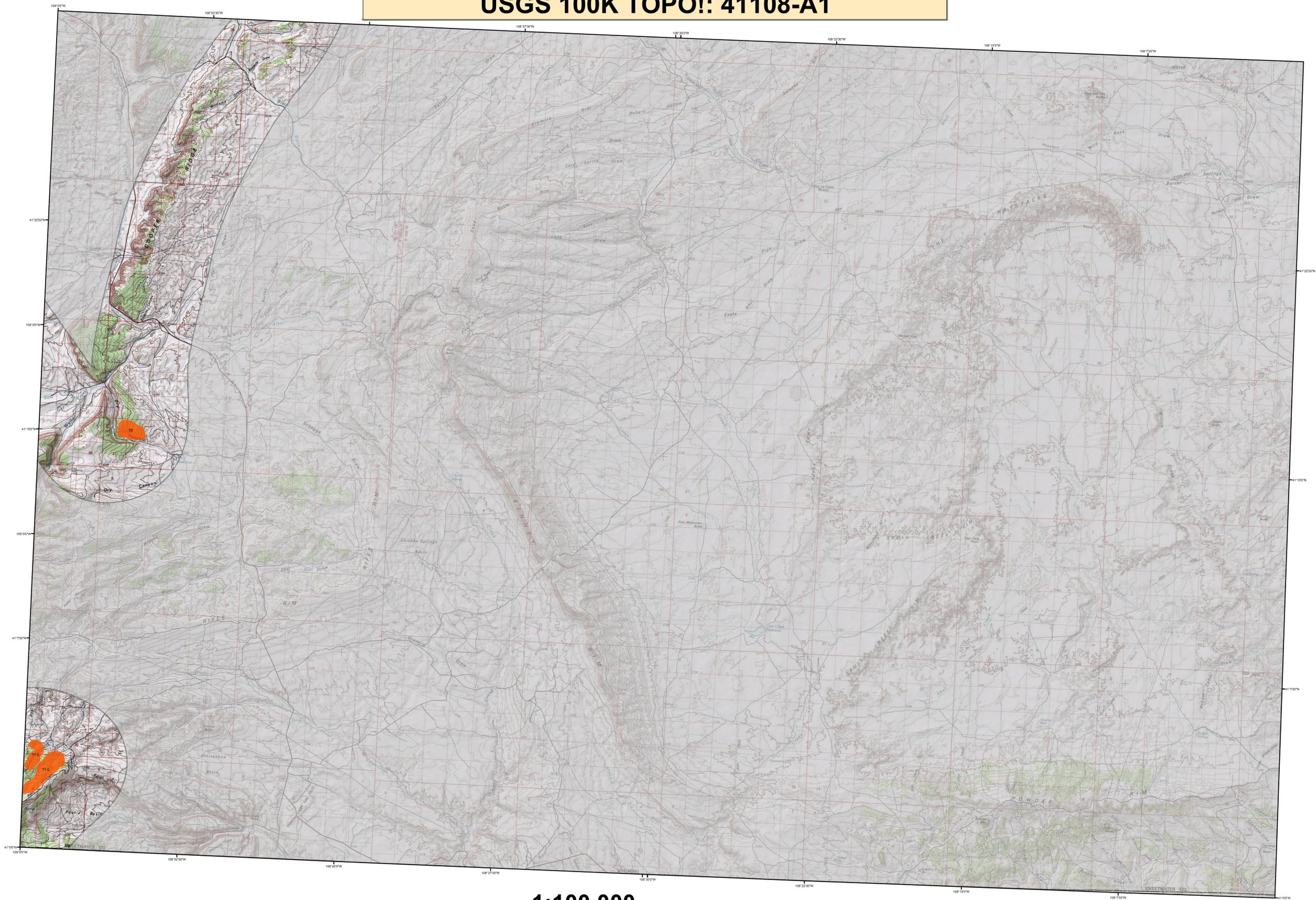
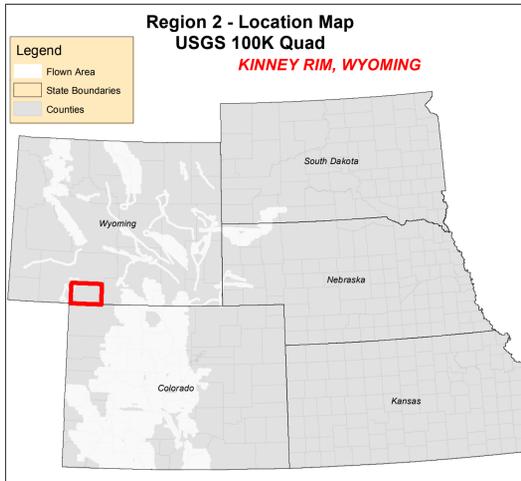


# 2013 Aerial Insect and Disease Survey KINNEY RIM, WYOMING USGS 100K TOPO!: 41108-A1



1:100,000

Legend		Causal Agent(s)		Not Flown	
1	Douglas fir beetle	59	Chickadee	108	Six squirrel flagging
2	Engelmann spruce beetle	60	Engelmann spruce	107	fall webworm
3	Blue spruce tree	61	White pine blister rust	109	road salt
4	Mountain pine beetle	62	Dwarf mistletoe	109	pinewood nematode
5	Mountain pine beetle	63	Lodgepole pine	110	oak wilt
6	Mountain pine beetle	64	S-needle pine	111	foliage disease
7	Mountain pine beetle	65	White fir	112	spruce ips
8	Western pine beetle	66	White fir	113	resinous chestnut borer
9	Pine engraver	67	Douglas fir	114	anthracnose like foliar disease
10	Douglas fir engraver beetle	68	Subalpine fir	115	Dieback
11	Western balsam bark beetle	69	Softwoods	116	Mortality
12	Unidentified bark beetle	70	Lophodermella arcuata	117	Discoloration
13	Pine engraver	71	Lecanosticta acicella	118	Herbicide
14	Pine engraver	72	Lophodermella concolor	119	Flagging
15	Ponderosa pine needle miner	73	Dofsthorstia pini	120	aspen tortrix
16	Lodgepole pine needle miner	74	Softwoods	121	Miscanoxia blight
17	Jack pine budworm	75	Unidentified disease	200	Dieback (ash)
18	Spruce budworm, light defol.	76	Winter damage light	201	Dieback (cottonwood)
19	Spruce budworm, medium defol.	77	Winter damage medium	202	Dieback (hardwood)
20	Spruce budworm, heavy defol.	78	Douglas fir tussock moth	204	Dieback (oak)
21	Pine butterfly	79	Winter damage heavy	210	Mortality (oak cottonwood)
22	Pine looper	80	Diapida	211	Mortality (eastern cedar)
23	Pine looper	81	Common Prinyon	212	Mortality (hardwood)
24	Pine tortrix	82	Fire	213	Mortality (oak)
25	Text caterpillars	83	Hardwoods	214	Mortality (spruce)
26	Leaf beetles	84	Hardwoods	215	Ash
27	Aspen defoliation	85	Quaking Aspen	220	Discoloration (ash)
28	Oak leaf roller	86	Hardwoods	221	Discoloration (coulter)
29	Pine needle-needle miner	87	Ponderosa Pine	222	Discoloration (cottonwood)
30	Pine sawflies	88	Hardwoods	223	Discoloration (eastern cedar)
31	Pine tussock moth	89	Hardwoods	224	Discoloration (hardwood)
32	Cankers/rot	90	Hardwoods	225	Discoloration (oak)
33	Variable oak leaf caterpillar	91	Hardwoods	228	Discoloration (spruce)
34	Unidentified defoliator	92	All Tree Species	230	Herbicide (cottonwood)
35	Cottonwood Decline/Mortality	93	Softwoods	231	Herbicide (eastern cedar)
36	Heterobasidion annosum (Fomes annosus)	94	Softwoods	240	Flagging (hardwood)
37	Amillaria octospora (Amillaria metke)	95	Softwoods	250	Unidentified defoliator (cottonwood)
38	Phomopsis	96	Softwoods	251	Unidentified defoliator (elm)
39	Cytospora	97	All Tree Species	262	Unidentified defoliator (hardwood)
40	Western gall rust	98	Unknown	300	Mortality (spruce)
41	Comandra rust	99	Unknown		



### 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.

Map Created: 1/2/2014  
Projection: UTM NAD83 Zone 13  
Author: J. Ross, USDA Forest Service  
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/>

### DIRECT ALL INQUIRIES TO:

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

USDA Forest Service, Region 2  
State and Private Forestry  
Forest Health Protection  
740 Simms St.  
Golden, CO 80401

\*\*\*\*\*DISCLAIMER\*\*\*\*\*

Forest Health Protection (FHP) and its partners strive to maintain an accurate Aerial Detection Survey (ADS) Dataset, but due to the conditions under which the data are collected, FHP and its partners shall not be held responsible for missing or inaccurate data. ADS are not intended to replace more specific information. An accuracy assessment has not been done for this dataset; however, ground checks are completed in accordance with local and national guidelines <http://www.fs.fed.us/foresthealth/aviation/qualityassurance.shtml>. Maps and data may be updated without notice. Please cite "USDA Forest Service, Forest Health Protection and its partners" as the source of this data in maps and publications.

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.