

Quick Guide to the Seeds of Success Protocol



This quick guide serves as an introduction to the SOS protocol. There are many more details and important information in the full protocol version, and this quick guide should not be used as a substitute for reviewing the full SOS Technical Protocol.

Agency Coordinators

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Program Goals (Section 1)

SOS is the National native seed collection program coordinated by the Bureau of Land Management in partnership with the National Parks Service and the U.S. Fish and Wildlife Service. The purpose of the Seeds of Success program (SOS) is to establish a national, high quality, accurately identified, and well documented native plant species seed collection. All seed collections are used to support development of geographically appropriate native plant materials for research, development, germplasm conservation, and ecosystem restoration.

Getting started (Section 2)

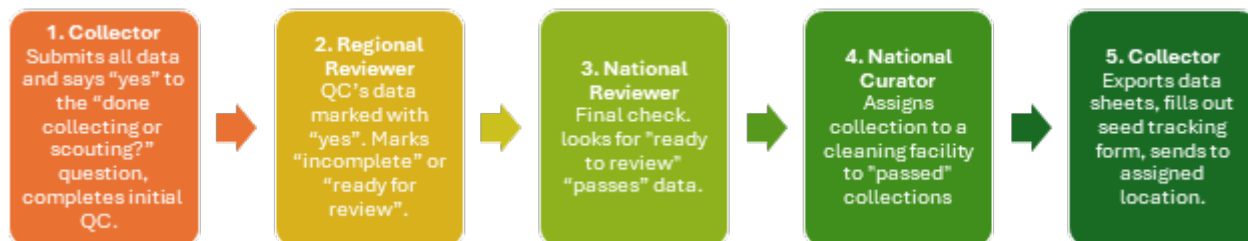
All SOS participants must complete several onboarding tasks before the season begins. The following steps can be completed via the “Getting Started” section of the SOS website, www.blm.gov/sos

- Sign the SOS Data Confidentiality Agreement
- Register for the monthly Collector Call, GeoPlatform/digital data collection access (if collecting, editing, or reviewing SOS data for the season)
- Register for annual training

At least one person from each collection team must attend the Monthly SOS Collector Calls. Calls occur on the first Tuesday of every month at 10am Mountain time.

End of Season Reporting and Data Management Requirements (Section 2e)

- All SOS data must be reviewed and completed BEFORE any data sheets/seed is shipped to a cleaning facility. Directions for data finalization and QC are in the help document “SOS Digital Data QC Guidelines 2025”.



- Teams should submit data sheets, photos, any relevant permits/permissions, and their Annual report once all seeds and vouchers have been shipped for the season. See the End of Season Checklist (Appendix M) for a detailed list of end of season requirements.
- All data and end of season deliverables must be sent to your Agency Coordinator at least two weeks BEFORE the last seasonal collector leaves for the season incase there are any questions about collections or data.
- All data and deliverables are due **no later** than Dec 15th.

Target Species (Section 3)

The collection focus of the SOS program is on species needed for restoration and rehabilitation projects. Teams may make multiple collections of species on their target species list as long as they are capturing unique populations in each collection. Collecting teams are encouraged to work with local federal land managers and their Agency SOS Coordinator to develop and execute priority target lists. **Target species lists are due to their Agency Coordinator by April 30th, and teams should use the target list template available on the SOS website.**

There are several general that have specific weight limits because they are difficult to clean. Refer to section 3a. for a list of which species and genera are weight limited.

Species Exclusions (Section 4)

SOS only accepts seed from abundant, wild, native plant populations that have orthodox seeds. Anything with recalcitrant or intermediate seed, or any seed from seeded, cultivated, agricultural, or non-native populations cannot be collected. Additionally, any species with a federal threatened or endangered status, or ranked G1/G2 by a state heritage program, or S1/S2 in the states they are classified as such cannot be collected for SOS.

Long-term Storage and Distribution (Section 5)

3,000PLS from each SOS collection is sent to USDA-ARS partner in Pullman, WA for incorporation into the National Plant Germplasm System. 2,000PLS go into 4⁰C back-up storage at the Plant Germplasm Introduction and Testing Research Unit in Pullman, WA and are distributed for research and education purposes via GRIN-Global. 1,000PLS are sent to the National Center for Genetic Resources Preservation in Fort Collins, CO for long term germplasm conservation at -20⁰C. Any seed over 3,000 PLS will remain at the cleaning facility and may be

requested for specific projects. Contact the National Coordinating Office for more information.

Permits / Permissions (Section 6)

- Permits are not required for collections on BLM land, though collectors should check with land managers at each office first. Some managers prefer to issue free use permits for SOS collections.
- **Permits/permissions ARE required for any collections that are not on BLM managed land.** A template permission letter is available on the SOS website.
- Permits must be submitted to your Agency Coordinator with all the end of season deliverables.

Sampling Protocol (Section 7, 8, 9)

- Only collect from large, wild populations
- Sample evenly and randomly, avoiding selecting seed from just largest or smallest individuals.
- Sample from at least 50 individuals, document the number of individuals sampled on the SOS Field Data Form
- Material collected on multiple dates at the same location in the same season can be combined into one collection. Collectors must ensure no more than 20% of the ripe seed is collected from the population on a single day.
- Perform regular cut tests to assess seed maturity and seed availability. An ideal collection is 10,000+ seed, 3,000 PLS is the absolute minimum. Collections targeting 10,000+ PLS ensure sufficient seed is collected.
- Different populations are kept as separate accessions.
- Materials collected from the same population during multiple growing seasons are kept as separate accessions and not combined.

Herbarium Vouchers (Section 10 and 14e)

One specimen is required as a record of each SOS collection and is sent to the U.S. National Herbarium at the Smithsonian Museum of Natural History. Teams may collect additional copies to send to a regional or local herbaria as desired by the coordinating office/agency.

1. Unmounted copy to U.S. National Herbarium
 - NPS Agency Teams make labels and draft transmittal notice, retain vouchers at office to be sent in the future.
 - All teams must print herbarium labels on acid-free paper and send a notice of transmittal with their voucher shipment.
2. Optional; One to a regional herbarium (see Appendix F for list)
3. Optional; One to keep at a field office

Shipping & Contact Info - U.S. National Herbarium / Smithsonian Institution

Shipping:

Smithsonian Institution

NMNH Department of Botany, MRC-166

10th and Constitution Ave., NW Washington, DC, 20560

Contact:
Erika Gardner, (202) 633-0904, gardnere@si.edu

Data Collection (Section 11)

The SOS Field Data Form

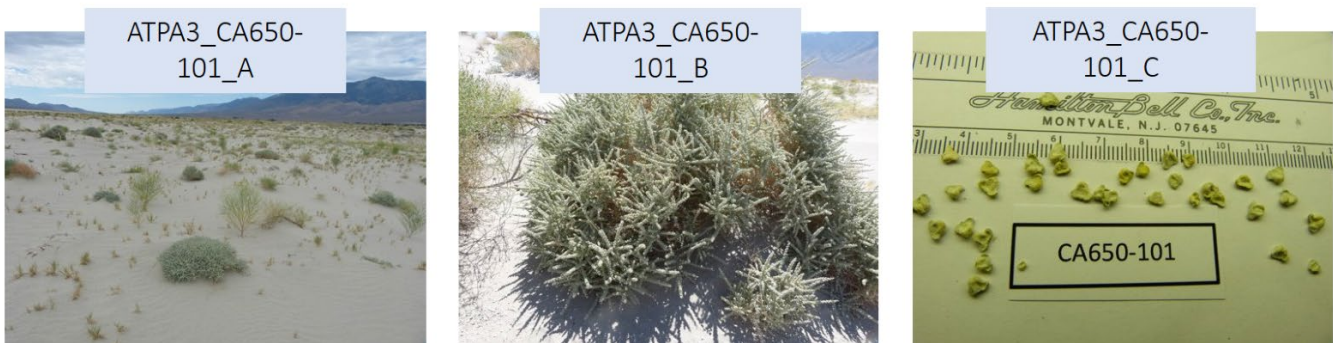
As of 2024, all SOS data will occur through digital data collection tools (see Section 11). Visit the “Getting Started” section of the SOS website for information on accessing digital data collection tools. Collectors will use a scouting form and a seed collection form to track phenology, collection information, and other collection notes. Data sheets can be exported from the GeoPlatform and teams should keep one copy of the form to their local office, send one copy with the seed to the designated cleaning facility, and email one copy to your Agency Coordinator by Dec 15th.

Photographs (Section 12)

Three digital photographs for each collection shall be sent to the National Coordinating Office. One photo each of the material collected (seed), the individual plant, and the plant population (habitat). These can be sent electronically at the end of the collection season.

- Naming convention: PLANTS Code_Seed Collection Reference Number_Letter (A, B, C, etc.)

Example of photos from the *Atriplex pacifica* (ATPA3) collection with the Seed Collection Reference Number CA650-101:



Post Collection Treatment and Storage (Section 13)

After collecting teams must carefully dry their seeds to maximize longevity, maturity, and avoid molding before sending to a cleaning facility (13 a). Before sending for cleaning, seeds must also go through pest treatment; there are different procedures for collections treated on BLM/USFWS and NPS managed lands. See Section 13b for details on seed treatment.

Shipping and Cleaning (Section 14)

- Each team will be assigned a designated cleaning facility after completing the data finalization/QC process outlined in the help document “SOS Digital Data QC Guidelines 2025”.
- Always send fleshy fruit overnight mail (notify cleaning facility), and no more than 2-day

shipping for dry seed. Only ship early in the week, ensuring the collection does not arrive on a Friday. Contact your Agency Coordinator a head of time so they know that data review will happen quickly after collecting.

- A copy of the completed field data forms documenting the collection with all shipments of seed; material will not be cleaned without this documentation. Data sheets and seed should not be sent until data is 100% complete, accurate, and reviewed.
- Fill out a seed tracking form as seeds are being shipped, not before. If the shipper needs assistance with filling out a seed tracking form, contact your Agency Coordinator.

Facility contacts, addresses, and special instructions:

Facility	Special Instructions	Contact Information	Shipping Address
Alaska Plant Materials Center	Notify when shipping fleshy fruit only	Lyubomir (Lubo) Mahlev, lyubomir.mahlev@alaska.gov Phone: (907) 745 8782	Alaska Department of Natural Resources Division of Agriculture Plant Materials Center 5310 S. Bodenburg Spur Palmer, AK 99645
Bend Seed Extractory	Notify when shipping fleshy fruit or collection over 50 pounds. FedEx and UPS preferred.	Matt Horning, matthew.horning@usda.gov cc Malcolm Howard, malcolm.howard@usda.gov Phone: (541) 383-5646	USDA USFS - Bend Seed Extractory 63095 Deschutes Market Road Bend, OR 97701
Dorena Genetic Resource Center	Notify when shipping all collections. Use UPS or FedEx only to ship. NO USPS. Packages could get lost.	Bracken Bing, bracken.bing@usda.gov cc Lisa DeWeese, nicole.l.deweese@usda.gov Phone: (541) 767-5708	Dorena GRC Attn: Bracken Bing 34963 Shoreview Rd Cottage Grove, OR 97424
National Seed Lab	Add packing slip with a list of collections in each box. No preference on carrier, teams should track shipments if using USPS. Email victor.vankus@usda.gov , cc agency coordinator before sending.	Victor Vankus, victor.vankus@usda.gov , sm.fs.nsl@usda.gov Phone: (478) 751-3551	National Seed Lab 5675 Riggins Mill Road Dry Branch, GA 31020
Southeastern Grasslands Institute	Notify when shipping all collections.	Gus Rasich gus.rasich@segrasslands.org	APSU, Southeastern Grasslands Institute 681 Summer Street Clarksville, TN 37040
University of Nevada, Reno	Notify when shipping all collections.	Shannon Swim, shannonswim@gmail.com, swim@unr.edu	UNR Shannon Swim/Bio dept 1664 N. Virginia St MS 314 Reno, NV 89557