



**2020 REPORT**



**CALIFORNIA**  
**PLANT RESCUE**

Safeguarding California's Botanical Diversity



# CALIFORNIA PLANT RESCUE

California Plant Rescue (CaPR) member institutions make conservation collections of seeds and living plants to secure high levels of genetic diversity in off-site collections, such as botanic gardens and seed banks, to safeguard wild populations in a time of uncertainty. We also gather information about wild populations to ensure that baseline information is available for future generations.

## CONSERVATION SEED BANKING

747

CNPS 1B plants represented in CaPR seed banks as of 2020

149

New kinds of CNPS 1B plants brought into CaPR seed banks in 2020

71

CNPS 2 and 4 plants represented in CaPR seed banks as of 2020

## BUILDING CAPACITY • STRENGTHENING COLLABORATIONS



### 6 New Staff

CA Biodiv funding facilitated the addition of new staff positions at CaPR institutions



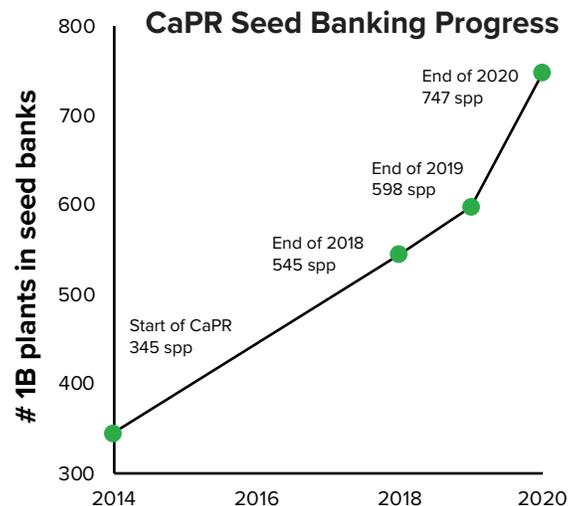
### 3 New Germination Chambers

CaPR institutions purchased germination chambers for seed viability testing, a key component to conservation seed banking



### Diverse Partnerships

CaPR collaborates with organizations in the state, federal, and nonprofit sectors to achieve our conservation goals



## EXECUTIVE SUMMARY

In 2020, CaPR members tripled their annual rate of seed collecting and added 149 new rare plant species (**California Rare Plant Rank [CRPR]1B**) to conservation seed banks, despite the challenges of a global pandemic and a record-breaking wildfire season. **We are now 64% of the way to the goal of seed banking 1,166 CRPR1B rare plants by 2025.** We also expanded institutional capacity to secure California's plant diversity by adding six new staff members; purchasing valuable infrastructure equipment such as germination chambers, cryopreservation tanks, and generators for backup power; and obtaining supplies like seed sieves and drying chambers. CaPR members also shared information about our work at more than 20 events with state and federal agencies, the scientific community and the general public. California Biodiversity Initiative funds allowed CaPR members not only to increase the number of rare plants represented in seed banks, but also to expand the geographic scope of our work. In 2020, CaPR collections ranged from Mount Shasta to San Diego, and from the Central Coast to Death Valley.

<b>2025 GOAL</b> 1,166 1B Rare Plant Species Banked	
2020	64%
2019	52%
2018	47%
2014	30%

### GOALS

The long-term goal of CaPR is **to secure the entire California flora in conservation collections, with an emphasis on seed collections.** In the near term, we are focusing on protecting the most vulnerable plants first. In 2018, the State of California launched the California Biodiversity Initiative, providing a roadmap for protecting the state's natural heritage. In 2019, the state legislature provided funding for conservation seed collections, with the express goal of leveraging the accomplishments and infrastructure of CaPR members to ramp up seed banking efforts across California. The ambitious goal set forth by the California Biodiversity Initiative is to seed bank or otherwise conserve all of California's rarest plants by 2025, and we are well on our way to meeting that goal.

Conservation collections of both seeds and living plants, stored in seed banks and living collections at botanic gardens, provide the raw materials for the enhancement, restoration and reintroduction of wild plant populations, while also **providing an insurance policy against extinction.** As we advance the long-term conservation of these rare plants, we also increase our understanding of their biology and ecology via field observations, germination testing and propagation. Thus, our seed banking efforts not only provide for long-term storage of invaluable genetic material, but also feed directly into **comprehensive strategies for plant conservation and recovery.**



### MEMBER INSTITUTIONS

California Botanic Garden  
California Native Plant Society  
Center for Plant Conservation  
Mojave Desert Land Trust  
Regional Parks Botanic Garden  
Santa Barbara Botanic Garden  
San Diego Botanic Garden  
San Diego Zoo Wildlife Alliance  
Theodore Payne Foundation  
UC Botanical Garden at Berkeley  
UC Davis Arboretum and Public Garden  
UC Santa Cruz Arboretum & Botanic Garden

### KEY PARTNERS

California Department of Fish & Wildlife  
California Department of Food & Agriculture  
California State Parks  
Local governments  
National Park Service  
The Nature Conservancy  
U.S. Bureau of Land Management  
U.S. Department of Defense  
U.S. Fish and Wildlife Service  
U.S. Forest Service

## ACCOMPLISHMENTS

### Progress Towards Our Goals in 2020

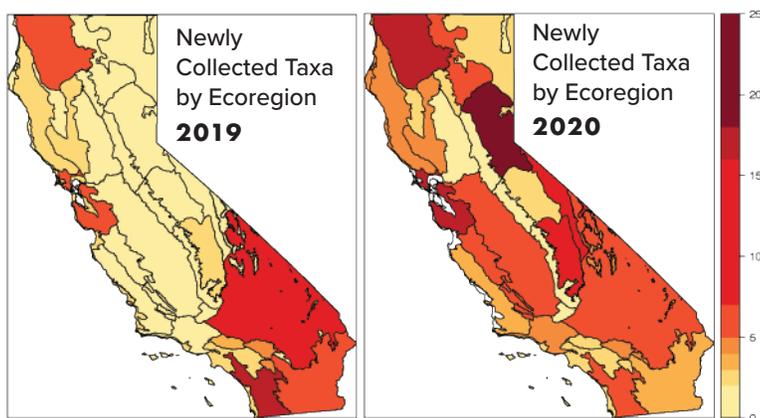
CaPR members made great strides in bringing previously uncollected CRPR1B rare plants into conservation collections in 2020, despite myriad challenges posed by a global pandemic and a catastrophic wildfire season. Spurred by California Biodiversity Initiative funding, 92 new CRPR 1B plants were brought into conservation via seed banking and living collections. Living collections are a complementary conservation strategy to seed banking and represent the primary mode of conservation for those plants that do not produce seed or whose seeds are not amenable to frozen storage.



Spiny sepaled button celery (*Eryngium spinosepalum*, CRPR 1B.2), a charismatic member of the carrot family, was collected by the Santa Barbara Botanic Garden from vernal pools in the Central Valley.

When considering the number of CRPR 1B rare plants represented in seed banks alone, the number of new kinds of plants increased by 149, bringing the total number of 1B plants in conservation seed banks to 747. This demonstrates that some plants that were historically only represented in living collections were brought into conservation seed banks in 2020. Prior to California Biodiversity Initiative funding, CaPR members were adding approximately 40-50 new CRPR 1B plants to seed banks per year. Between 2019 and 2020, that number nearly tripled and is indicative of the increased collecting capacity that resulted from the first full year of California Biodiversity Initiative funding. CaPR is now 64% of the way to our goal of seed banking 1,166 CRPR 1B rare plants.

Receiving an influx of funding allowed us to increase not only the diversity of our seed collections, but also the geographic extent of our collection sites. Prior to the California Biodiversity Initiative, CaPR members often focused on making collections in areas that overlapped with existing funding and priorities. However, the California Biodiversity Initiative funding allowed us to expand our reach, thus increasing conservation efforts in previously underrepresented regions, especially in central, northern and eastern California (see below). In addition to our focus on collecting CRPR 1B rare plants, CaPR members have also benefited from environmental license plate funds to make collections of CRPR 2 and 4 plants. Thus far, CaPR members have made conservation seed collections for 71 CRPR 2 and 4 plants, and 57 of those collections were made in 2020.



### EXPANDING OUR REACH

Newly collected CRPR 1B plants by ecoregion in 2019 (left) and 2020 (right). Light cream colors indicate fewer collections of novel plants than darker, redder colors. These maps depict seed collections from rare plants that were seed banked for the first time in 2019 and 2020 and provide geographic context for our efforts.

## COLLABORATION

Collaboration is central to the work of CaPR, as our mission of securing conservation seed collections of California plants depends on and benefits from the diverse strengths of our members. In 2020, CaPR welcomed two new members to our network: The Mojave Desert Land Trust (MDLT) and Theodore Payne Foundation (TPF). MDLT and TPF bring diverse skills and resources to CaPR including, plant collections, organizational capacity, and regional expertise in the California desert and Los Angeles area.



Our collaborative strength extends beyond the formal CaPR members to working hand in hand with land managers and volunteer groups across the state. For example, San Diego Botanic Garden worked with the San Diego Monitoring and Management Program and the U.S. Geological Survey to provide plant material of the federally listed Encinitas baccharis (*Baccharis vanessae*). East Bay Regional Botanic Garden is developing a several partnerships surrounding conservation of Vine Hill manzanita (*Arctostaphylos densiflora*), including CNPS Milo-Baker Chapter and the Green Biome Institute (GBI) at California State University, East Bay. California Botanic Garden coordinated with the Vegetation Program Manager at the Mojave National Preserve to facilitate access and identify best timing to secure a conservation seed collection of Thorne's buckwheat (*Eriogonum thornei*).

Though in-person meetings were not possible during COVID-19, CaPR members participated in meetings and outreach events remotely. Members presented on seed collections and CaPR-related activities at more than 20 events. From presentations to state parks administrators, groups of land managers, conservation practitioners, and native plant enthusiasts, we continued to share the message that seed banking is a valuable plant conservation tool.



SBBG Rare Plant Technician collected ripe berries from Santa Barbara honeysuckle (CRPR 1B.2).

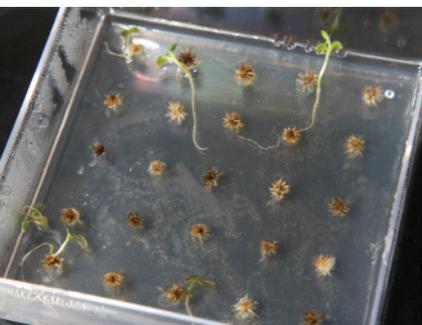


## MEETING CHALLENGES

Two challenges of global scale defined the 2020 collection season, both highlighting the importance of our work in biodiversity conservation. First, the global coronavirus pandemic emerged just as field season was beginning. Initially, this meant shut downs: we lost our volunteers, student workforce and some staff positions and hours; we were denied access to parks, permits and campsites for field work; we missed out on opportunities to scout locations and identify early-flowering plants; carpooling and indoor seed lab work were limited. We adapted. We scheduled staggered shifts to work indoors, altered our field plans, and developed new protocols to work safely during the pandemic. Next, the dry season came, and with it, fire season. A combination of lightning in the north and human-caused ignitions in the south ignited drought-parched landscapes and the fires led to shutdowns of roads, National Forests, and sheltering in place to limit smoke exposure. Again, we adapted, we changed our plans, and we continued working to protect California's rare plants. In spite of these challenges, our teams persevered and achieved many successes!

### WILDFIRE

The CZU Lightning Complex fires were ignited in August and stoked by intense winds. Within a few days, the fires were approaching the UC Santa Cruz Arboretum and Botanic Gardens, and their conservation seed bank. Even with the deployment of sprinklers over the roofs, the seed bank's collections needed to be evacuated, and the staff mobilized quickly. The emergency evacuation demonstrates the commitment of CaPR members to safeguarding the botanical heritage of California, even in the face of catastrophe. The need to secure collections in the face of fire, and the power outages they cause, is a prime consideration as we look to strengthen our infrastructure.



## BEYOND COLLECTIONS

The primary objective of CaPR is to ensure the conservation of California's botanical heritage, and to meet this ambitious goal, we need to grow and strengthen our ex-situ collection programs. In addition to adding six new staff across the various CaPR members, we made important infrastructure additions.

**Germination Chambers** — Germination tests allow us to get a more accurate account of the amount of viable seeds collected, inform the need for recollection, begin to understand propagation needs, and make us aware of seed deterioration in storage.

**Cryobiology** — Freezing tissue and seed with liquid nitrogen will increase our ability to conserve plants that can't be conserved through traditional seed banking – known as exceptional species.

**Field & Lab Equipment** — Increasing our collecting effort has driven a need for more field gear, as well as processing equipment to quickly and efficiently get seeds into long-term storage.

**Backup Power** — Generators and batteries ensure the safety of thousands of collections during wildfires or other power interruptions.



## FUNDING

In 2019, the California state legislature included \$3.2 million in the state budget to support CaPR's ex situ collections of rare plants. This was the first element of the California Biodiversity Initiative to receive financial support. The vital role of plants and CaPR's extensive progress towards its conservation goals made funding conservation collections of all of the rarest plants in the state an early priority. 2020 marked the first year CaPR organizations were able to account for this source of funding in their collection planning – and the impact has been astounding.

Additional funders and partners have allowed CaPR members to expand their conservation efforts beyond a single collection for the plants most in need. For example, additional grant funding has enabled the California Botanic Garden to take a multi-year approach to collecting seed from Amargosa niterwort (*Nitrophila mohavensis*), a challenging endangered plant with low seed set and inconspicuous fruits. They increased the number of seeds conserved for this species to 155 this year. Funding from the U.S. Fish and Wildlife Service, Bureau of Land Management, local governments, and more has increased the genetic representation of CRPR 1B, 2B, and 4 rare plants in collection through the collection of multiple populations. CaPR members have also been able to make the most of state legislated funding by securing matching contributions for infrastructure. Many of the larger infrastructure upgrades, including updates to the CRPR database, the cryotank, and backup powers system, were executed with the help of matching funds.



Amargosa niterwort  
*Nitrophila mohavensis*

## LOOKING AHEAD

In 2021, CaPR members will continue to work towards the California Biodiversity Initiative goal to collect 1,166 CRPR 1B rare plants by 2025. Many members worked to secure permits for plants that could not be accessed due to COVID-19 restrictions and wildfires, and are eager to get another pass at these collections. As a group, we will be tackling standards for working with exceptional species, upgrading our collections database, and working more with diverse partners to ensure we are meeting their collection needs and addressing their concerns.



### UNDERSTANDING EXCEPTIONAL SPECIES

San Diego Zoo Wildlife Alliance has been working with Nuttall's scrub oak (*Quercus dumosa*), refining protocols for micropropagation (growing in sealed containers, left) and will preserve these propagated specimens with liquid nitrogen in a new cryotank. This is just one avenue we are taking to address exceptional species conservation.

LEARN MORE AT: [CAPLANTRESCUE.ORG](https://caplantrescue.org)