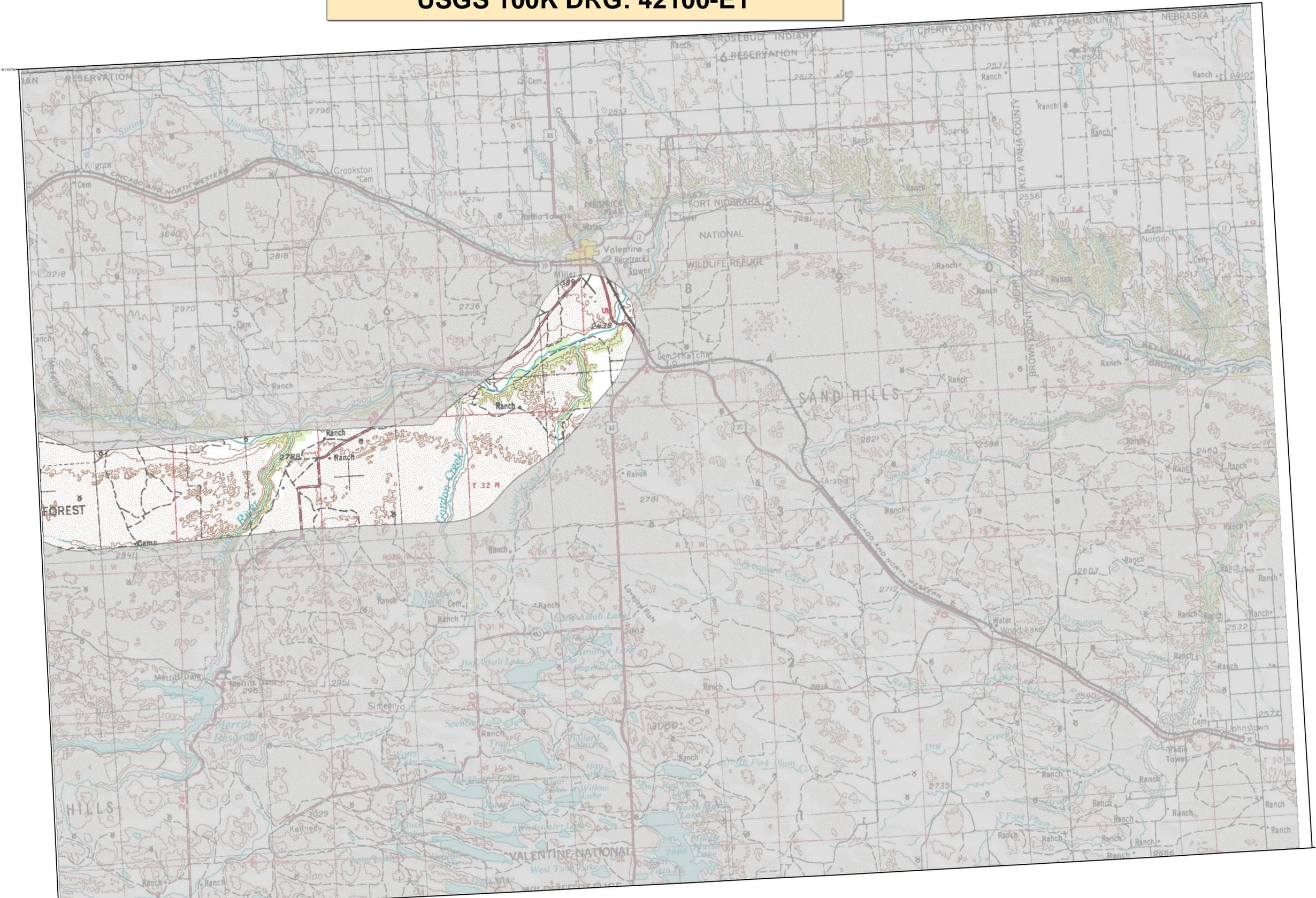


2009 Aerial Insect and Disease Survey Valentine, Nebraska USGS 100K DRG: 42100-E1

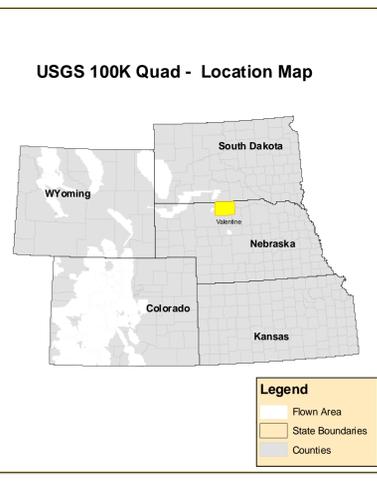


1:100,000

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 "faded" 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 "faded" trees (or an intensity code). For example: 5-125 = The first number before the dash is the causal agent code. The number after the dash is an estimate of the number of dead "faded" trees in the polygon per acre. In this case it would be an estimate that, on the average, one tree per every two acres would be a dead "faded" tree. In another example: 5-1A that on the average, an estimated three trees per acre are dead "faded" 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	49	Anoploplitis	Lodgepole Pine	106	Scirpomyces gignis	Cottonwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	50	White pine blister rust	5-Needle Pine	107	fat webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Erythrina	Ponderosa Pine	109	orange-red nematode	Softwoods
5	Mountain pine beetle	5-Needle Pine	53	Inductus 805, 80 & 83	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	Fire Engulver	White Fir	55	Chemical damage	All Tree Species	112	spruce ice	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	56	Lophodermium pinastri	Softwoods	113	twined chestnut borer	Oak
9	Western balsam bark beetle	Subsopine Fir	57	Phaeodictyon pseudotsugae	Douglas-fir	114	anthracnose like solar disease	Bur Oak
10	Unidentified bark beetle	Softwoods	58	Lophodermium acutatum	Softwoods	115	Dieback	All Tree Species
11	Pine engraver	Lodgepole Pine	59	Lecanostoma acicula	Softwoods	116	Dieback	All Tree Species
12	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	61	Cottoneaster asi	Softwoods	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	62	Needle cast (Hypodemateaceae)	All Tree Species	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	63	Root Rot	All Tree Species	120	aspen tortrix	Quaking Aspen
16	Ponderosa pine needle miner	Ponderosa Pine	64	Unidentified disease	Softwoods	121	Mesoxena flight	Quaking Aspen
17	Jack pine budworm	Jack Pine	65	Winter damage light	All Tree Species	122	Dieback (ash)	Ash
18	Spruce budworm, light defol.	Douglas-fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Spruce budworm, medium defol.	Douglas-fir	67	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Spruce budworm, heavy defol.	Douglas-fir	68	Dipteris	Softwoods	204	Dieback (oak)	Oak
21	Douglas-fir bark moth	Douglas-fir	69	Prion bark stain	All Tree Species	210	Mortality (oak cottonwood)	Cottonwood/Poplar
22	Douglas-fir bark moth	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine butterfly	Ponderosa Pine	71	Parasitism	Softwoods	212	Mortality (hardwood)	Oak
24	Pine looper	Ponderosa Pine	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
25	Pine tortrix	Softwoods	73	High water damage	All Tree Species	221	Discoloration (ash)	Softwoods
26	Tast caterpillars	Hardwoods	74	Aspen decline-multiple agents	Quaking Aspen	222	Discoloration (cottonwood)	Cottonwood/Poplar
27	Leaf beetles	Hardwoods	75	Prion bark stain	All Tree Species	223	Discoloration (eastern cedar)	Eastern Red Cedar
28	Oak leaf roller	Hardwoods	76	Unidentified mortality	Common Piñon	224	Discoloration (hardwood)	Hardwoods
29	Pine sawfly	Ponderosa Pine	77	Juniper mortality-unknown agents	Juniper	225	Discoloration (oak)	Oak
30	Pine sawfly	Ponderosa Pine	78	Gambel oak decline-unknown agents	Gambel Oak	226	Discoloration (spruce)	Spruce
31	Pine sawfly	Ponderosa Pine	79	Limber pine decline-multiple agents	Limber Pine	230	Herbicide (cottonwood)	Cottonwood/Poplar
32	Variable oak leaf caterpillar	All Tree Species	80	Hail damage	All Tree Species	231	Herbicide (eastern cedar)	Eastern Red Cedar
33	Unidentified defoliator	Softwoods	81	Unknown polygon	Common Piñon	240	Flagging (hardwood)	Hardwoods
34	Heterobasidion annosum (Fomes annosus)	Softwoods	100	old pinion mortality	Lodgepole Pine	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
35	Armillaria ostroyae (Armillaria mellea)	Softwoods	101	leaf fall top	Elm	251	Unidentified defoliator (oak)	Oak
36	Poryporus schweinitzii	Softwoods	102	leaf fall top	Elm	252	Unidentified defoliator (oak)	Oak
37	Phomopsis	All Tree Species	103	leaf fall top	Elm	253	Unidentified defoliator (oak)	Oak
38	Cytospora	Unknown	104	leaf fall top	Elm	254	Unidentified defoliator (oak)	Oak
39	Western gall rust	Unknown	105	drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	300	Mortality (pine)	Pine
40	Comandra rust	Lodgepole Pine						
41	Stactiiforme rust	Lodgepole 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.

Map Created December 18 2009
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/>

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*****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 for which it was intended may yield inaccurate or misleading results.