

2018 Update

Whitebark Pine Pilot Fieldwork Report

Sierra National Forest



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CALIFORNIA
NATIVE PLANT SOCIETY



Methods and Materials

The California Native Plant Society (CNPS) obtained updated GIS data from various sources including the USFS Pacific Southwest - Region Remote Sensing Lab's CALVEG maps (USFS 2018), and California Department of Fish and Wildlife (CDFW) - High Elevation Species Sightings Sierra Nevada (CDFW 2018). In addition, we used the updated species profile from the CNPS Rare Plant Program, which maps the distribution of whitebark pine using many sources such as herbarium specimens and other observational data (Serkanic and Sims 2018).

CNPS reviewed the CNPS/CDFW Vegetation Rapid Assessment protocol used in the 2013 pilot project for evaluating whitebark pine vegetation and insect/disease impacts. We made minor edits and clarification to the data sheet and protocol in order to collect standardized data across the five forests. A reconnaissance (recon) form was used to gather simplified, general information about stands of vegetation, especially for WBP stands that were near or adjacent to stands already sampled by a full Rapid Assessment.

Upon evaluating existing datasets and obtaining input from Sierra National Forest staff, Joanna Clines, we identified priority areas to ground-truth in order to determine the distribution and health/status of whitebark pine on National Forest lands.

Results

In August 2018, CNPS staff assessed whitebark pine on the High Sierra Ranger District of Sierra National Forest in the John Muir Wilderness, Dinkey Lakes Wilderness and non-wilderness areas. Across four days, CNPS conducted 13 Rapid Assessments and 4 Recons.

Along the Dusy-Ershim OHV Route towards Mount Givens, CNPS staff completed 5 Rapid Assessments (3 whitebark dominant, 2 lodgepole dominant) and 2 Recons (1 whitebark dominant, 1 lodgepole dominant). Five of these observations were in the John Muir Wilderness, 1 in the Dinkey Lakes Wilderness and 1 in non-wilderness. Whitebark pine was found in exposed areas around 3,050 m (10,030 ft) and along the Mount Givens ridge around 3,200 m (10,500 ft). In slightly lower elevation areas around 3,030 m (9,940 ft) and more protected areas, lodgepole pine is dominant. The stands are in 'Excellent' health with 1% mortality from WPBR.

In the Mt. Hooper area of the John Muir Wilderness, CNPS staff assessed whitebark pine around Harvey, Hooper and Neil Lakes and north toward Cirque Lake. In this area, there were 7 Rapid Assessments (4 whitebark dominant, 3 lodgepole dominant) and 2 Recons (whitebark dominant). At elevations around 3,150 m (10,330 ft), lodgepole dominated forests begin transitioning to whitebark pine. At high elevations near 3,450 m (11,320 ft), whitebark pine exhibited a Krummholz form. The stands surveyed here are in 'Excellent' health with less than 1% mortality from WPBR.

For more detailed summary information from the field surveys, summary tables, and photographs please refer to Appendix 1. The maps that follow show predicted delineations based on CALVEG, areas of whitebark pine alliance, areas of whitebark pine presence and predicted areas (negative report) that do not accurately represent whitebark pine distributions. These areas were assessed on the ground during field surveys.

Conclusions and Discussion

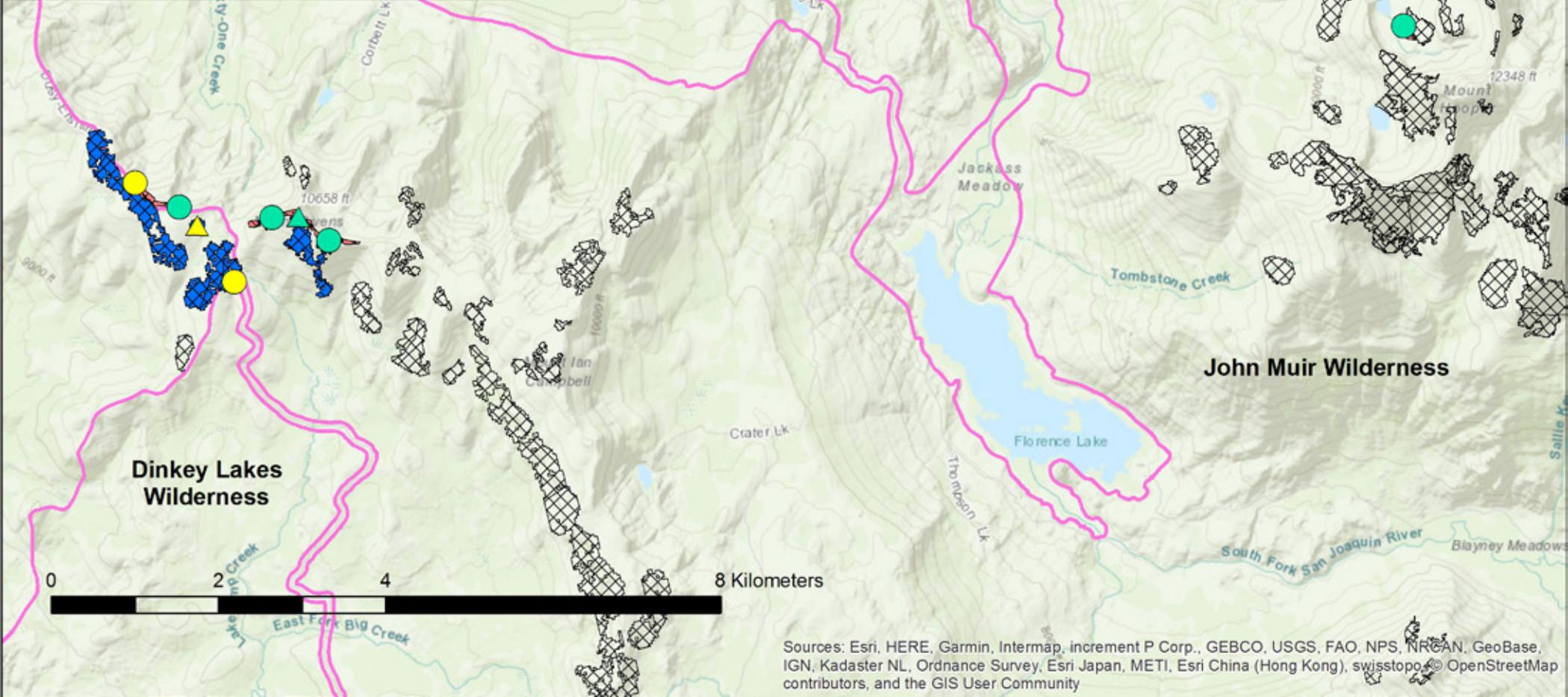
Whitebark pine field work in the Sierra National Forest was important in assessing the overall distribution of this species. Using the California Natural Diversity Database (CNDDDB) protocol for documenting overall quality and viability of whitebark pine stands observed in the Sierra National Forest, we conclude that stands overall had excellent viability (probability of persistence) over the next 20 years.

Overview of Whitebark Pine Surveys, High Sierra Ranger District, Sierra National Forest

2018 Surveys

Survey Type, Alliance

- Rapid Assessment - *Pinus albicaulis*
- ▲ Reconnaissance - *Pinus albicaulis*
- Rapid Assessment - *Pinus contorta* ssp. *murrayana*
- ▲ Reconnaissance - *Pinus contorta* ssp. *murrayana*
- ★ Other *Pinus albicaulis* Observations
- ▨ *Pinus albicaulis* Predicted
- *Pinus albicaulis* Alliance
- *Pinus albicaulis* Presence
- Negative Report
- ▭ Wilderness Boundary



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Future Recommendations on the Sierra National Forest

Bass Lake Ranger District

Ground truth predicted polygons in the Ansel Adams Wilderness Area. Survey CDFW whitebark pine observation outside near Jackass Creek.

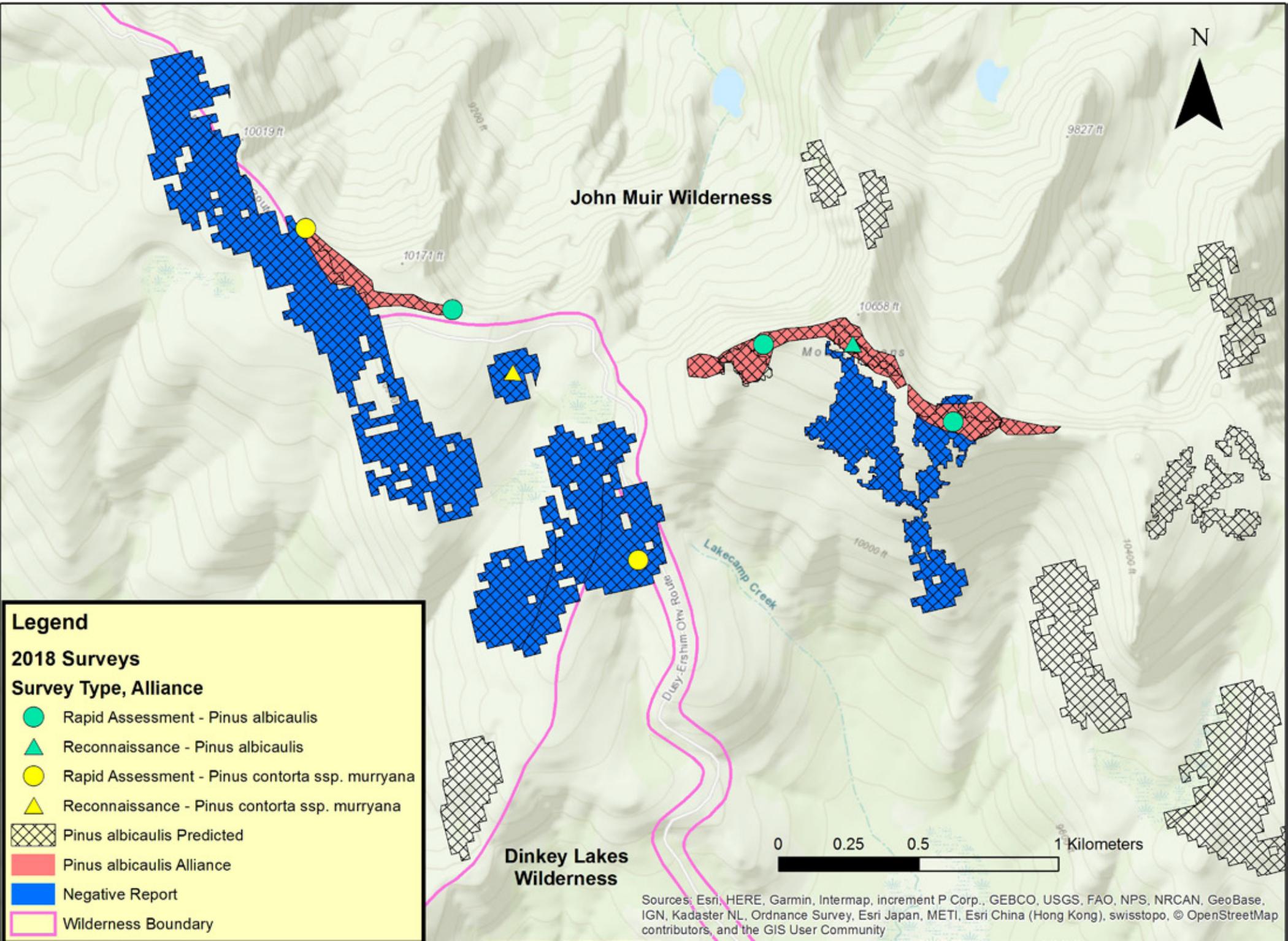
High Sierra Ranger District

Ground truth whitebark pine observation in the Kaiser Wilderness Area. Survey CDFW whitebark pine observation near Pine Ridge and western populations along the lower edge of the whitebark elevation range.

Literature Cited

- California Department of Fish and Wildlife (CDFW). 2018. High Elevation Species Sightings - Sierra Nevada North Central Region, Resource Assessment Program. <https://map.dfg.ca.gov/metadata/sec/ds2772.html>
- California Natural Diversity Database (CNDDDB). 2014. California Department of Fish and Game, Biogeographic Data Branch, Vegetation Classification and Mapping Program, Sacramento, CA.
- Serkanic, S. and A. E. Sims. 2018. *Pinus albicaulis* Engelm. (whitebark pine). Plant Species Evaluation Form, DRAFT FINAL Version 1, 2018-06-19. USDA Forest Service. 81 pp.
- UC Berkeley. 2013. Consortium of California Herbaria. Data provided by the participants of the Consortium of California Herbaria. Data available at:
http://ucjeps.berkeley.edu/cgi-bin/get_consort.pl?taxon_name=Pinus%20albicaulis
- USDA Forest Service. 2018. Whitebark Pine (*Pinus albicaulis*) range map in California. Pacific Southwest Region, Remote Sensing Lab and Region 5 Ecology Program.

Dusy-Ershim OHV Route and Mount Givens, High Sierra Ranger District, Sierra National Forest

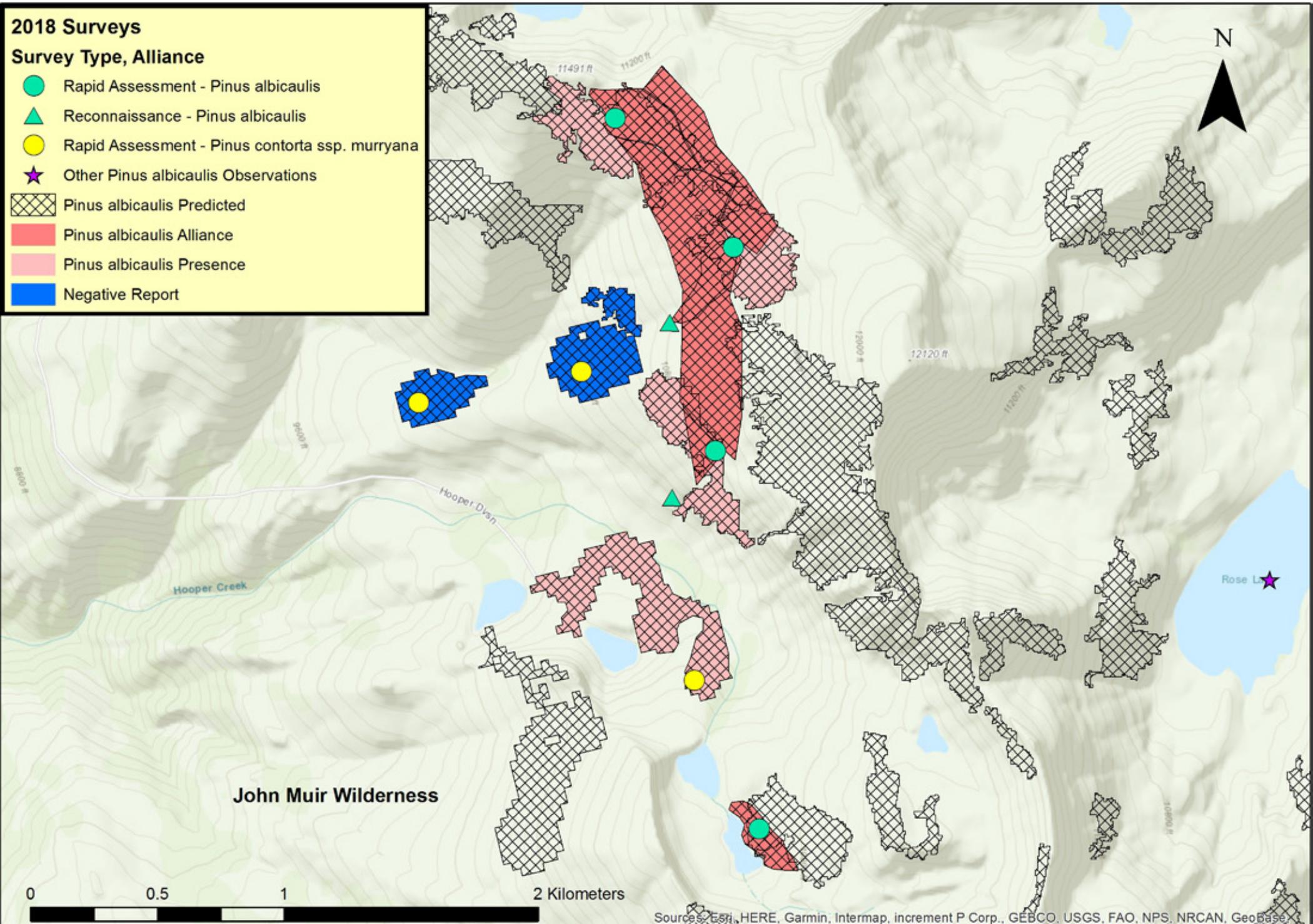


Mount Hooper area, High Sierra Ranger District, Sierra National Forest

2018 Surveys

Survey Type, Alliance

- Rapid Assessment - *Pinus albicaulis*
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- ★ Other *Pinus albicaulis* Observations
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Appendix 1: Photos and tables from 2018 Field Work



Figure 1. *Pinus albicaulis* stand near Mt. Hooper, John Muir Wilderness. Photo by CNPS.



Figure 2. Krumholtz *Pinus albicaulis* stand on ridge south of Depressed Lake, John Muir Wilderness. Photo by CNPS.



Figure 3. Unknown stem mortality on *Pinus albicaulis* on west ridge of Mt. Givens, John Muir Wilderness. Photo by CNPS.



Figure 4. Presumed mountain pine beetle mortality on *Pinus albicaulis* near Mt. Hooper, John Muir Wilderness. Photo by CNPS.

Table 1. Rapid Assessment summary, Sierra National Forest

| DbaseID | County | Ranger District | Wilderness | Site Name | Alliance | Altitude (m) | Estimated Pct Cover PIAL | Impacts |
|----------------|---------------|------------------------|-------------------|-----------------------|--------------------------------------|---------------------|---------------------------------|----------------|
| WBP0400 | Fresno | High Sierra | John Muir | Dusy-Ershim OHV Route | <i>Pinus contorta ssp. murrayana</i> | 3022 | 8 | Grazing (low) |
| WBP0401 | Fresno | High Sierra | John Muir | Dusy-Ershim OHV Route | <i>Pinus albicaulis</i> | 3058 | 15 | Grazing (low) |
| WBP0402 | Fresno | High Sierra | John Muir | Mt. Givens | <i>Pinus albicaulis</i> | 3195 | 14 | WPBR (1%) |
| WBP0403 | Fresno | High Sierra | John Muir | Mt. Givens | <i>Pinus albicaulis</i> | 3214 | 12 | Grazing (low) |
| WBP0404 | Fresno | High Sierra | Dinkey Lakes | Dusy-Ershim OHV Route | <i>Pinus contorta ssp. murrayana</i> | 3025 | 0 | Grazing (low) |
| WBP0405 | Fresno | High Sierra | n/a | Dusy-Ershim OHV Route | <i>Pinus contorta ssp. murrayana</i> | 3039 | 6 | None |
| WBP0406 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus albicaulis</i> | 3253 | 32 | WPBR (0.2%) |
| WBP0407 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus contorta ssp. murrayana</i> | 3172 | 10 | MPB (5%) |
| WBP0408 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus contorta ssp. murrayana</i> | 3034 | 8 | None |
| WBP0409 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus contorta ssp. murrayana</i> | 3155 | 5 | None |
| WBP0410 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus albicaulis</i> | 3477 | 22 | None |
| WBP0411 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus albicaulis</i> | 3449 | 33 | None |
| WBP0412 | Fresno | High Sierra | John Muir | Mt. Hooper | <i>Pinus albicaulis</i> | 3301 | 32 | None |

Table 2. Whitebark pine attributes from Rapid Assessments, Sierra National Forest

| DbaseID | Site name | Stand size | Clumps per hectare | Stems per hectare | Percent Vegetative | Percent Flowering | Percent Fruiting | Mortality by MPB | Mortality by WPBR | Total Mortality | Quality |
|---------|-----------------------|------------|--------------------|-------------------|--------------------|-------------------|------------------|------------------|-------------------|-----------------|-----------|
| WBP0400 | Dusy-Ershim OHV Route | 1-5 acres | 18 | 195 | 35 | 50 | 15 | 0 | 0 | 0 | Excellent |
| WBP0401 | Dusy-Ershim OHV Route | 1-5 acres | 41 | 407 | 25 | 35 | 40 | 0 | 0 | 0 | Excellent |
| WBP0402 | Mt. Givens | 1-5 acres | 40 | 279 | 10 | 40 | 50 | 0 | 1 | 1 | Excellent |
| WBP0403 | Mt. Givens | > 5 acres | 53 | 424 | 10 | 20 | 70 | 0 | 0 | 0 | Excellent |
| WBP0404 | Dusy-Ershim OHV Route | > 5 acres | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| WBP0405 | Dusy-Ershim OHV Route | 1-5 acres | 10 | 76 | 60 | 20 | 20 | 0 | 0 | 0 | Excellent |
| WBP0406 | Mt. Hooper | > 5 acres | 153 | 917 | 93 | 6 | 1 | 0 | 0.2 | 0.2 | Excellent |
| WBP0407 | Mt. Hooper | 1-5 acres | 31 | 102 | 80 | 20 | 0 | 2 | 0 | 2 | Excellent |
| WBP0408 | Mt. Hooper | 1-5 acres | 21 | 265 | 100 | 0 | 0 | 0 | 0 | 0 | Excellent |
| WBP0409 | Mt. Hooper | > 5 acres | 21 | 177 | 99 | 1 | 0 | 0 | 0 | 0 | Excellent |
| WBP0410 | Mt. Hooper | > 5 acres | 239 | 1074 | 10 | 10 | 80 | 0 | 0 | 0 | Excellent |
| WBP0411 | Mt. Hooper | > 5 acres | 239 | 796 | 90 | 0 | 10 | 0 | 0 | 0 | Excellent |
| WBP0412 | Mt. Hooper | > 5 acres | 88 | 531 | 20 | 5 | 75 | 0 | 0 | 0 | Excellent |