

Summary of Helicopter Overflight of Parts of Lake and Napa Counties

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On 12/17/2021, Pest Specialists Curtis Ewing and Chris Lee, along with LNU Division Chief Paul Duncan, Lake County Supervisor Jessica Pyska, and Cal Fire Forestry Aide Jesse Moran, participated in a reconnaissance overflight of the portion of Lake and Napa Counties roughly encompassing Mount Konocti to the north down to Angwin and Mt. St. Helena to the south. The object of the reconnaissance flight was to roughly ascertain the extent and intensity of conifer mortality in these parts of these two counties.

The flight revealed extensive patches of mortality in at least four conifer species: ponderosa pine, Douglas-fir, knobcone pine, and gray pine. Mortality in the pine species is obvious because the bark beetles responsible attack synchronously over the whole tree and also because dead needles remain attached to the tree for a long time. Mortality in Douglas-fir can be much harder to track from the air because the needles fall off more quickly from dead branches and also because in most cases, each Douglas-fir is attacked by more than one beetle pest, some of which accumulate relatively slowly in the declining tree and overcome it over many months or even years. While most dead pines were attacked and killed this year, Douglas-firs were observed in all stages of decline and mortality from totally bare, gray trees (Fig 1) to those with currently dying tops and still-living bases. Following is a list of approximate locations/landmarks with selected mortality observations. This list is not exhaustive since mortality is pervasive over the Lake and Napa County landscapes.

Sketchmaps generated during the flight (white polygons) and afterward using photos (red polygons) are presented in figs 6-9. Mortality indicated by polygon is primarily ponderosa pine, Douglas-fir, and knobcone pine. During the flight, Ewing was seated on the left and Lee on the right. Once the helicopter passed Lake Hennessy and turned back north, Ewing was observing primarily toward the west and Lee toward the east. In this document, the text itself mainly records Lee's observations from the helicopter's right side, and the polygons record Ewing's observations from the left. Therefore, extensive mortality may exist in many areas with no polygons in Figures 6-9 (e.g., Pope Valley).

Images and polygons in kml format, as presented in figs 6-9, are available upon request (curtis.ewing@fire.ca.gov or christopher.lee@fire.ca.gov).

HiddenValley area/east of Boggs DSF: numerous patches of dead ponderosa pine were observed between Boggs DSF and Hidden Valley. Along the south shore of Putah Creek where it makes a heavily incised canyon, a prominent patch of 10-12 dead gray pines was observed. Scattered gray pine mortality was also observed on the approach toward the west side of Lake Berryessa. We skirted the west side of the lake down to Lake Hennessy and then turned back west and north.

Lake Hennessy: Many very thin or gray Douglas-fir crowns were observed north of the lake. The entire west face of the ridge north of the lake also has numerous graying Douglas-firs.

Napa Valley/Angwin: The SW-NE trending ridge system on the east side of Napa Valley, including the community of Angwin, contained the largest concentration of ponderosa pine and Douglas-fir mortality in the flight area as seen from the helicopter's right side. Large patches of dead ponderosa pine were observed along the top of the ridge, and many scattered patches are localized near Angwin. Most patches contained approximately 10-12 dead trees, but the largest observed patch contained 20-30 dead trees (Fig 2). Ground observations conducted prior to the flight at Las Posadas State Forest near Angwin had established that ponderosa pine mortality was caused by western pine beetle and Douglas-fir mortality by Douglas-fir engraver beetle and flatheaded fir borer.

Pope Valley: the western side of Pope Valley, i.e., the east face of the ridge separating Pope Valley from Napa Valley, contained numerous scattered dead ponderosa pine, gray dead Douglas-fir, and red dead Douglas-fir. These patches were distributed in a more scattered (less clumped) fashion than in most other areas but were pervasive over the face of the ridge (Fig 3).

Mt. St. Helena: Mixed Douglas-fir and ponderosa pine mortality was observed on the east side of the mountain, and heavy mortality was observed to the north and east of the mountain. Some patches of up to 40 dead ponderosa pines were noted, and a concentration of dead, red Douglas-firs were noted on the knob roughly between Mt. St. Helena and Middletown (encompassing the Groom Hill-Lindquist Ridge area).

Cobb Mt./Boggs Mt. area: Large, continuous patches of dead ponderosa pines were observed extending throughout the Loch Lomond-Mt. Hannah-Mt. Olive area (Fig 4). Some large patches of ponderosa pine mortality were observed around the edges of the Salmina Meadow.

Mt. Konocti: Approaching the mountain, we saw patches of both dead ponderosa pine and fading Douglas-fir in the vicinity of the Shambhala Monastery off of Bottle Rock Road and a large patch of pine mortality near the Highway 29 road improvement project. On the slopes of Mt. Konocti itself, heavy concentrations of dead knobcone pine were noted. In many cases, large, continuous stands of even-aged knobcone pine exhibited heavy mortality at the edges but not in the centers of the stands (Fig 5). This mortality was particularly heavy in places near the Black Forest/Clearlake Riviera neighborhood. Although some of the mortality along the slopes appeared to be gray pine, it was unclear to what extent some of these may have been open-grown or multi-stemmed knobcone pine.



Figure 1. Dead Douglas-firs. These died recently based on the presence of fine branches, but exactly how recently is uncertain because red, dead needles do not persist in the tree crowns for long.



Figure 2. Large patch of dead ponderosa pine near the community of Angwin.



Figure 3. Scattered dead pines and Douglas-firs on the western side of Pope Valley.



Figure 4. Band of dead ponderosa pines, along with scattered patches of dead pines, along the ridge system extending from the Loch Lomond area through Mt. Hannah and Mt. Olive.



Figure 5. Patches of dead knobcone pine on the north slopes of Mt. Konocti.

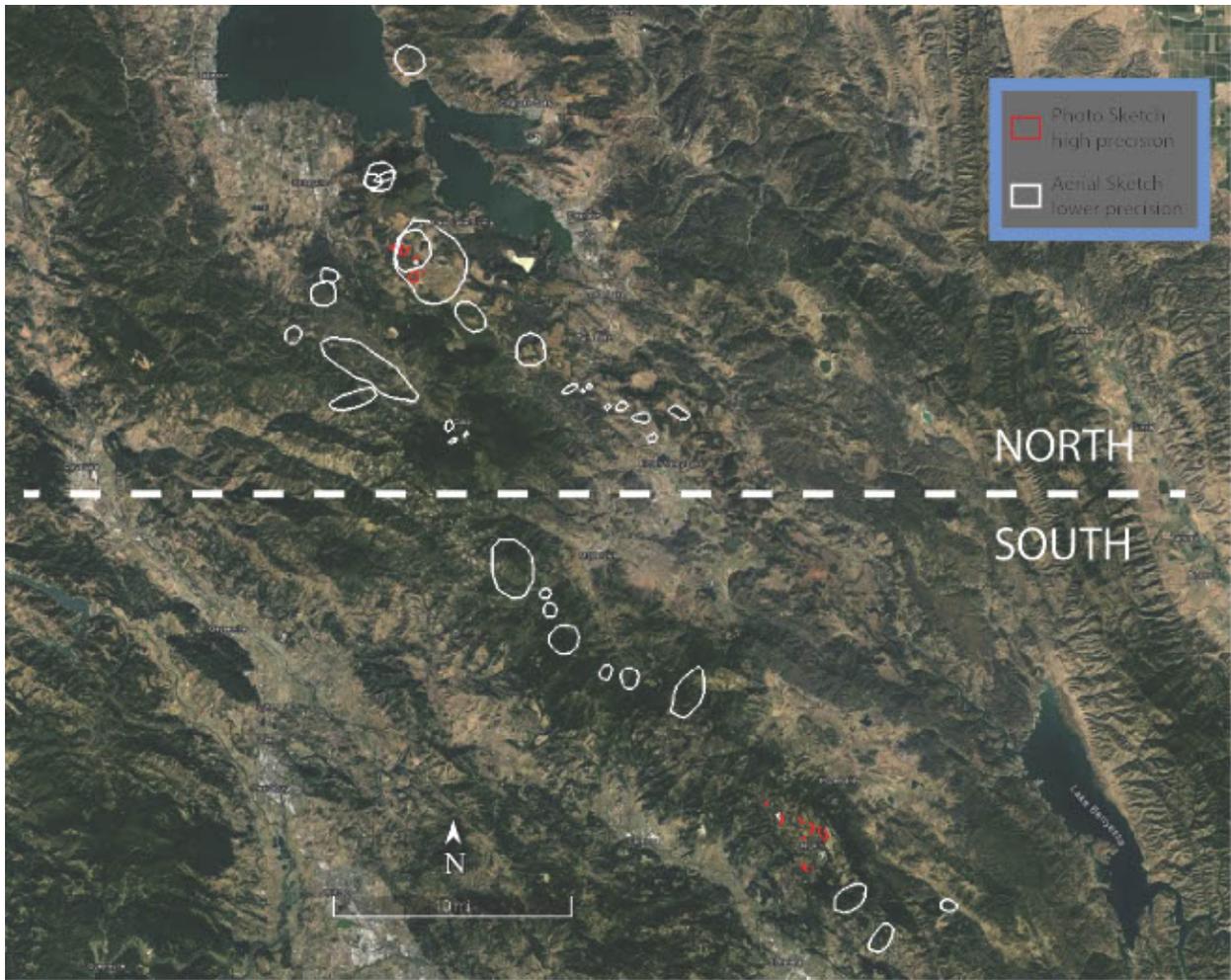


Figure 6. Overview of flight survey area with mortality polygons.

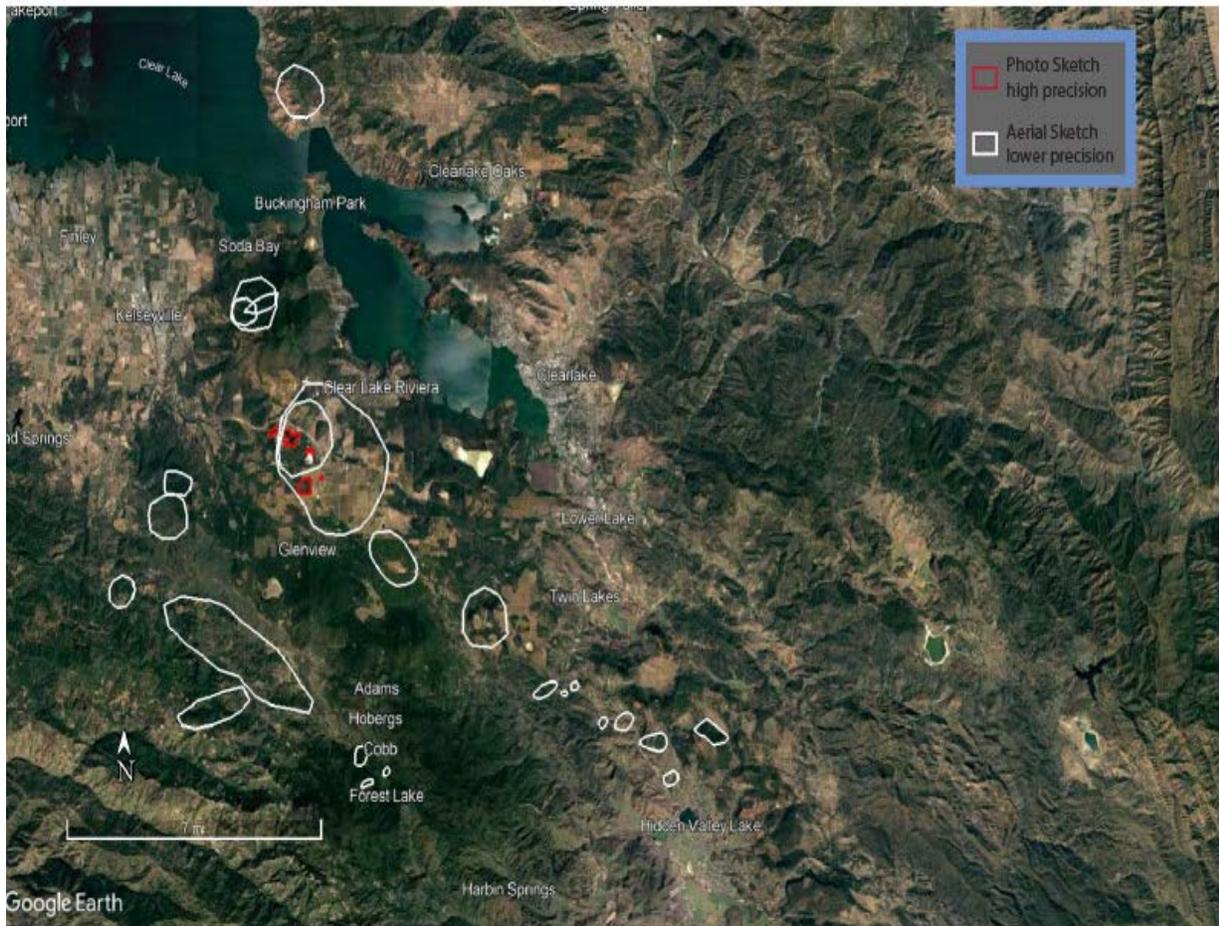


Figure 7. Mortality polygons in area south and east of Clear Lake, including the Mt. Konocti area.

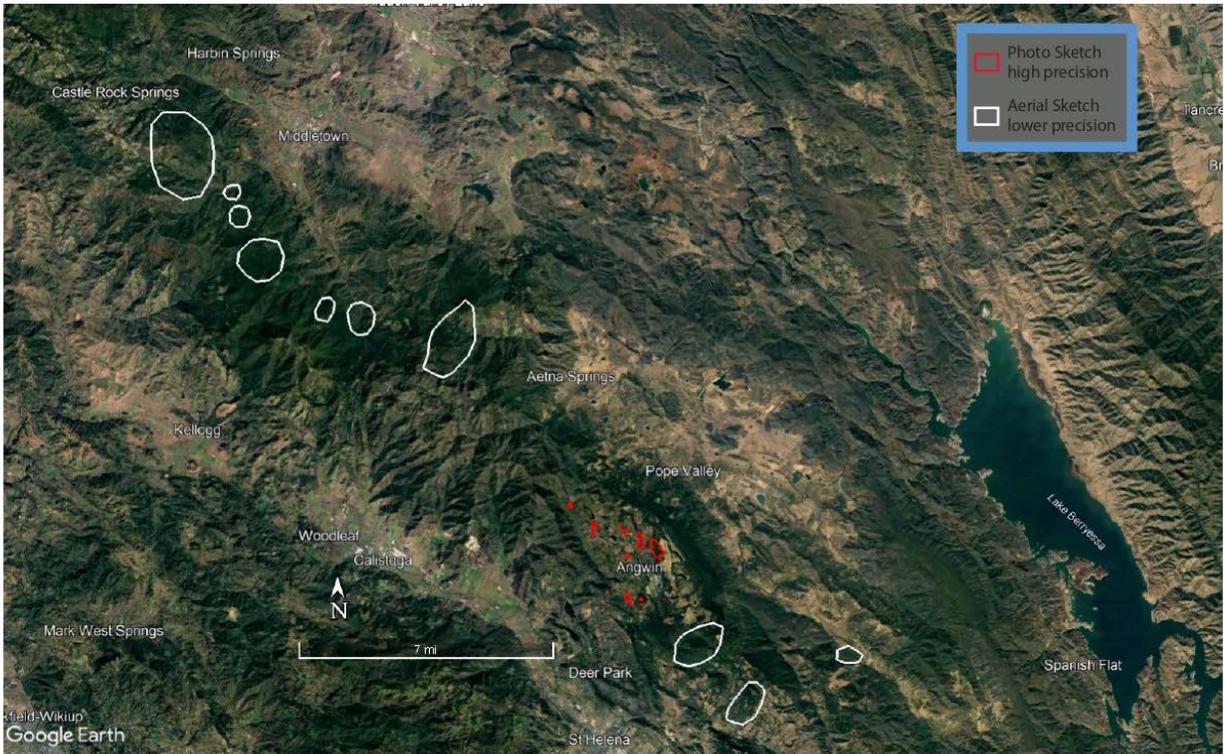


Figure 8. Mortality polygons in area west of Lake Berryessa, including Angwin, Pope Valley, and Middletown.

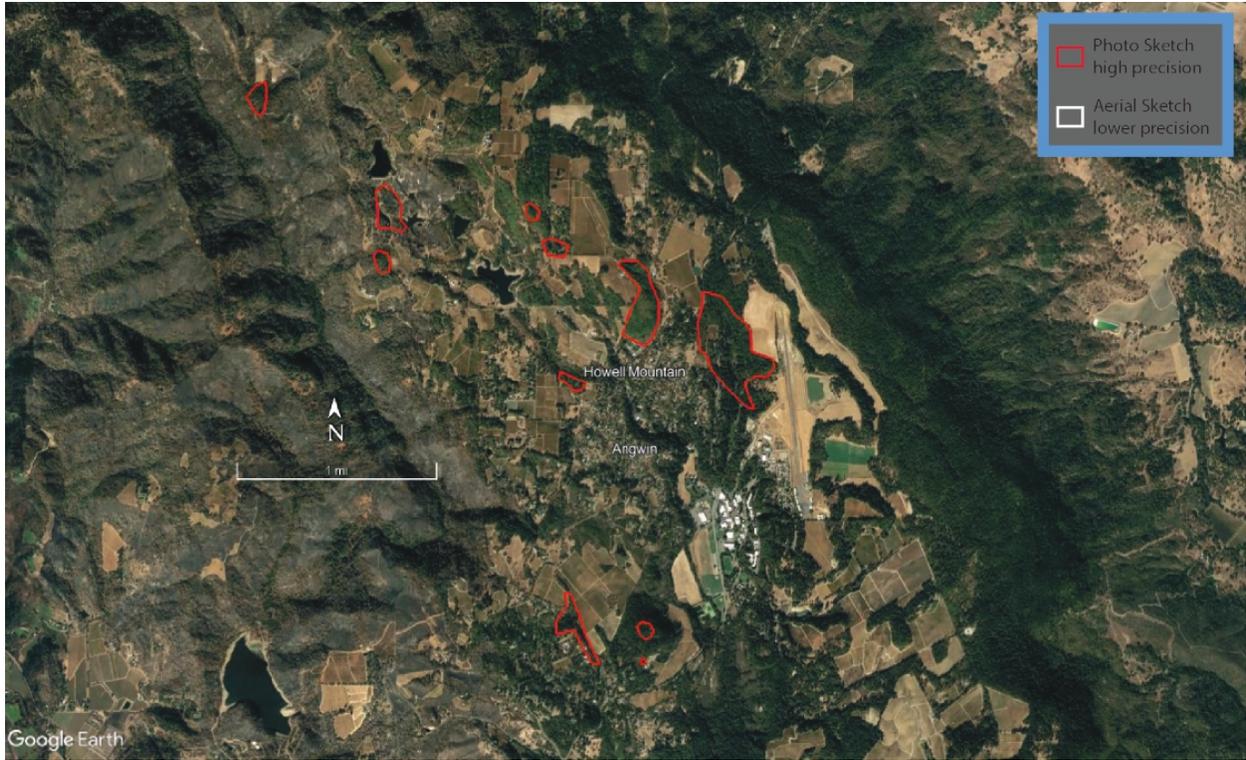


Figure 9. Close-up of mortality polygons near Angwin.