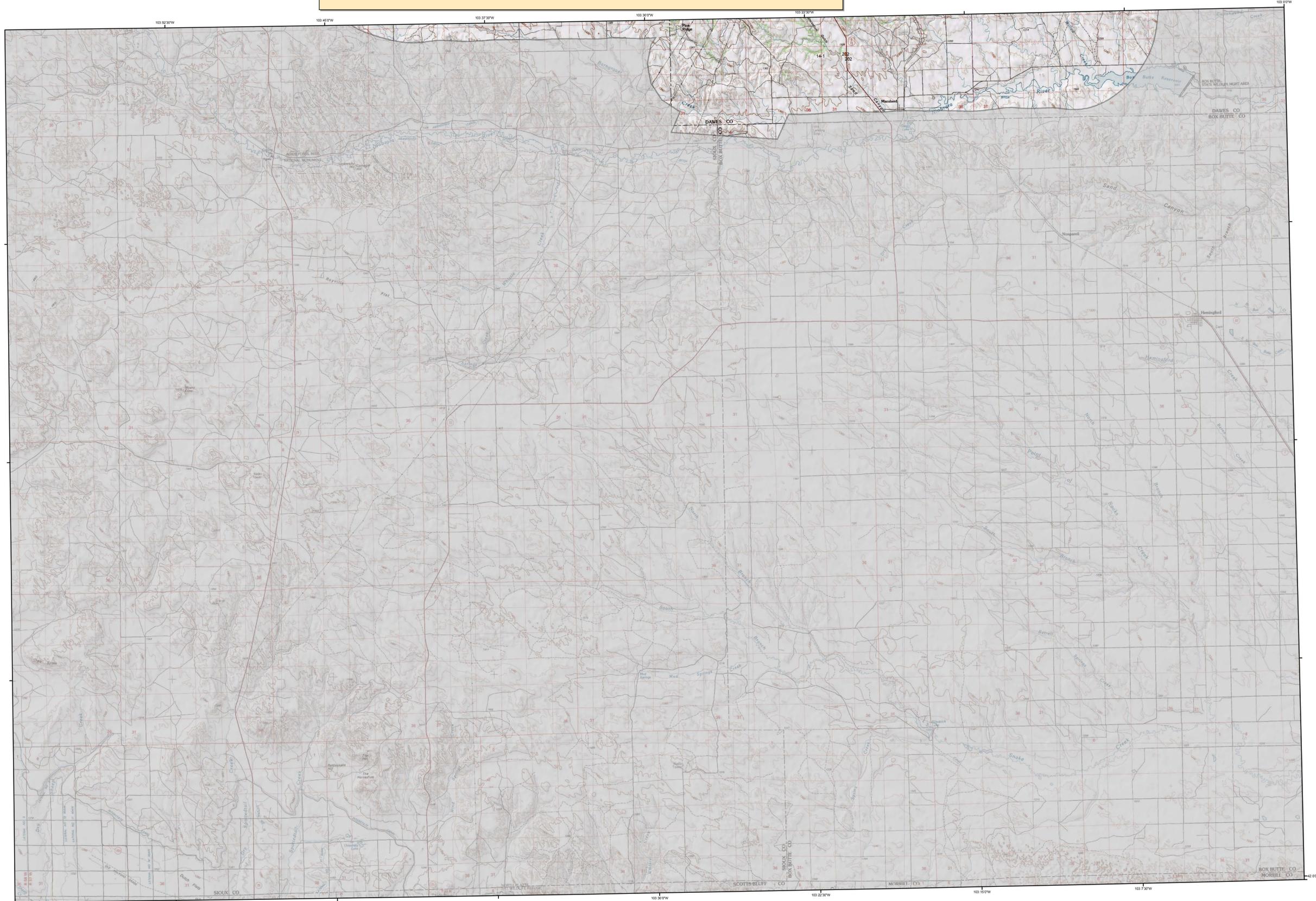


# 2007 Aerial Insect and Disease Survey Hemingford, Nebraska USGS 100K DRG: 42103-E1

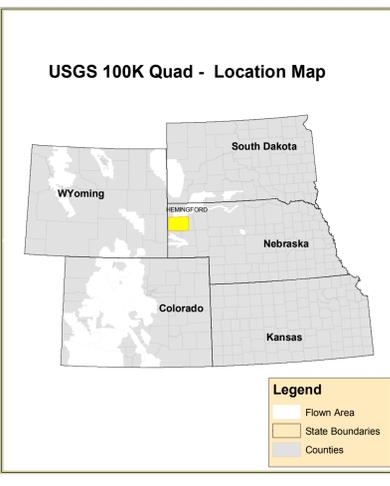


1:100,000

**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, 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: 5-120A = 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	49	Ring-necked Pigeon	Lodgepole Pine	102	fox squirrel knagging	Cottonwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	50	White pine blister rust	5-Needle Pine	107	fall webworm	Cottonwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	51	Cherry leaf miner	Softwoods	108	road salt	Softwoods
4	Mountain pine beetle	Lodgepole Pine	52	Elytromyxa	Ponderosa Pine	109	pinewood nematode	Scotch Pine
5	Western pine beetle	Ponderosa Pine	53	Induleta #02, 00 & 03	All Tree Species	110	oak wilt	Oak
6	Western pine beetle	Ponderosa Pine	54	Air pollutants	All Tree Species	111	scotch disease	All Tree Species
7	Mountain pine beetle	Ponderosa Pine	55	Chemical damage	All Tree Species	112	spruce tip	White Spruce
8	Western pine beetle	Ponderosa Pine	56	Lophodermium pinastri	Softwoods	113	hemlock chestnut borer	Oak
9	Fire Engulver	White Fir	57	Rhabdocline pseudotsugae	Douglas-fir	114	anthracnose like foliar disease	Bur Oak
10	Douglas-fir engraver beetle	Douglas-fir	58	Lophodermium arcuta	Softwoods	115	Chabak	All Tree Species
11	Western balsam bark beetle	Subalpine Fir	59	Lophodermium acicola	Softwoods	116	Mortality	All Tree Species
12	Unidentified bark beetle	Softwoods	60	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
13	Pine engraver	Lodgepole Pine	61	Cochylospora pin	Softwoods	118	Heterosia	All Tree Species
14	Pine engraver	Ponderosa Pine	62	Needle cast (Hyodermataceae)	Softwoods	119	Flagging	All Tree Species
15	Ponderosa pine needle miner	Lodgepole Pine	63	Road Rot	All Tree Species	120	Japan Tortois	Quaking Aspen
16	Ponderosa pine needle miner	Ponderosa Pine	64	Unidentified disease	Softwoods	121	Marronina Blight	Quaking Aspen
17	Jack pine budworm	Jack Pine	65	Winter damage light	All Tree Species	200	Dieback (ash)	Ash
18	Spruce budworm, light defol.	Douglas-fir	66	Winter damage medium	All Tree Species	201	Dieback (cottonwood)	Cottonwood
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	Stolida	Softwoods	204	Dieback (oak)	Oak
21	Douglas-fir tussock moth	Douglas-fir	69	Pinon black stain	Common Pinon	210	Mortality (old cottonwood)	Cottonwood/Poplar
22	Pine butterfly	Ponderosa Pine	70	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
23	Pine looper	Ponderosa Pine	71	Panoplia	Softwoods	212	Mortality (hardwood)	Oak
24	Pine tortrix	Ponderosa Pine	72	Windthrow	All Tree Species	213	Mortality (oak)	Oak
25	Tent caterpillar	Hardwoods	73	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
26	Leaf beetles	Hardwoods	74	Avianchra	All Tree Species	220	Discoloration (ash)	Ash
27	Oak leaf roller	Hardwoods	75	Aspen decline-multiple agents)	Softwoods	221	Discoloration (cottonwood)	Cottonwood/Poplar
28	Pine needle-shaft miner	Ponderosa Pine	76	Pinon pine mortality	Common Pinon	222	Discoloration (cottonwood)	Cottonwood/Poplar
29	Pine sawfly	Ponderosa Pine	77	Juniper mortality-unknown agents)	Juniper	223	Discoloration (eastern cedar)	Eastern Red Cedar
30	Pine tussock moth	Ponderosa Pine	78	Gambel oak decline-unknown agents)	Gambel Oak	224	Discoloration (hardwood)	Hardwoods
31	Carlinworms	Hardwoods	79	Limber pine decline-multiple agents)	Limber Pine	225	Discoloration (oak)	Oak
32	Variable oak leaf caterpillar	All Tree Species	80	Hail damage	All Tree Species	226	Discoloration (spruce)	Spruce
33	Unidentified defoliator	Softwoods	81	Unknown polygon	Unknown	230	Harbicide (cottonwood)	Cottonwood/Poplar
34	Heterostelium anisomum (Fomes anisomus)	Softwoods	100	old prairie mortality	Common Pinon	231	Herbicide (eastern cedar)	Eastern Red Cedar
35	Armillaria ostoyae (Armillaria mellea)	Softwoods	101	road salt tip	Lodgepole Pine	240	Flagging (hardwood)	Hardwoods
36	Polygonus schweinitzi	Softwoods	102	sublim disease	Elm	250	Unidentified defoliator (cottonwood)	Cottonwood/Poplar
37	Phomopsis	Softwoods	103	Aspen light	Ponderosa Pine	251	Unidentified defoliator (elm)	Elm
38	Cytospora	All Tree Species	104	lps numbers	Spruce, White Spruce	252	Unidentified defoliator (hardwood)	Hardwoods
39	Western gall rust	Unknown	105	straght killed narrow leaf cottonwood	Narrowleaf Cottonwood	300	Mortality (pine)	Pine
40	Comandra rust	Unknown						
41	Stachytaraxa 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.

**Area surveyed by Bill Schaupp & Al Dymerski  
Map Created: 12/12/2007  
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/>