California BOTANIC GARDEN

2022 BRAUNTON'S MILKVETCH SEED BANKING REPORT

Collection Data

Taxon:	Astragalus brauntonii
Collector(s):	Tara Schoenwetter, Mark Elvin, Preston Butler
Collection Date(s):	7/26/2022, 7/27/2022, 8/17/2022, 8/19/2022
Locality:	USA; California; Ventura County; Santa Susana Field Lab; 2000-2140 feet; 34° 13' 35" N, 118° 42' 60" W.
# Sampled:	50 (maternal line) in July; 1365 (bulk) in August
Pop Size:	1415
Collector Notes:	This metapopulation is located within USFWS designated critical habitat (56.13 acres) in Area IV of Santa Susana Field Lab (SSFL). Plants germinated in April 2019 following the 2018 Woolsey Fire. 13,300 plants recorded in 2019, and now 1415 remain. Seeds were collected from all remaining plants. Clear herbivory noted on site.

Processing and Storage

A maternal line-sampled seed collection of *Astragalus brauntonii* was sent to California Botanic Garden (CalBG) by Tara Schoenwetter, Senior Ecologist/Biologist with Leidos, and arrived on August 9th 2022. The collection was processed at the California Seed Bank using a hand debearder, soil sieves and a seed aspirator unit in order to separate the seeds from the excess plant material. The seeds from each maternal parent were kept separate during processing. A second, bulk-sampled seed collection from the same population arrived at CalBG on September 15th 2022, which was processed in the same way to remove excess plant material (Figure 1). Many insect seed predators were observed in the collection during processing (Figure 2), and the seeds were placed in a sealed container with a Hot-Shot® No-Pest Strip for four days in order to kill the insects. Seeds were then dried in an airtight drying chamber until their relative humidity reached between 25-35% at room temperature prior to storage in heat-sealed foil packets at -23°C (Figure 3). The collection was split into two storage types: a Permanent Conservation Collection and a Temporary Research and Recovery Collection. The Permanent Conservation Collection is distributed into three storage lots: an Active lot to be stored at CalBG and utilized for follow up germination testing and approved distribution, a Base lot to be stored at CalBG and kept sealed and frozen for long-term genetic preservation, and a Backup lot to be sent to the National Laboratory for Genetic Resource Preservation (NLGRP) in Fort Collins, CO and kept sealed and frozen for long term genetic preservation. The Temporary Research and Recovery Collection is maintained as a single storage lot that will be stored at CalBG for up to five years and made available to CDM Smith at any time for reintroduction. If seeds remain after the five-year storage term, a fee of $150/year will be incurred. Table 1 details the seed quantities of the collections.

California
BOTANIC GARDEN

Figure 1. Bulk-sampled seed collection of *Astragalus brauntonii* after processing at the California Seed Bank.

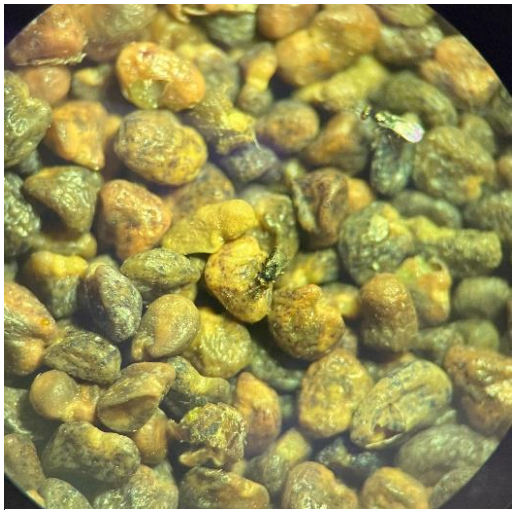

Figure 2. Insects found in the *Astragalus brauntonii* seed collection. The larva of these flying insects appear to be seed predators.

Figure 3. The *Astragalus brauntonii* seed collection packaged in heat-sealed foil packets. The Permanent Conservation Collection is comprised of Active, Base, and Backup storage lots.

CALIFORNIA BOTANIC GARDEN
1500 North College Avenue, Claremont, CA 91711
(909) 625-8767 | www.calbg.org

Table 1. Seed quantities for the Permanent Conservation Collection and the Temporary Research and Recovery Collection of *Astragalus brauntonii*. Seed quantities are estimates based on weight.

Acc-Lot #	Collection Type	Lot	Seed Quantity	Total
26363-6449	Permanent Conservation Collection	Active	3,113	15,097
		Base	6,004	
		Backup	5,980	
26363-6450	Temporary Research and Recovery Collection		90,460	90,460

Germination Test

On August 22nd 2022, an initial germination test was conducted to evaluate germinability. A sample of 50 seeds was selected randomly from the maternal line collection and the seed coats were knicked using nail clippers in order to trigger germination. The seeds were then soaked with a sterilizing bleach-tween solution for one minute to prevent mold contamination, and sown on a 0.5% agar solution on a clear plastic examination plate. The germination test was kept in a growth chamber maintained at 11 hours light cycle at 20°C and 13 hours dark cycle at 12°C. After just one week, all 50 seeds had germinated (Figure 4). Protrusion of the radicle to at least one half the length of the seed is considered positive germination. Follow-up testing on the Permanent Conservation Collection will occur after 1, 5, 10, 20, and every subsequent 10 years in storage.

Figure 4. The initial agar germination test of the *Astragalus brauntonii* seed collection showing 100% germination.