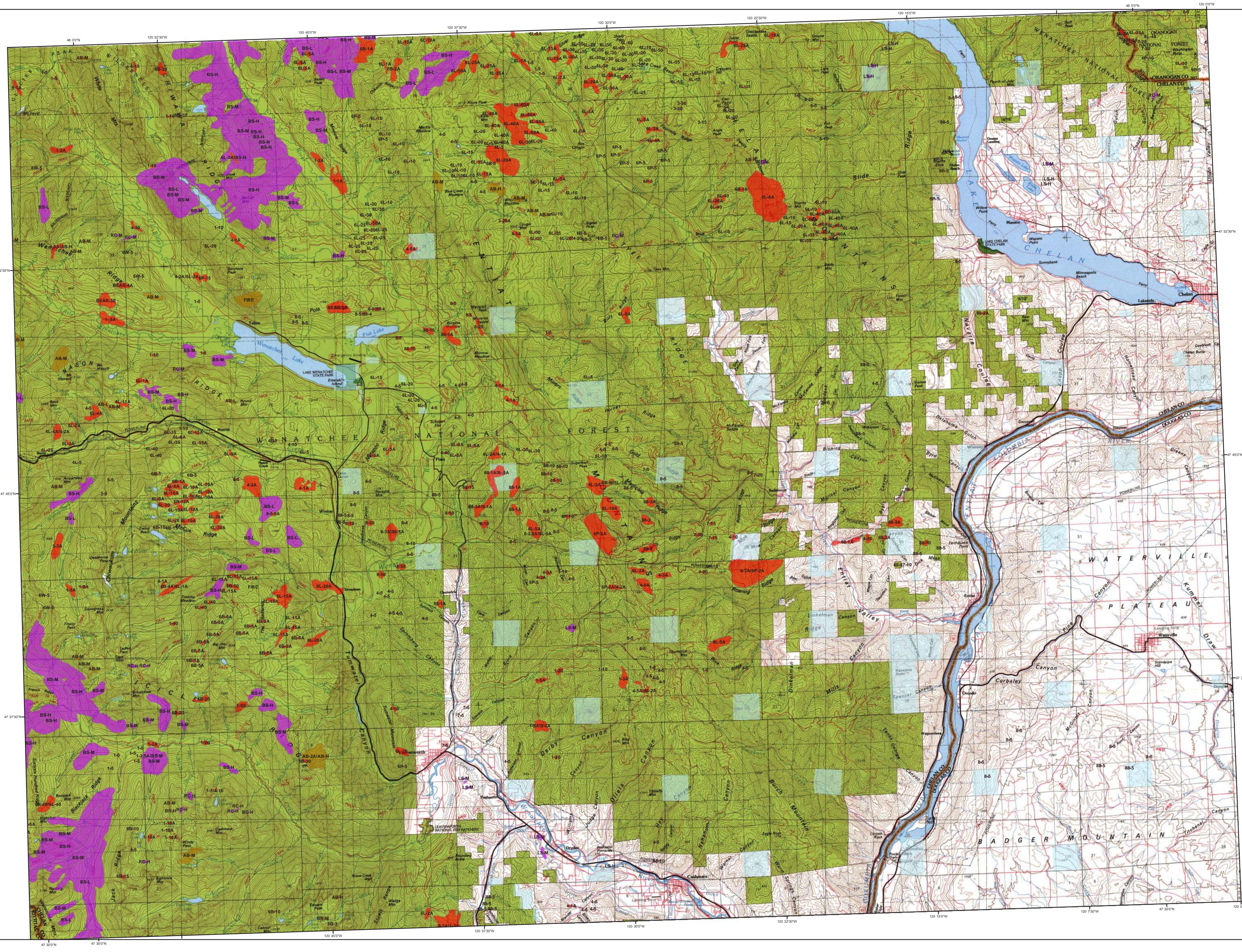
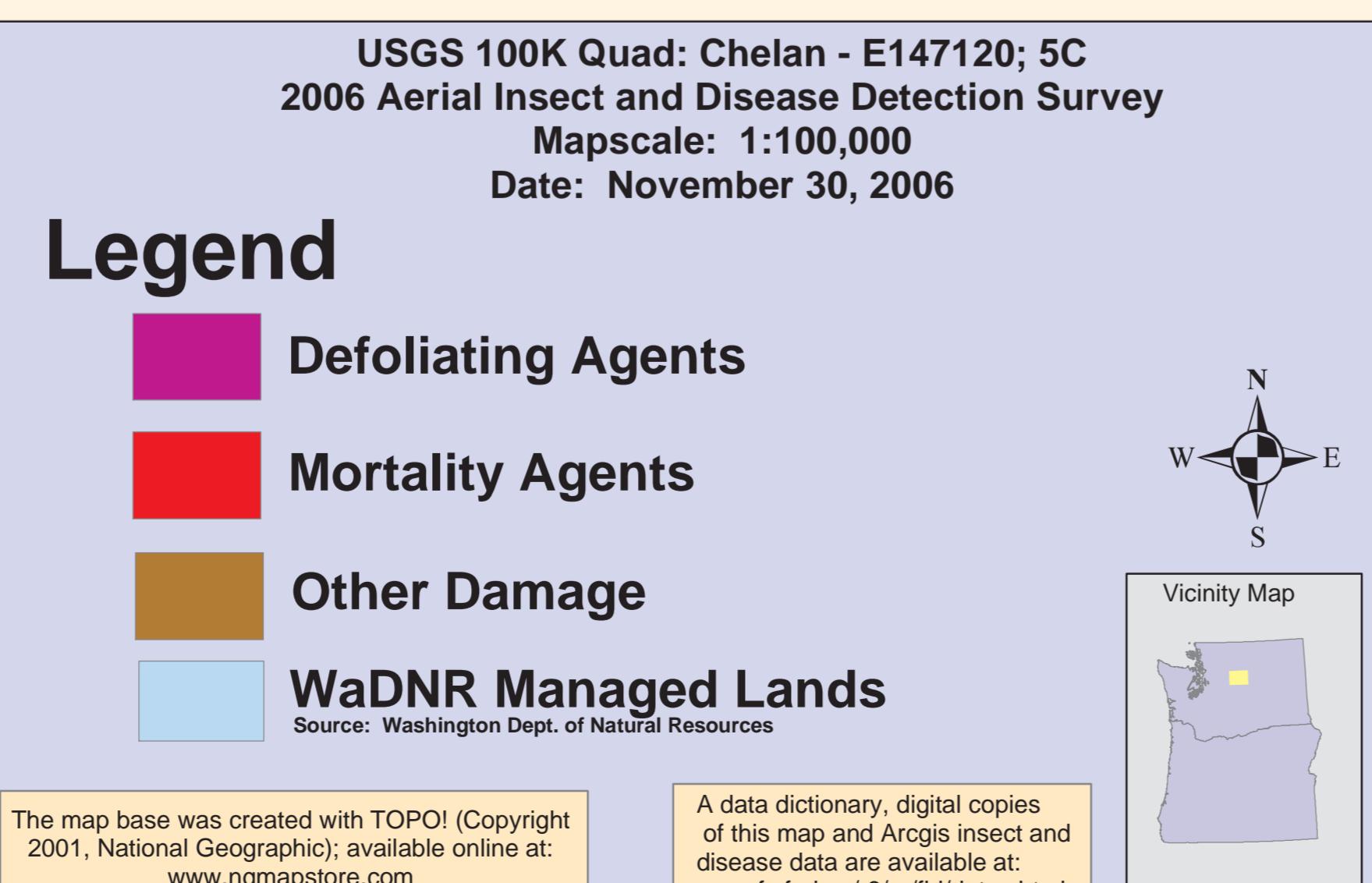


2006 Aerial Insect and Disease Survey

USGS 100K Quad: Chelan - E147120; 5C



Defoliators			Mortality Agents		
Code	Damaging Agent	Primary Host	Code	Damaging Agent	Primary Host
AS	Spruce aphid	Silky spruce	1	Douglas-fir engraver	Douglas-fir
BB	Western black-headed budworm	Hemlock, spruce, true fir	2	Douglas-fir engraver	Douglas-fir
BM	Pine budworm	Pine	3	Fir engraver	Spruce
BP	Sugar pine tortrix	Lodgepole, ponderosa pine	4	Fir engraver	True fir
BV	Balsam's blight/Lophodermella	True fir, Douglas-fir, spruce	5	Western hemlock bark-beetle	Silky-alpine fir
CH	Larch	Western larch	6B	Mountain pine bark-beetle	Western white pine
HL	Western hemlock looper	Western hemlock looper	6L	Mountain pine beetle	Jeffrey pine
LG	Western spruce stem borer	Douglas-fir, Western hemlock	6P	Mountain pine beetle	Knobcone pine
LL	Larch looper	Western larch	6W	Mountain pine beetle	Lodgepole pine
LS	Black pine needle scale	Hemlock-spruce pine	7	Mountain pine beetle	Ponderosa pine
MD	Mountain hemlock budmoth	Western larch	8	Mountain pine beetle	Sugar pine
ML	Larch budmoth	Western larch	8B	Mountain pine beetle	Western white pine
MR	Douglas-fir needle midge	Douglas-fir	88	Mountain pine beetle	Ponderosa, lodgepole pines
MS	Mountain hemlock budmoth	Spruce	9	Silver fir engraver	Ponderosa
ND	Needle miner	Douglas-fir	10	Balsam looper	Pole-sized ponderosa pine
NJ	Needle miner	Spruce	11	False alder	Silver fir
NK	Needle miner	Knobcone pine	12	Flatheaded wood borer	Conifer
NL	Needle miner	Lodgepole pine	13	Dying hemlock	Conifer
NN	Needle miner	Conifer	14	Gouty pitch midge	Conifer
NS	Needle miner	Ponderosa pine	15	Hail	All species
NT	Needle miner	Sugar pine	16	Hail	Ponderosa pine
NW	Needle miner	True fir	17	Hair	All species
OL	Western oak looper	Oaks	18	Heartwood decline	Hemlock
PB	Pine Butterfly	Ponderosa pine	19	No areas not found	Hemlock
PC	Pine cone cast	Ponderosa pine	20	Out	Hemlock
PH	Phantom hemlock looper	Hemlock, Douglas-fir	21	Pacific madrone	Hemlock
PN	Pandora moth	Ponderosa, Jeffrey pines	22	Leaf rust in poplars	Hemlock
PS	Swiss needle cast	Pines	23	Red spruce	Hemlock
SC	Needle cast	Conifer	24	Slime	Hemlock
SA	Sawfly	Conifer	25	Unknown defoliation	Hemlock
SD	Sawfly	Douglas-fir	26	WATR	Hemlock
SP	Sawfly	True fir	27	Water damage	Hemlock
SH	Sawfly	Hemlock	28	Wind damage	Hemlock
SK	Sawfly	Knobcone pine	29	Wind damage	Hemlock
SS	Sawfly	Lodgepole pine	30	Wind damage	Hemlock
SM	Satin moth	Aspens	31	Wind damage	Hemlock
SNC	Swiss needle cast	Douglas-fir	32	Wind damage	Hemlock
SP	Sawfly	Ponderosa pine	33	Wind damage	Hemlock
SW	Sawfly	Western larch	34	Wind damage	Hemlock
TA	Tent caterpillar, aspen	Alder	35	Wind damage	Hemlock
TC	Tent caterpillar, other	Blackwoods	36	Wind damage	Hemlock
TM	Tent caterpillar, firs	True fir, Douglas-fir	37	Wind damage	Hemlock
TS	Tent caterpillar, other	Aspen	38	Wind damage	Hemlock



How the Aerial Surveys Are Conducted

Data represented on this map are based on trees visibly affected by forest insects and diseases detected and recorded during aerial survey flights conducted by the USDA Forest Service and the Washington Department of Natural Resources. Observers have just 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, digital 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.

The aerial survey provides information on the current status for many causal agents, and is 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. Specially designed surveys with modified flight patterns and timing may be conducted to more accurately delineate the extent and severity of a particular disturbance agent. Special surveys, such as Swiss needle cast surveys, are conducted when resources are available to address situations of sufficient economic, political or environmental importance.

DIRECT ALL INQUIRIES TO:

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Resource Protection
Forest Health
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Olympia, WA 98504

-- OR --

USDA Forest Service, Region 6
Natural Resources
Forest Health Protection
PO Box 3623
Portland, Oregon 97208

DISCLAIMER***
The insect and disease data presented should only be used as an indicator of insect and disease activity, and should be ground-checked for precise location, extent, severity and causal agent. Color coded polygons show locations where trees were severely killed or defoliated. Intensity of damage is variable and not all trees within coded polygons are dead or defoliated. The cooperators reserve the right to correct, update, modify or replace GIS products without notice. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.