwoods	118	Heterobasidion	All Tree Species
14	Lodgepole pine needle miner	Ponderosa Pine	72	Needle cast (hypodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Jack pine budworm	Jack Pine	73	Root Rot	All Tree Species	120	aspen tortrix	Quaking Aspen
16	Spruce budworm, light defol.	Douglas-fir	74	Unidentified disease	Softwoods	121	Mansuetina Blight	Quaking Aspen
17	Spruce budworm, medium defol.	Douglas-fir	75	Winter damage light	All Tree Species	200	Diaback (ash)	Ash
18	Spruce budworm, heavy defol.	Douglas-fir	76	Winter damage medium	All Tree Species	201	Diaback (cottonwood)	Cottonwood/Poplar
19	Douglas-fir tussock moth	Douglas-fir	77	Winter damage heavy	All Tree Species	202	Diaback (hardwood)	Hardwoods
20	Pine butterfly	Ponderosa Pine	68	Diaback	Oak	204	Diaback (oak)	Oak
21	Pine looper	Ponderosa Pine	69	Prion bark stain	Common Piñon	210	Mortality (red cottonwood)	Cottonwood/Poplar
22	Tan carpetiller	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Leaf beetles	Hardwoods	71	Fire	All Tree Species	212	Mortality (hardwood)	Oak
24	Oak leaf roller	Hardwoods	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
25	Pine needle-sheath miner	Ponderosa Pine	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Pine sawflies	Ponderosa Pine	74	Anakiche	All Tree Species	220	Discoloration (ash)	Softwoods
27	Variable oak leaf skeletonizer	Hardwoods	75	Aspen decline-multiple agents(x)	Quaking Aspen	221	Discoloration (cottonwood)	Softwoods
28	Unidentified defoliator	All Tree Species	76	Juniper mortality	Common Piñon	222	Discoloration (eastern cedar)	Eastern Red Cedar
29	Heterobasidion annosum (Fomes annosus)	Softwoods	77	Juniper mortality-unknown agents(x)	Juniper	223	Discoloration (hardwood)	Hardwoods
30	Armillaria ostroyae (Armillaria mellea)	Softwoods	78	Quaking oak decline-unknown agents(x)	Quaking Oak	224	Discoloration (oak)	Oak
31	Polygrapha schweinitzi	Softwoods	79	Limber pine decline-multiple agents(x)	Limber Pine	225	Discoloration (oak)	Oak
32	Phragmitis	All Tree Species	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Cytospora	All Tree Species	81	Unknown pathogen	Common Piñon	230	Heterobasidion (cottonwood)	Cottonwood/Poplar
34	Western gall rust	Unknown	100	old poison mortality	Lodgepole Pine	231	Heterobasidion (eastern cedar)	Eastern Red Cedar
35	Concordia rust	Unknown	101	red salt tip	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
36	Stackpole rust	Lodgepole Pine	102	slut elm disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Stackpole rust	Lodgepole Pine	103	slut elm disease	Ponderosa Pine	251	Unidentified defoliator (elm)	Elm
38	Stackpole rust	Lodgepole Pine	104	lga burn	Spruce, White Spruce	252	Unidentified defoliator (hardwood)	Hardwoods
39	Stackpole 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 Al 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/>