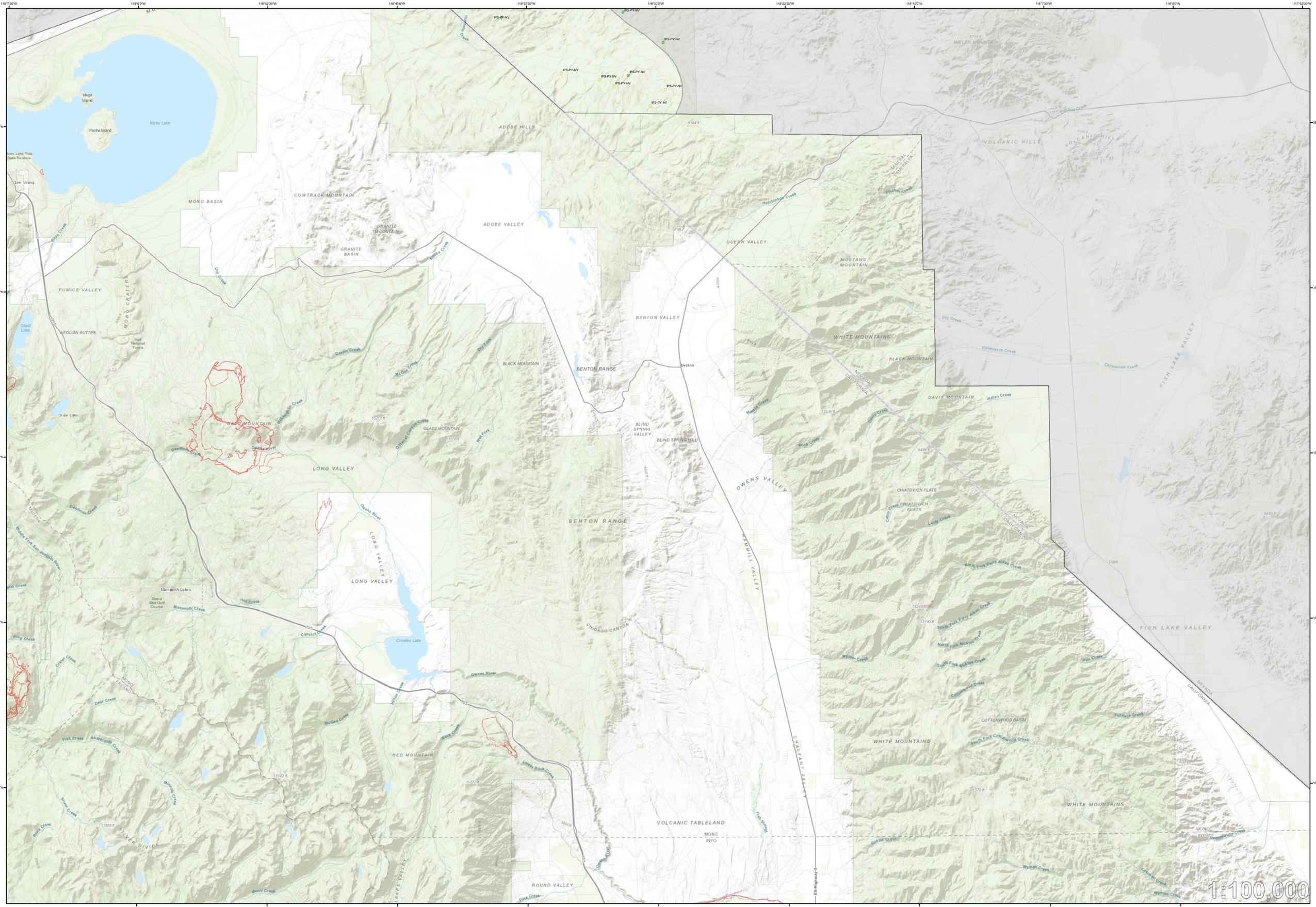


# 2018 Aerial Insect and Disease Survey Benton Range, California



### Legend

**Damage Points**  
Number of Trees

- 1 - 5
- 6 - 30
- > 30

**Damage Polygons**  
Percent Affected

- Light (1-10%)
- Moderate (11-50%)
- Severe (>50%)
- Not flow
- Fire Perimeters (2015 - 2017)

**CODING SYSTEM**  
Codes have two parts: the first represents the causal agent and the second represents the host. If needed, the two-part code is followed by an 'M' or 'H' to indicate severity of the activity. Data is color coded to represent the intensity of activity as seen in the legend.

**Examples:**  
MPB-LPP represents mountain pine beetle in Lodgepole pine.  
WSB-DF-SAF-H represents western spruce budworm infestation in subalpine fir/Douglas-fir mix with >75% of leaves defoliated.

Causal Agent Codes	Host Codes
<b>Abiotic</b>	ASP Aspen
Avlnch-All	Avlnch Rocky Mtn bristlecone pine
Strncht	Black cottonwood
Flood	Floodng-high water
FRDST	Frost (ASP)
Und S&B-All	Und S&B-All
<b>Aspen</b>	
ASP Decline	Aspen Decline
ASP Dieback	Aspen Dieback
Mans, Mans BI	Mansonia blight
<b>Bark beetles</b>	
DFB	Douglas fir beetle
ESB	Engelmann spruce beetle
FEB	Fir engraver beetle
IPS	Pine engraver beetle
Jeffrey PB	Jeffrey pine beetle
MPS	Mountain pine beetle
WBSB	Western balsam bark beetle (SAF)
West PB	Western pine beetle (PP)
<b>Defoliation</b>	
77Def Defol	Unknown defoliator
BWA	Balsam woolly adelgid
Clmwd-AB	Cottonwood leaf beetle
CFM	Douglas fir tussock moth
FTC	Fir tent caterpillar (ASP)
Satin_Moth	Satin moth
Scale	Prion tree scale
Budworm	Western pine budworm
WSB	Western spruce budworm
<b>Disease</b>	
77Dis	Unknown foliage or shoot disease
77M	Unknown mortality
77W	Unknown rust
BlkStn	Black stain foot disease
DF-Nd_Cast	Needle cast
FRB	Fir broom rust (SAF)
Lgph	Lophodermella needle cast (LPP)
SAF-Mn_Cmplex	SAF Mortality Complex
WPBR	White pine blister rust
NSB	Needle blight (CON)
<b>Host Codes</b>	
CON	Unknown conifer
DF	Douglas fir
ES	Engelmann spruce
HW	Unknown hardwood
UM	Limber pine
LJ_LPP	Lodgepole pine
PNV, Nvny	Nevada pinyon
PP	Ponderosa Pine
RF	Red fir
SAF	Subalpine fir
SGP	Sugar pine
PN-UT	Utah pinyon, common or two-needle pinyon
WSP	Whitebark pine
WWP	Western white pine
<b>Miscellaneous</b>	
H	Defoliation - Heavy (>75% of leaves defoliated)
M	Defoliation - Moderate (50-75% of leaves defoliated)
TK	Top kill
FLAG	Flagging
MON	Monotony
ALL	All tree species

### Region 4 - Location Map

USGS 100K Quad  
USGS 100K TOPOI: 37118-E1  
Benton Range, California

**Legend**

- Counties
- Flow
- R4 Boundary

### HOW THE AERIAL SURVEYS ARE CONDUCTED

Data represented on this map are based on trees visibly affected by forest insects, diseases and abiotic factors that are detected and recorded by observers during aerial survey flights. These flights are conducted by a joint partnership between the USDA Forest Service and state cooperators.

Observers have just a few seconds to recognize characteristic signatures of healthy and damaged trees of different species, correctly diagnose damage causal agents, estimate the intensity or extent of damage, and precisely record information on a digital sketch mapping platform. Air turbulence, cloud shadow, haze, smoke, and observer experience can affect the quality of the survey. These sketchmaps and the resultant data summaries provide an estimate of conditions on the ground, and may differ from estimates derived by other methods.

Annual aerial surveys provide important information on the current status of detected causal agents and can be used to determine trends in damage levels over time by comparing previous and current survey data over large areas.

**Map Created: 2/14/2019**  
**Projection: UTM NAD83 Zone 11S**  
**Author: R1/R4 FHP GIS, USDA Forest Service**

### DIRECT ALL INQUIRIES TO:

**USDA FOREST SERVICE REGION 1**  
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Forest Health Protection  
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**DISCLAIMER**

The digital map layer upon which the insect and disease data are presented vary in both source and scale, therefore, accuracy is not guaranteed.

The insect and disease data should be used only as an indicator of insect and disease activity, and should be ground-truthed for actual location and causal agent. Polygons indicate locations of tree mortality, defoliation, and/or other damage. Intensity of damage is variable, and not all trees and areas indicated are dead or damaged. The joint cooperators reserve the right to correct, modify, update, or replace the data as necessary. Using this data for purposes other than those for which it was intended may yield inaccurate or misleading results.