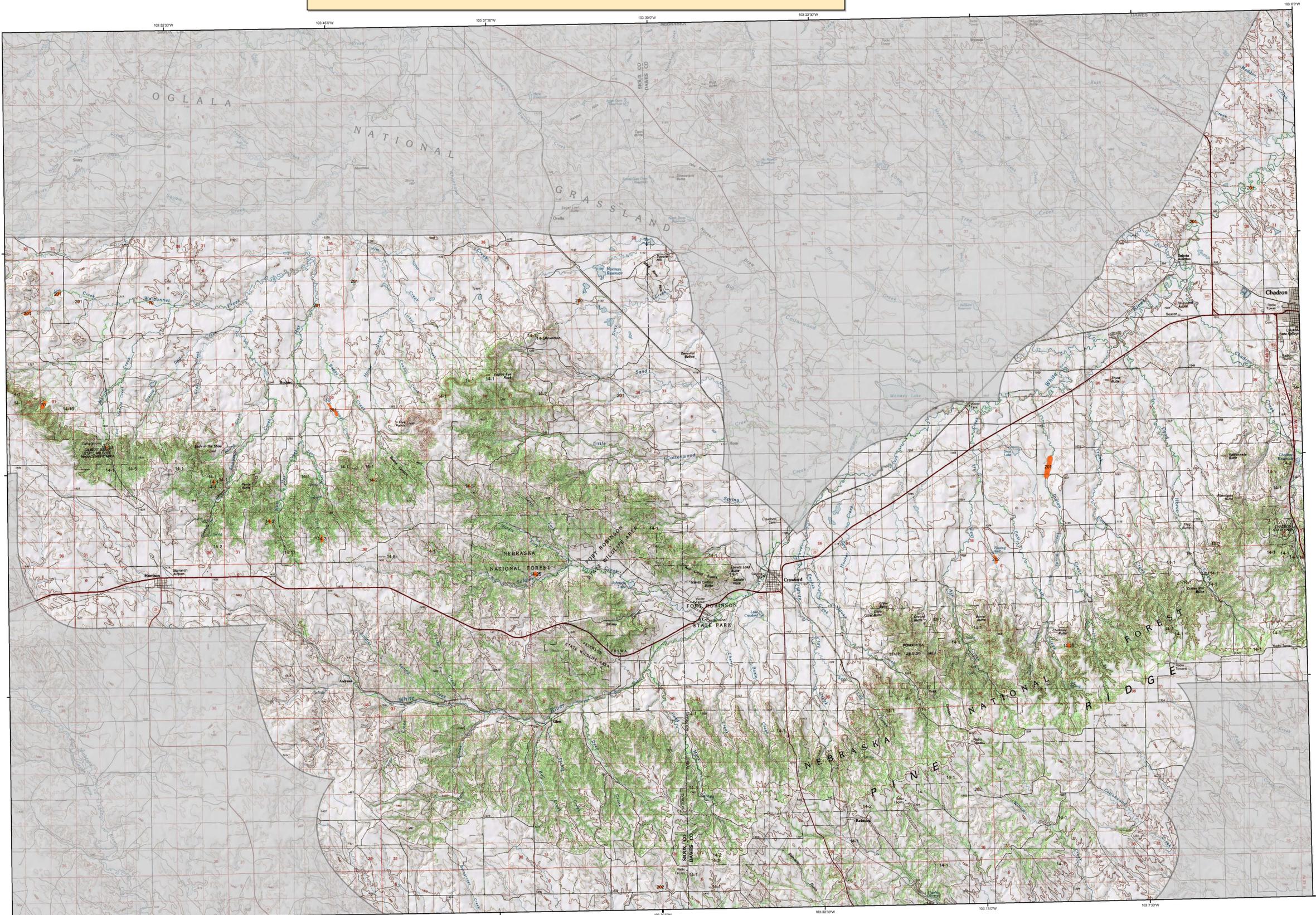


2005 Aerial Insect and Disease Survey Crawford, Nebraska USGS 100K DRG: 42103-E1



1:100,000

Legend

Causal Agent(s) **Not Flown in 2005**

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, 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: 5-12A = 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	Code	Causal Agent	Primary Host
1	Douglas-fir beetle	Douglas-fir	59	Ring-necked Puffin	Lodgepole Pine	102	fox squirrel trapping	Cottonwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	60	White pine blister rust	5-Needle Pine	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	61	Cherry leaf miner	Softwoods	108	road kill	Softwoods
4	Mountain pine beetle	Ponderosa Pine	62	Elytrodema	Ponderosa Pine	109	pinewood nematode	Scotch Pine
5	Mountain pine beetle	Ponderosa Pine	63	Indusid 602, 60 & 63	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	64	Air pollution	All Tree Species	111	foliar disease	All Tree Species
7	Fire Engulver	Douglas-fir	65	Chemical damage	All Tree Species	112	spruce Ips	White Spruce
8	Douglas-fir engraver beetle	Douglas-fir	66	Lophodermium pinastri	Softwoods	113	hemlock chestnut borer	Oak
9	Fire Engulver	White Fir	67	Rhabdocline pseudotsugae	Douglas-fir	114	anthracnose like foliar disease	Bur Oak
10	Douglas-fir engraver beetle	Subalpine Fir	68	Lophodermium arcuta	Softwoods	115	Chabak	All Tree Species
11	Western balsam bark beetle	Softwoods	69	Lophodermium arcuta	Softwoods	116	Mortality	All Tree Species
12	Unidentified bark beetle	Softwoods	70	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	71	Cotryporina sp.	Softwoods	118	Herbicide	All Tree Species
14	Pine engraver	Ponderosa Pine	72	Needle cast (Hyodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	73	Rust Rot	All Tree Species	120	Japan tortix	Quaking Aspen
16	Ponderosa pine needle miner	Lodgepole Pine	74	Unidentified disease	Softwoods	121	Marronina Blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	75	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Spruce budworm, light defol.	Douglas-fir	76	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood/Poplar
19	Spruce budworm, medium defol.	Douglas-fir	77	Winter damage heavy	All Tree Species	202	Dieback (hardwood)	Hardwoods
20	Spruce budworm, heavy defol.	Douglas-fir	78	Dieback	Softwoods	204	Dieback (oak)	Oak
21	Douglas-fir tussock moth	Douglas-fir	79	Pinon black stain	Common Pinon	210	Mortality (old cottonwood)	Cottonwood/Poplar
22	Pine butterfly	Ponderosa Pine	80	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine looper	Ponderosa Pine	81	Parasitism	Softwoods	212	Mortality (hardwood)	Hardwoods
24	Tent caterpillar	Hardwoods	82	Windthrow	All Tree Species	213	Mortality (spruce)	Spruce
25	Leaf beetles	Hardwoods	83	High water damage	All Tree Species	220	Discoloration (ash)	Ash
26	Pine needle-shaft miner	Ponderosa Pine	84	Avian/hoop	All Tree Species	221	Discoloration (cottonwood)	Softwoods
27	Pine needle-shaft miner	Ponderosa Pine	85	Pinon pine mortality	Common Pinon	222	Discoloration (cottonwood)	Cottonwood/Poplar
28	Pine tussock moth	Ponderosa Pine	86	Juniper mortality-unknown agents	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
29	Variable oak leaf caterpillar	Hardwoods	87	Gambel oak decline-unknown agents	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
30	Unidentified defoliator	All Tree Species	88	Limber pine decline-multiple agents	Limber Pine	225	Discoloration (oak)	Oak
31	Heterodactylus annosus (Fomes annosus)	Softwoods	89	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
32	Armillaria ostoyae (Armillaria mellea)	Softwoods	90	Unknown polygon	Unknown	230	Herbicide (eastern cedar)	Eastern Red Cedar
33	Polyporus schweinitzii	Softwoods	91	old prairie mortality	Common Pinon	231	Herbicide (hardwood)	Hardwoods
34	Phomopsis	Softwoods	92	dead salt tip	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
35	Cytospora	All Tree Species	93	sublim disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
36	Western gall rust	Unknown	94	lps numbers	Spruce, White Spruce	251	Unidentified defoliator (hardwood)	Hardwoods
37	Comandra rust	Unknown	95	straggle killed narrow leaf cottonwood	Narrowleaf Cottonwood	300	Mortality (pine)	Pine
38	Stachytarax rust	Lodgepole Pine						

USGS 100K Quad - Location Map



Legend
 Yellow: Flown Area in 2005
 Grey: State Boundaries
 Blue: Counties

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 Bill Schaupp & Al Dymerski
 7/7 & 9/12 - 9/14 2005
 Map Created: 01-06
 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/>