

Final Outcome:

**Coyote Hills Regional Park Overwintering Monarch Nectar Resource Enhancement – Irrigation Support
(2021 Alameda County Fish and Game Propagation Fund Report)**

Prepared for: Alameda County Fish and Game Commission, 4985 Broder Blvd., Dublin, CA 94568

Prepared by: Ricka Stoelting, Biologist, Alameda County Resource Conservation District, 3585 Greenville Rd., #2, Livermore, CA 94550

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Summary Outcome:

In March 2021, The Alameda County Fish and Game Commission (ACFGC) awarded \$4,754.63 in funds to the Alameda County Resource Conservation District (ACRCD) in support of pollinator nectar resource enhancement at the Coyote Hills western monarch overwintering grove in Fremont, California, on lands managed by East Bay Regional Park District (EBRPD). Western monarchs (*Danaus plexippus plexippus*) have experienced a precipitous decline over the last five years, inciting concerns of a trajectory toward western monarch extinction. The overwintering phase of western monarch life cycle is recognized as an important focus of management to ensure population viability of this species in its natural migratory condition. Enhancement of nectar resources in proximity to western monarch overwintering groves supports individual monarch butterflies through the overwintering period by providing hydration and energetic resources necessary to survive harsh winter conditions and to fuel the monarchs' spring migrations to breeding grounds. Funding from ACFGC supported acquisition of plant protection and irrigation materials necessary to ensure survival of the 616 young nectar resource plants put in the ground across a 0.75-acre footprint, adjacent to the grove, in November 2021. Individual rodent protection and plant cages will reduce impacts on these plants from concentrated gopher, wild turkey, deer, and sheep (routinely used for fuels reduction) activity in the nectar planting area. ACFGC funds also supported purchase of above-ground irrigation materials to complete a dripline irrigation system installed with matching funds from the California Association of Resource Conservation Districts via the Wildlife Conservation Board and project partner EBRPD. USFWS Partners for Fish and Wildlife Program provided additional match funding to support materials and labor for this effort. In supporting these materials acquisitions, the ACFGC-awarded funds support an overall effort to assess and enhance the Coyote Hills western monarch overwintering grove, which has been documented to host fluctuating numbers of overwintering monarchs over the last twenty plus years, dwindling more recently with grove senescence and overall monarch population declines. These funds allowed project partners ACRCD, EBRPD, California Conservation Corps, The Watershed Nursery, Creekside Science, and volunteers to work together to improve habitat conditions for this butterfly. During October 2021 site preparation and November 2021 planting, up to six monarch butterflies per day were observed flitting in proximity to the grove and nectar planting footprint. We are hopeful that nectar resources and additional grove enhancements recommended in long-term management plans being developed for the grove will increase the quality of habitat for western monarchs in this location.

Photographs of the project implementation, plant protection and irrigation materials are shown below.



Fig. 1. Project partners East Bay Regional Park District (EBRPD), The Watershed Nursery, Creekside Science, and Alameda County Resource Conservation District discussing nectar resource implementation at Coyote Hills western monarch overwintering grove in October 2020 (prior to nectar resource enhancement). Photo credit: Christina Garcia, EBRPD.



Fig. 2. Rough planting plan for Coyote Hills overwintering grove nectar resource enhancement showing 616 individual plant locations of ten locally, collected native nectar plant species, distributed over 0.75 acres in proximity to observed clustering locations of overwintering western monarchs.



Fig. 3. Plant protection: interior above and below-ground rodent caging and exterior individual plant caging at Coyote Hills western monarch overwintering grove, November 2021. In background, ACRC Project Assistant Jennifer Trevis planting. Photo credit: Dina Robertson, EBRPD.



Fig. 4. Western monarch observed at Coyote Hills western monarch overwintering grove on November 17, 2021, during nectar resource planting. Photo credit: Kristen Ludt, EBRPD.



Fig. 5. California Conservation Corps planting and installing individual plant protection at Coyote Hills western monarch overwintering grove, November 2021. Photo credit: Ricka Stoelting, ACRCD.



Fig. 6. Completed native nectar resource planting at Coyote Hills western monarch overwintering grove, November 2021. Photo credit: Ricka Stoelting, ACRCD