

FRIENDS OF SAUSAL CREEK

PALLID MANZANITAS

OF THE SAUSAL CREEK WATERSHED



Photo by Mark Rauzon

BACKGROUND

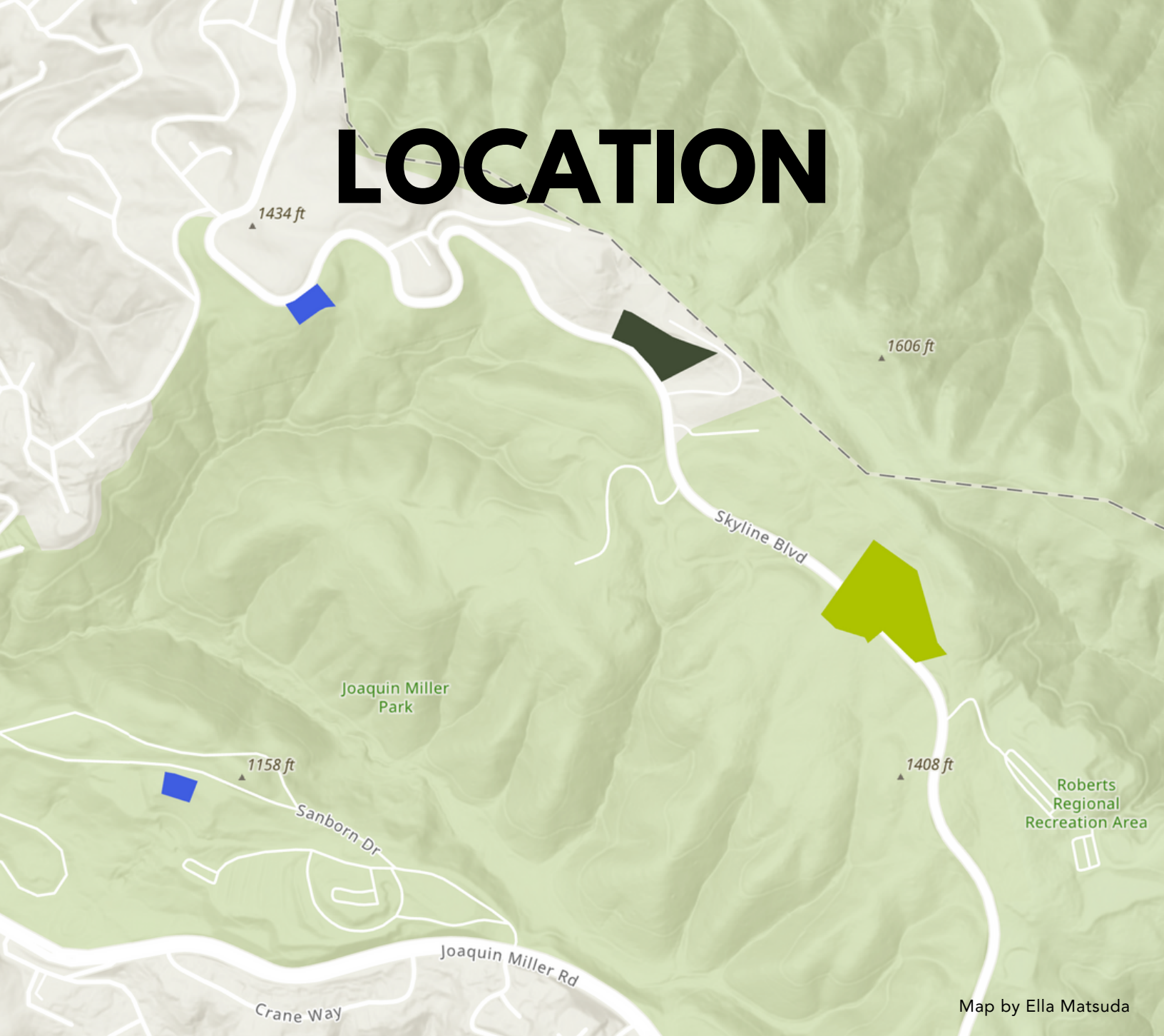


Photo by Kate Berlin

Pallid manzanitas (*Arctostaphylos pallida*) are a federally protected, California-endangered species found only in Alameda and Contra Costa counties. This is a fire-adapted species that has declined sharply in recent decades due to disease and lack of habitat. Approximately 1,738 individuals remain worldwide (EBPRD, 2017). Of those, 171 are found within the Sausal Creek Watershed in Joaquin Miller Park and below the Chabot Space and Science Center. Friends of Sausal Creek is committed to studying and protecting pallid manzanitas, and enhancing their habitat in the Sausal Creek Watershed.



LOCATION



SITE 1: BIG TREES

SITE 2: CHABOT

SITE 3: OUTPLANTINGS



HISTORY

Photo by Kate Berlin

SITE 1: BIG TREES

The Big Trees population is the oldest pallid manzanita population in the Sausal Creek Watershed. The population was surveyed in 2003, and more regularly since 2010. The area is heavily shaded, and contains many skeletons of large, sprawling manzanitas. Most of the living plants are relatively small, or a large plant with only a few living branches. *Phytophthora cinnamoni* was found in soil tests around dead manzanitas in 2010. Leaf spots on Big Trees manzanitas tested negative for *Phytophthora ramorum* in 2015. In 2016, soil tests from 3 sites within Big Trees also tested negative for *Phytophthora*.

SITE 2: CHABOT

Manzanitas have not always grown on the slope below the Chabot Space & Science Center; it is suspected that seeds were introduced when fill dirt from Manzanita Dr. was dumped here in the 1980s. The 1995 Environmental Impact Report identified 21 pallid manzanitas growing on this slope. When active management at Chabot began in 2015 with the finalization of the Habitat Enhancement & Conservation Plan (HECP), only three mature pallid manzanitas remained.

From 2015-2020, FOSC worked with the City of Oakland, Golden Hour Restoration Institute, and Chabot Space & Science Center to restore pallid manzanita habitat. In January 2015, 100 trees were removed via crane from the site, and 38 others were pruned to reduce shading. The leaf litter surrounding mature/dead manzanitas was raked away, and hundreds of seedlings emerged from the exposed soil. Due to budget constraints, an additional 191 tree removals recommended by the HECP were never completed, so this site still has potential for future habitat expansion. Seed germination experiments were attempted at this site with no success. Disease does not currently appear to be an issue here, and seven soil samples collected in 2016 tested negative for *Phytophthora*.

At the conclusion of the project in 2020, 119 live seedlings were observed, far exceeding the goal of 21 seedlings.

SITE 3: OUTPLANTINGS

One pallid manzanita was propagated and outplanted at the FOSC nursery in 2013, under CDFW SEM Permit # 2081(a)-13-001-RP. In 2017, FOSC was contracted to propagate pallid manzanitas to mitigate damage done to a plant on private property (ITP # 2081-2016-018-03). Propagation was attempted with both seeds and stem cuttings; only stem cuttings were successful. Through this permit, 9 plants were established in Joaquin Miller Park. This exceeded the goal of 5 individuals, and the contract was fulfilled in 2022.



MANAGEMENT

Photo by Kate Berlin

BIG TREES The Big Trees population is heavily shaded by Monterey pine, cypress, and coast live oak. Management involves clearing as much overstory vegetation as possible to let more light into the site.

Isolated manzanitas have been fenced for protection, and we are working to block trails leading into the main manzanita population.

CHABOT Since the 2015 tree removals, FOSC has hosted monthly dry season workdays at this site.

When a new manzanita is discovered, surrounding plants may be pruned, but are left in place to provide shelter for the young manzanita. When the manzanita is better established after a few years, competing vegetation is removed to maximize sun exposure. Current priorities include pruning coyote brush and oaks that are encroaching on rapidly expanding manzanitas, and pulling invasive broom and thistles.

Total population numbers are beginning to decline as the dense manzanita seedlings compete with one another and reach the carrying capacity of the space, but most individual plants are healthy and the total manzanita canopy coverage has increased exponentially each year.

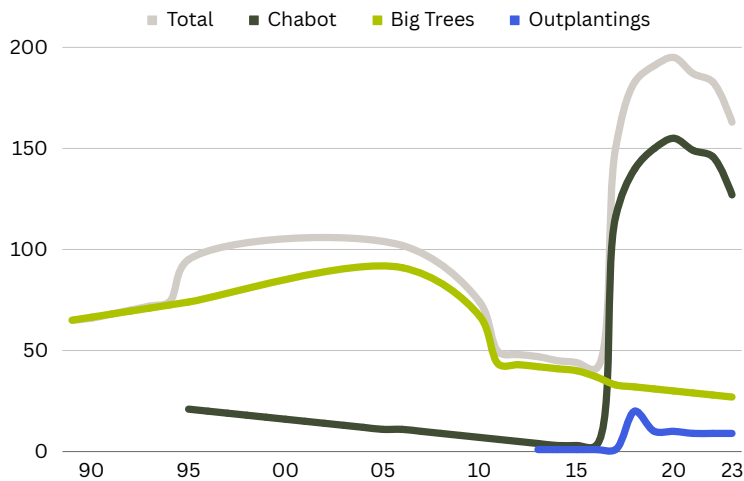
OUTPLANTINGS FOSC grew 85 cuttings collected from 2015-2016 for 2 years in the nursery, which yielded 20 healthy D40 manzanitas. Cuttings were then planted in fall and mulched with rocks. After 50% mortality within the first year of outplanting, there has been no further senescence. They were planted on open grassy hillsides, so do not require much maintenance, but they are fenced and monitored annually.



MONITORING

Photo by Michelle Krieg

POPULATION SIZE

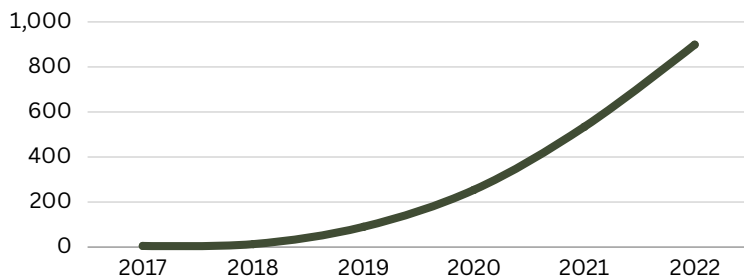


Site 1: Big Trees has been declining steadily since 2010, despite new seedling recruitment in 2014 and 2016.

Site 2: Chabot population numbers peaked in 2020. Though most individual plants are thriving, numbers are starting to decline as the manzanitas grow, compete, and reach the carrying capacity of the space.

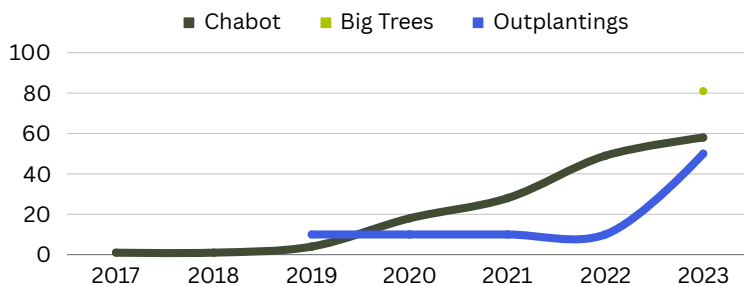
Site 3: After ~50% mortality within the first year of planting, outplanted manzanita populations appear to be stable.

CANOPY VOLUME (M³)



Though the number of manzanitas at Chabot is declining, the total canopy volume of manzanitas at the site increased exponentially from 2017-2022. Plants were too large to measure efficiently in 2023.

PERCENT FRUITING



Over half of manzanitas are fruiting by 6 years of age, but manzanitas grown from cuttings fruit younger than naturally recruited plants. Big Trees fruiting was monitored for the first time in 2023.



FUTURE GOALS



Photo by Mark Rauzon

1. **Map all individual plants** to increase accuracy of survey data and relocate missing plants more efficiently
2. **Measure changes in canopy coverage** to track impact of restoration work
3. **Perform disease testing across populations** to identify plants and locations for propagation
4. **Install permanent fencing & signage** to protect populations and engage community
5. **Secure propagation permit** to continue outplanting and strengthening pallid manzanita populations



A close-up photograph of a hummingbird hovering near a cluster of small, white, bell-shaped flowers. The bird's wings are spread, and its long beak is pointed towards the flowers. The background is a soft-focus green, suggesting foliage.

FRIENDS OF SAUSAL CREEK CONTACTS:

**Ella Matsuda | Restoration and Nursery Manager
ella@sausalcreek.org (510) 325-9006**

**Russell Huddleston | Board of Directors
russhudd@gmail.com (916) 296-6792**

