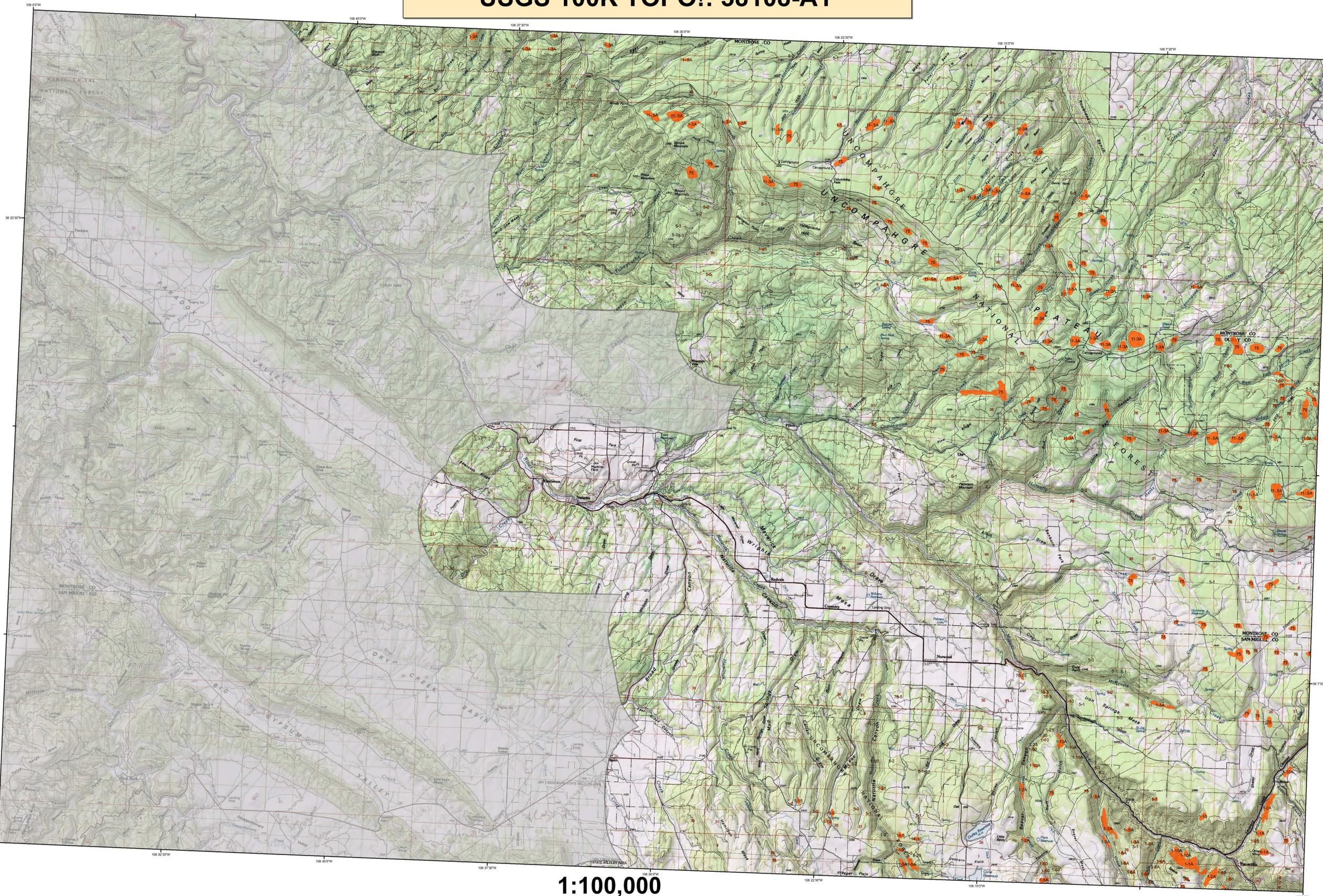


2006 Aerial Insect and Disease Survey Nucla, Colorado USGS 100K TOPO!: 38108-A1



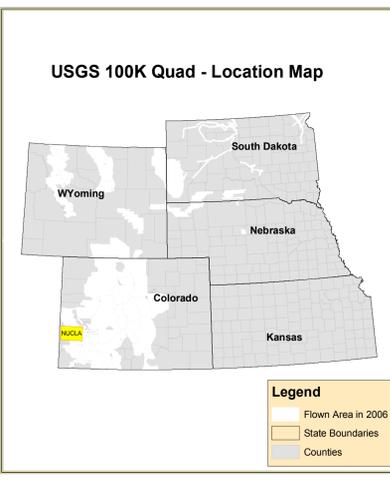
1:100,000

Legend

Causal Agent(s) **Not Flown in 2006**

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 "fader" 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 "fader" trees (or an intensity code). For example: 5-122A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "fader" 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 "fader" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "fader" 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	60	White pine blister rust	Lodgepole Pine	107	fall webworm	Cottwood/Poplar
2	Engelmann Spruce Beetle	Engelmann Spruce	61	Cherry root disease	Softwoods	108	fall webworm	Cottwood/Poplar
3	Mountain pine beetle	Ponderosa Pine	62	Elyrodium	Ponderosa Pine	109	pinewood nematode	Softwoods
4	Mountain pine beetle	Lodgepole Pine	63	Includes #65, 66 & 68	All Tree Species	110	oak wilt	Oak
5	Western pine beetle	Ponderosa Pine	64	Air pollution	All Tree Species	111	scabies disease	All Tree Species
6	White Fir	White Fir	65	Chemical damage	All Tree Species	112	spuce ips	White Spruce
7	White Fir	White Fir	66	Lophodermium pinastri	Softwoods	113	swelled chestnut borer	Oak
8	Douglas fir engraver beetle	Douglas fir	67	Rhabdocline psudotsugae	Douglas fir	114	anthracnose like foliar disease	Bur Oak
9	Western balsam bark beetle	Subalpine Fir	68	Lophodermium arcuta	Softwoods	115	Diaback	All Tree Species
10	Jack pine budworm	Softwoods	69	Lecanostoma acicola	Softwoods	116	Mortality	All Tree Species
11	Unidentified bark beetle	Lodgepole Pine	70	Lophodermium concolor	Softwoods	117	Discoloration	All Tree Species
12	Pine engraver	Lodgepole Pine	71	Distomera pin	Softwoods	118	Herbicide	All Tree Species
13	Pine engraver	Ponderosa Pine	72	Needle cast (Hypodermataceae)	Softwoods	119	Flagging	All Tree Species
14	Pine engraver	Ponderosa Pine	73	Root rot	All Tree Species	120	spine tortix	Quaking Aspen
15	Ponderosa pine needle miner	Lodgepole Pine	74	Unidentified disease	Softwoods	121	Marsdenia Blight	Quaking Aspen
16	Lodgepole pine needle miner	Lodgepole Pine	75	Winter damage light	All Tree Species	200	Diaback (ash)	Ash
17	Jack pine budworm	Jack Pine	76	Winter damage medium	All Tree Species	201	Diaback (cottonwood)	Cottwood/Poplar
18	Unidentified bark beetle	Douglas fir	77	Winter damage heavy	All Tree Species	202	Diaback (hardwood)	Hardwoods
19	Spinec budworm, medium defol.	Douglas fir	78	Diaback	Softwoods	204	Diaback (oak)	Oak
20	Spinec budworm, heavy defol.	Douglas fir	79	Pinyon black stain	Common Pinyon	210	Mortality (old cottonwood)	Cottwood/Poplar
21	Douglas fir tussock moth	Douglas fir	80	Fire	All Tree Species	211	Mortality (eastern cedar)	Eastern Red Cedar
22	Pine butterfly	Ponderosa Pine	81	Peruone	Softwoods	212	Mortality (hardwood)	Hardwoods
23	Pine looper	Ponderosa Pine	70	Winter damage	All Tree Species	213	Mortality (oak)	Oak
24	Pine tortix	Ponderosa Pine	71	High water damage	All Tree Species	214	Mortality (spruce)	Spruce
25	Tent caterpillars	Hardwoods	72	Avian/che	All Tree Species	220	Discoloration (ash)	Ash
26	Leaf beetles	Hardwoods	73	Aspen decline-multiple agents)	Quaking Aspen	221	Discoloration (cottonwood)	Cottwood/Poplar
27	Oak leaf roller	Hardwoods	74	Pinyon pine mortality	Common Pinyon	222	Discoloration (eastern cedar)	Eastern Red Cedar
28	Pine needle-sheath miner	Ponderosa Pine	75	Juniper mortality-unknown agents)	Juniper	223	Discoloration (hardwood)	Hardwoods
29	Variable oak leaf caterpillar	All Tree Species	76	Limber pine decline-multiple agents)	Limber Pine	224	Discoloration (spruce)	Spruce
30	Unidentified defoliator	All Tree Species	77	Unknown polygon	Unknown	230	Herbicide (cottonwood)	Cottwood/Poplar
31	Herbivorous arthropod (Tomus arnosus)	Softwoods	100	old pinon mortality	Common Pinyon	231	Herbicide (eastern cedar)	Eastern Red Cedar
32	Armillaria ostoyae (Armillaria mellea)	Softwoods	101	road salt tip	Softwoods	240	Flagging (hardwood)	Hardwoods
33	Polygonus schweinfurthi	Softwoods	102	dutch elm disease	Elm	250	Unidentified defoliator (cottonwood)	Cottwood/Poplar
34	Phomopsis	Softwoods	103	girdler blight	Ponderosa Pine	251	Unidentified defoliator (elm)	Elm
35	Cytospora	All Tree Species	104	log hunter	Spruce, White Spruce	300	Mortality (pine)	Pine
36	Western gall rust	Unknown	105	straght killed narrow leaf cottonwood	Narrowleaf Cottonwood			
37	Comandra rust	Unknown						
38	Stachyria 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 Patrick Ahern, Kelly Rogers 09/18 - 09/19 2006
Erik Johnson, Patrick Ahern, Kelly Rogers 09/11 - 09/13 2006
 Map Created: 01/04/2006
 Projection: UTM NAD83 Zone 13
 Author: J. Ross, USDA Forest Service

DIRECT ALL INQUIRIES TO:

Colorado State Forest Service
 Colorado State University
 Fort Collins, Colorado 80523

USDA Forest Service, Region 2
 Renewable Resources
 Forest Health Management
 PO Box 25127
 Lakewood, Colorado 80225

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/>