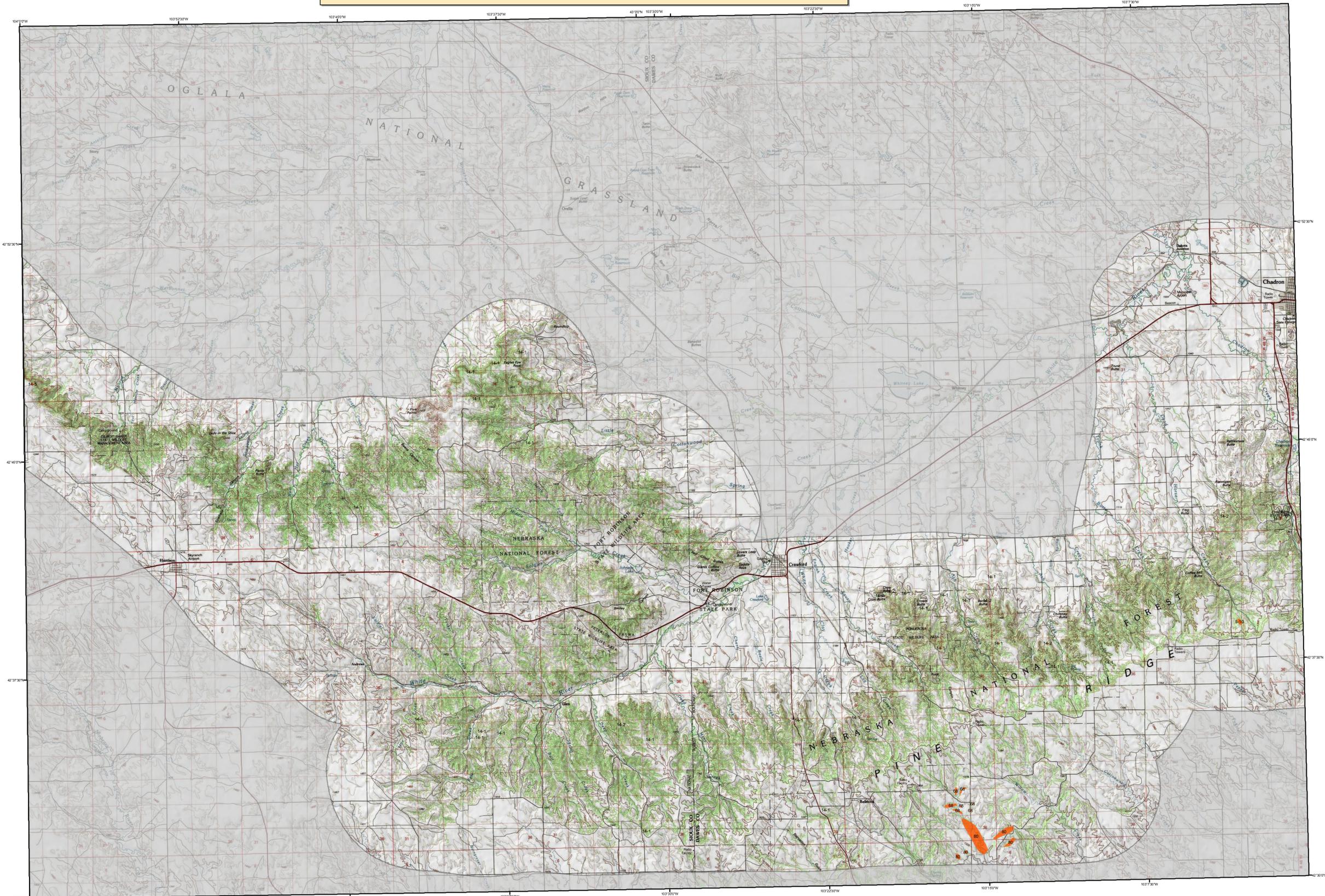
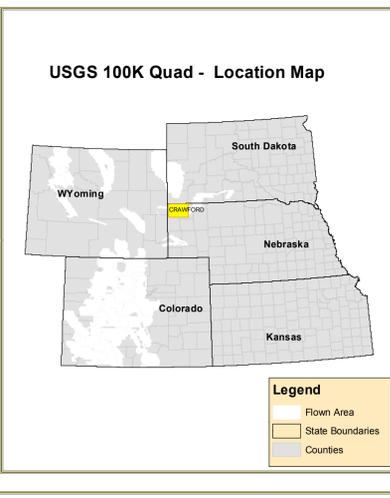


2011 Aerial Insect and Disease Survey Crawford, Nebraska USGS 100K DRG: 42103-E1



1:100,000

Legend		Causal Agent(s)	Not Flown		
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 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 "faded" trees (or an intensity code). For example: 5-1/2A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "faded" 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 "faded" tree. In another example: 5:3A = 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
1	Douglas fir beetle	Douglas fir	49	Atypical	Lodgepole Pine
2	Engelmann spruce beetle	Engelmann spruce	48	Stalactiform rust	Lodgepole Pine
3	Blue spruce ips	Blue spruce	50	White pine blister rust	Softwoods
4	Mountain pine beetle	Ponderosa Pine	51	Dwarf mistletoe	Softwoods
5	Mountain pine beetle	Lodgepole Pine	52	Elytridemia	Ponderosa Pine
6	Mountain pine beetle	S-Needle Pine	53	Includes #65, #66 & #68	All Tree Species
7	Western pine beetle	Ponderosa Pine	54	Air pollution	All Tree Species
8	Fir engraver	White fir	55	Chemical damage	All Tree Species
9	Fir engraver	Douglas fir	56	Lophodermium pinastri	Softwoods
10	Douglas fir engraver beetle	Subalpine fir	57	Rhabdoineousis	Douglas fir
11	Western balsam bark beetle	Softwoods	58	Lophodermium arcutum	Softwoods
12	Unidentified bark beetle	Lodgepole Pine	59	Lecanora acicola	Softwoods
13	Pine engraver	Ponderosa Pine	60	Lophodermium concolor	Softwoods
14	Pine engraver	Lodgepole Pine	61	Dofhinoma pini	Softwoods
15	Ponderosa pine needle miner	Ponderosa Pine	62	Needle cast (Hymenotetrane)	Softwoods
16	Lodgepole pine needle miner	Ponderosa Pine	63	Rust Red	All Tree Species
17	Jack pine budworm	Softwoods	64	Unidentified disease	Softwoods
18	Pine sawfly	Douglas fir	65	Winter damage light	All Tree Species
19	Spruce budworm, light defol.	Douglas fir	66	Winter damage medium	All Tree Species
20	Spruce budworm, medium defol.	Douglas fir	67	Winter damage heavy	All Tree Species
21	Spruce budworm, heavy defol.	Douglas fir	68	Dipodia	Softwoods
22	Douglas fir bark moth	Ponderosa Pine	69	Pinon bark stain	Common Pinon
23	Pine butterfly	Ponderosa Pine	70	Fire	All Tree Species
24	Oak leaf roller	Hardwoods	71	Porcupine	Softwoods
25	Pine needle-shaft miner	Ponderosa Pine	72	Windthrow	All Tree Species
26	Pine sawflies	Ponderosa Pine	73	High water damage	All Tree Species
27	Leaf miner	Hardwoods	74	Aspen decline-multiple agents	Quaking Aspen
28	Carionworms	Hardwoods	75	Aspen decline-multiple agents	Quaking Aspen
29	Carionworms	Hardwoods	76	Pinon pine mortality	Common Pinon
30	Unidentified defolator	All Tree Species	77	Juniper mortality-unknown agents	Juniper
31	Cottonwood Decline/Mortality	Cottonwood	78	Camble oak decline-unknown agents	Camble Oak
32	Heterodermium arvenum (Fomes annosus)	Softwoods	79	Linear pine decline-multiple agents	Linear Pine
33	Amillaria vesicaria (Amillaria mellea)	Softwoods	80	Hill damage	All Tree Species
34	Thromopsis	Softwoods	81	Unknown polygon	Unknown
35	Cystospora	Softwoods	82	Unknown	Common Pinon
36	Western gall rust	Unknown	100	100 pines/moose	Lodgepole Pine
37	Domipoda rust	Unknown	101	101 road salt lip	Lodgepole Pine
			102	102 insect disease	Elm
			103	103 dipodia blight	Ponderosa Pine
			104	104 drought killed narrow leaf cottonwood	Narrowleaf Cottonwood
			105	105 drought killed narrow leaf cottonwood	Narrowleaf Cottonwood
			106	106 fox squirrel girdling	Cottonwood/Poplar
			107	107 fall webworm	Cottonwood/Poplar
			108	108 oak saw	Scottish Pine
			109	109 pinewood nematode	Oak
			110	110 oak wilt	All Tree Species
			111	111 foliage disease	All Tree Species
			112	112 spruce ips	White Spruce
			113	113 twisted chestnut borer	Oak
			114	114 arthropod-like foliar disease	Bur Oak
			115	115 Dieback	All Tree Species
			116	116 Mortality	All Tree Species
			117	117 Dieback	All Tree Species
			118	118 Flaggging	All Tree Species
			119	119 Flaggging	All Tree Species
			120	120 open barbs	Quaking Aspen
			121	121 Manssonia Blight	Quaking Aspen
			200	200 Dieback (left)	Ash
			201	201 Dieback (right)	Ash
			202	202 Dieback (cottonwood)	Cottonwood/Poplar
			203	203 Dieback (hardwood)	Hardwoods
			204	204 Dieback (oak)	Oak
			210	210 Mortality (old cottonwood)	Cottonwood/Poplar
			211	211 Mortality (eastern cedar)	Eastern Red Cedar
			212	212 Mortality (hardwood)	Hardwoods
			213	213 Mortality (oak)	Oak
			214	214 Mortality (hardwood)	Hardwoods
			220	220 Discoloration (ash)	Ash
			221	221 Discoloration (cottonwood)	Softwoods
			222	222 Discoloration (cottonwood)	Cottonwood/Poplar
			223	223 Discoloration (eastern cedar)	Eastern Red Cedar
			224	224 Discoloration (hardwood)	Hardwoods
			225	225 Discoloration (oak)	Oak
			226	226 Discoloration (hardwood)	Hardwoods
			227	227 Discoloration (hardwood)	Hardwoods
			228	228 Discoloration (hardwood)	Hardwoods
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			231	231 Discoloration (hardwood)	Hardwoods
			232	232 Discoloration (hardwood)	Hardwoods
			233	233 Discoloration (hardwood)	Hardwoods
			234	234 Discoloration (hardwood)	Hardwoods
			235	235 Unidentified defolator (cottonwood)	Cottonwood/Poplar
			236	236 Unidentified defolator (hardwood)	Hardwoods
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			299	299 Unidentified defolator (hardwood)	Hardwoods
			300	300 Mortality (spruce)	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 1 2011
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 those for which it was intended may yield inaccurate or misleading results.