

## **SEED COLLECTION POLICY**

### **Amended 5 January 2023**

#### **Mission Statement**

Advancing knowledge, conservation, and appreciation of California Native Plants.

#### **Collection Policy**

In accordance with its mission statement, California Botanic Garden will develop, assemble, document, and maintain a Seed Collection of California plants. The purpose of this document is to guide, direct and manage the development of this collection at California Botanic Garden.

#### **Legal and Ethical Consideration**

California Botanic Garden's collections, collecting policies, procedures, and activities strive to comply with all relevant international, national, state, and local laws, and trustee policies and directives regarding the collection, propagation, and distribution of plants (e.g., CITES, ESA, etc.) and their components (propagules, DNA samples, roots, leaves, flowers, pollen, seeds, wood samples, etc.). All seed collections and collecting activities will comply and be consistent with the Trustee approved Code of Ethics (2022 revision).

Seeds accepted into the collection will be considered legal property of California Botanic Garden unless otherwise specified in writing by contract or agreements, or when ownership of the collection is specifically prohibited by any state, federal, or international laws or regulations. The Garden cannot guarantee to maintain the viability of a seed collection or be held financially responsible for loss in seed viability or for loss of or damage to a seed collection.

#### **Purpose**

The California Seed Bank maintains a collection of wild collected and cultivated seed to facilitate greater understanding, conservation, education, botanical research, and the horticultural use of California's flora as defined in the institutional mission statement.

As a founding member institution of the Center for Plant Conservation (CPC) the Garden maintains a major part of a national collection of some of the most critically endangered native plant species. Most of these conservation collections are conserved as seeds in long-term cold storage. The Garden is authorized and regularly utilized as the principal repository for seed collections of rare, threatened, and endangered California native plant species.

The seed collections serve as source material for horticultural, education, and research programs at CalBG as well as at other scientific, botanical, and research institutions through the distribution of samples from the collections.

The curation and maintenance of the Garden's seed collections serve to increase our understanding of seed processing and storage requirements and of the limitations to the long-term viability of seeds. Research on these stored collections can lead to the improvement of storage methods and practices.

### **Scope of the Collection – Provenance**

The primary focus of the Seed Collection is the wild native plants of California. This includes plants from within the political boundaries of the US state of California and the entire California Floristic Province. Seeds from taxa that fall outside of this geographic scope but advance the mission of CalBG may be accessioned at the discretion of the Seed Conservation Collection Manager or the Director of Conservation Programs. This collection is interpreted to include those materials owned outright by the Garden, as well as materials maintained under contract to others.

### **Categories, Collection Type and Prioritization**

Priority will be for those plant species producing seeds that tolerate cold dry conditions used to enhance longevity in storage. Priority will also be given for collections of species of conservation concern and those that can be used to enhance the Garden's Living Collections. The collection is divided into three main types:

1. *Documented conservation collections (long-term storage)* are collections consisting of rare, gene pool representative germplasm designated for long-term storage to provide protection against extinction and as a source material for future restoration and recovery. Conservation collections are intended to be permanent collections. The material is not intended for direct use in restoration or reintroduction but rather as a source of genetic material to generate seed for planned restoration or recovery efforts. Where sufficient quantities exist over a sufficient minimum quantity required for a core collection, seed may be utilized or distributed for viability testing, developing horticultural protocols, and for research projects that will enhance conservation efforts.
2. *Documented research, education, and horticultural collections (medium-term storage)* are seed collections primarily designated for distribution and consumptive use at the Garden and elsewhere. Horticulture, education, and research collections are in essence transitory in nature and are stored primarily for utilization and distribution. However, both the consumptive use of conservation collections and the long-term (permanent) storage of research, education, and horticultural seed collections enhance the value and purpose of the collections.
3. *Documented contract collections* are accessioned collections that are stored on a temporary basis and remain the property of the contracting party as long as the contract obligations are in effect. Acceptance of contract collections is restricted to those that serve the mission of the Garden and whose presence in the collection does not compromise the maintenance and curation of the

conservation, research, education, and horticultural seed collections. Subject to any applicable state, federal, or international restrictions, contract collections are returned to the contracting party at the end of the contract period. If the contracting party is not able to take possession of or renew the storage contract, CalBG reserves the right to incorporate, distribute or dispose of non-funded contract seed collections as allowable under any existing state, federal or international laws.

### **Acquisition**

New seed accessions are acquired by the Garden through staff and affiliate/collaborator collecting activities in the field, on-site garden projects, exchanges with other institutions and individuals, contracts, gifts, or purchases.

Documented seed collections are acquired from and accessioned as one of three source types:

- (W) Seed collected directly from plants growing in native habitats.
- (Z) Seed collected from plants in cultivation from known wild origin.
- (G) Seed collected from cultivated plants -not- of known wild origin.

### **Quality Standards for Collection Acquisitions**

To achieve maximum storage longevity and for the collections to provide their intended purpose, seed collections must:

1. Be submitted for processing and storage as soon after collection as possible.
2. Be harvested at a mature stage of development.
3. Be of adequate quantity for their intended purpose and to allow for initial and future viability testing. The typical quantity consists of a minimum of 2000 seeds.

Wild origin seed acquisitions require a fully completed Field Record Form (or similar data record). Collection documentation at a minimum will include:

1. Species identification to the species or infraspecific level.
2. A verifying herbarium voucher specimen.
3. Detailed locality information.
4. Collector's name, collection number, date of collection.
5. Habitat, aspect and degree of slope, elevation, geological substrate, and plant associations.
6. Population specific information (population size and number of plants sampled).

Seed collections acquired from plants in cultivation need to have similar documentation including:

1. Wild source or cultivated lineage data.
2. Number of genetically distinct maternal individuals represented in the seed collection.
3. Pollination methods.

4. Cultivation methods and site information.
5. Presence of any known closely related species in the vicinity of the cultivated plants.

A post-cleaning dissection exam will be conducted on all incoming collections to verify that the seed lot contains filled, fully developed, viable seeds. Where a sufficient quantity of seeds exists, an initial germination test will be conducted prior to placing seeds into storage.

### **Utilization**

Utilization and distribution of accessioned material from the seed collection is governed by the collection type and any applicable laws or regulations that may restrict the distribution and use of the collections. Utilization and distribution are generally restricted to scientific, botanical, educational, and research institutions. Distribution of material to a commercial enterprise can be made when the intended use of the material serves both the mission of CalBG and the purpose of the collection.

Distribution of seed from the collection will be made as determined appropriate by the Seed Conservation Collection Manager based on but not limited to: (1) the proposed use of the material; (2) the purpose of the accessioned collection and value to the institution; (3) size of the seed lot; and (4) in consideration of any legal, ethical, or institutional restrictions that may apply. In most cases the quantity of seed provided for distribution will generally be sufficient to raise only a small number of plants. Distribution of materials from some collections may require consultation with Garden collection managers and research staff, regulatory agencies, or with individuals or organizations outside the institution. A fee is charged to distribute seeds from the collection.

When a sufficient quantity exists, CPC National Collection accessions and other documented conservation collections may be backed up at the National Laboratory for Genetic Resource Preservation in Fort Collins, Colorado. Subject to any state or federal restrictions, seed collections maintained under contract may be distributed in whole or part to the contracting party at the end of the contract period. Distribution of wild collected seed from plant species with state, federal, or international legal protection generally requires direct written authorization from any controlling regulatory agencies.

### **Access**

Visitors may enter the seed storage facilities when accompanied by a Garden staff member or Seed Program volunteer. Unless occupied by Garden staff or volunteers, doors to the facilities are to remain locked at all times. Access to the Seed Collection must be authorized by the Seed Conservation Collection Manager.

The Garden will maintain a current list of the seed collections on its website.

## **Documentation**

As collection documentation adds value to the objects in the collection, documentation should be as thorough and accurate as resources allow. Appropriate records will be maintained, and periodic inventories conducted as appropriate for each collection. Collection records include (but are not limited to) documentation of provenance (including voucher specimen), accessions, deaccessions, exchanges, gifts, purchases, and loans.

## **Collection Conservation and Stewardship**

The Seed Collection expects to meet museum and other professional standards and to hold its collections in public trust. CalBG's Seed Collection constitutes a significant scientific, horticultural, educational, and conservation resource for a community and region where species and habitat loss are critical issues. California Botanic Garden will strive to fully implement and comply with the Trustee approved Long-Range Collections Conservation Plan (2022).

## **Deaccession**

A seed collection may be deaccessioned by the Seed Conservation Collection Manager under the following conditions and when no plants from the seed accession remain in the Living Collection. All data relating to such accessions will be maintained in perpetuity.

1. When the collection does not meet collection quality standards.
2. When the seed collection does not meet the intended purpose as defined in the collection policy.
3. When it is determined that the collection does not meet the provenance criteria as defined in the collection policy.
4. When the seed is no longer viable.
5. When the collection is an unnecessary duplicate.
6. When the collection is completely utilized, distributed, lost, stolen or destroyed.
7. When a contract collection is returned in whole to a contracting party.

Non-viable or poor-quality seed accessions should not be deaccessioned if they can be considered useful for research use. In this case they will be maintained as part of a Seed Herbarium collection.

Notification of deaccession or non-viability of a seed collection must be provided for collections stored at the Garden through association, agreement or contract with an outside party.

## **Loans**

Loans are the formal, temporary transfer of specimens or collection holdings to outside researchers or institutions. Although the temporary transfer of seed collections is highly unusual, if seed collections are sent out on loan, decisions regarding loans from Seed Collection holdings are made by the Seed Conservation Collection Manager.

### **Exchanges**

Exchanges are the formal reciprocal transfer of specimen(s), or other collection material(s) between California Botanic Garden's Seed Collection and other institutions or individuals. Decisions regarding the exchange from or to the Seed Collection holdings are made by the Seed Conservation Collection Manager and are made in accordance with the Seed Collection's collection policy. The Garden participates in the free exchange of seed accessions with the few California institutions that maintain wild source collections of California species. For all other institutions and individuals requesting samples from the Seed Collection a modest fee per sample is charged.

### **Gifts**

Gifts are the unconditional, unilateral transfer of ownership of specimen(s), or other collection material(s) between California Botanic Garden's Seed Collection and other institutions or individuals. Gifts are typically given with the intent of augmenting the holdings of outside institutions or supporting research and activities consistent with the mission of the Garden. Gifts to the Seed Collection at California Botanic Garden are typically accepted with the expressed intent of augmenting the Garden's existing Seed Collection in a manner consistent with the Seed Collection's collection policy. Decisions regarding gifts to or from the Seed Collection holdings are made by the Seed Conservation Collection Manager.

### **Risk Management**

Collections, staff, and visitors are to be protected to the best of the Garden's ability in the event of an emergency or disaster in accordance with the Emergency Response Plan (2021). The primary threats to the Seed Collection are fire, power failure, and loss of or mismanagement of collections or their supporting data. To help mitigate these threats all seed collections with greater than 200 seeds and which are listed as rare, threatened, or endangered by the California Native Plant Society will have a backup portion of the collection stored off-site at the U.S.D.A. National Laboratory for Genetic Resource Preservation in Fort Collins, Colorado. The backup generator for the freezer storage units will be maintained and tested on a monthly basis. Collection data will be maintained on a central server and will be backed up on a weekly basis according to the prevailing standards for data security. All hard copies of data and documentation relating to seed accessions will be maintained and stored at the Seed Program facilities. The door to the seed storage facilities is to be locked at all times when Seed Program staff are not working in the facility.

In the event of a disaster, emergency response to protect and preserve the Seed Collections will be undertaken in accordance with and as specified in the Emergency Response Plan.

**Policy Review / Revision**

The Seed Conservation Collection Manager shall review the Seed Collection Policy not less than once every five years. The Seed Collection Policy must maintain consistency with the Garden's Comprehensive Collection Policy. Any revisions to the Seed Collection Policy shall be presented to and approved by the Collections Committee. If no revisions are deemed necessary, the policy shall be noted as reviewed and dated.

**APPENDIX**

- I. Definition of Terms/Glossary

## Appendix I to the Seed Collection Policy

### Definition of Terms/Glossary

To avoid confusion with other uses of terms for collections at California Botanic Garden, the following definitions are provided as they pertain to this document:

- **California Floristic Province** The floristically rich Californian Province occupies most of cismontane California and a portion of adjacent northwestern Baja California. As defined by A.L. Takhtajan (1986), it includes the great Central Valley, inner North Coast ranges, South Coast ranges, Transverse and Peninsular ranges of southern California, and foothills of the Cascade and Sierra Nevada ranges up to the ponderosa pine forests at about 1200 meters elevation in the southern Sierra Nevada. See also, The Jepson Manual, second edition.
- The **Garden** or **CalBG** refers to California Botanic Garden.
- The **Center for Plant Conservation (CPC)** is a national coalition dedicated to conserving and restoring the rare native plants of the United States. The CPC National Office is located at the San Diego Zoo Institute for Conservation Research in Escondido, California.
- **Seed** (or Seeds) is inclusive of all types of seeds, pollen, and spores.
- The **Seed Collection** refers to seed, pollen, and spore collections that are accessioned and placed in short to long-term (permanent) storage at CalBG.
- **Accession** is the unit for a single collection. For the Seed Collection, this may represent seeds from a single plant or a subset of a population of plants that share the same collection method and date. Under no circumstances are different materials combined in a single accession. Seeds, cuttings, divisions, whole plants, etc. are always separate accessions.
- **Curation** is the process of managing a collection to ensure its preservation, perpetuation, ease of access and retrieval of data, and to provide for orderly accessions.
- **Accessioning** is the process of adding specimens to the collection. This process includes assignment of a unique reference (accession) number and entering its collection information in BG-Base (our computerized database). Accession information for all collections is maintained in perpetuity.



- **Deaccessioning** is the process of actively removing an accession from the Seed Collection. The data pertaining to deaccessioned seed collections will be maintained in perpetuity.
- **Vouchers** are pressed specimens (directly from the wild when the accession was collected or subsequently collected from the Living Collection) that are used as permanent record and verification of accessions in the Seed Collection. All voucher specimens are part of the CalBG Herbarium and are governed by Herbarium policies, protocols, procedures and guidelines.
- **Wild Origin Collections** are collected propagules (seeds, cuttings, divisions, spores, small plants, etc.) from wild populations of plants or from an individual plant for which information (documentation) has been recorded on the field record cards and herbarium voucher specimens have been collected.