

SOS Protocol Quick Guide and Glossary 2026



*This serves as an abbreviation of – and should **not** be used as a substitute for – the full Technical Protocol.*

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Points of Contact

- Sarah Hill – SOS National Curator and BLM Coordinator, sehill@blm.gov
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Section 1: Introduction

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.

Section 2: Getting Started

All SOS participants must complete several onboarding tasks before the season begins. See the “Getting Started” section of the SOS website (blm.gov/sos) to:

- Sign the SOS Data Confidentiality Agreement (see section 2a of protocol)
- Register for monthly collector calls, GeoPlatform (if necessary), and 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 MST

Section 2f: End of Season Reporting & Data Management Requirements

- **All data must pass the QC process BEFORE any seeds are shipped and BEFORE seasonal collectors leave for the season.** Figure 1 below provides an overview of the data reviewing process. See section 14a of the full protocol and the SOS Digital Data QC guide for more information about data finalization.

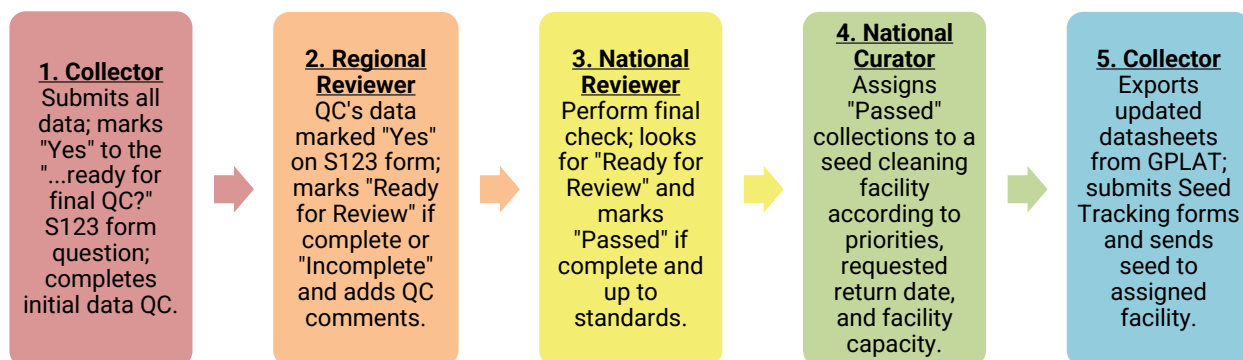


Figure 1. Steps to finalizing data and preparing for seed shipment.

- Teams must submit all required materials to their SOS Agency Coordinator **no later than December 15th**, including an annual report. A checklist is available on the SOS website, in each GeoPlatform regional groups' help documents, and in Appendix M of the protocol.

Section 3: Target Species

Species needed for ecological restoration and rehabilitation are the focus of the SOS program. **Target species lists are due to the SOS National Curator, Sarah Hill (sehill@blm.gov) before April 30th.** There is a template available on the SOS website.

- Some taxa have weight limits because they are difficult to clean; refer to section 3b of the full protocol for a list of which species and genera are limited

Section 4: Excluded Species

The SOS program only accepts orthodox seed from healthy, wild, native populations. Exclusions include, but are not limited to:

- Seeded, cultivated, agricultural, or non-native populations
- Recalcitrant/intermediate species that cannot survive standard drying/freezing
- Federally threatened or endangered species, or species ranked G1/G2 or S1/S2 in the states they are being collected

Section 5: Storage & Distribution

After cleaning and processing, collections are divided into two portions: long-term storage (for research and conservation purposes) and short-term storage (available for native plant materials development projects). See the protocol for more details.

Section 6: Permission to Collect

- **Permits or other permission documentation are required for any work done on land *not* managed by the BLM**
- Collectors should always confirm requirements with each land manager whose land they are collecting from, including the BLM
- Permits must be submitted to your SOS Agency Coordinator at end of season
 - Template permission letter is available on the SOS website

Section 7, 8, 9: Sampling Protocol

- Collect from large, wild, native populations of target species
- Sample evenly and randomly, avoiding bias, from at least 50 unique individuals
- Collect no more than 20% of the population's ripe seed on a single day
- Perform cut tests to assess seed maturity and confirm collection potential
- Seed from the same population but different growing seasons are kept as

separate collections and must not be combined

- Target at least 10,000 PLS per collection (3,000 PLS is the *absolute minimum*)

Section 10d, 10e, 14e: Herbarium Vouchers

One voucher specimen is required for each SOS collection, sent to the U.S. National Herbarium at the Smithsonian Museum of Natural History. Additional vouchers may be required and vary by crew; confirm the requirements and destinations with your manager. Write key information on the newspaper a voucher will be pressed in (species name, date, coordinates, site name, team name, scouting/collection ID, etc.) to keep track of them.

Section 11: Data Collection

As of 2024, all SOS data collection is conducted through BLM-managed ArcGIS Online GeoPlatform groups using a mobile device with two applications: Survey123 and Field Maps. All digital data users will learn how to use GeoPlatform and the associated tools during national SOS training. For more information, visit the SOS website's "Getting Started" page or contact your SOS Agency Coordinator.

Section 12: Photos

A required minimum of three digital (.JPG) photos per collection will be submitted at the end of each season: one of the habitat/landscape (A), one of an individual plant in flower (B), and one of the seed (C).

- Name format: **USDA Plants Code_Collector Code-Collection Number_Letter**
- Any additional photos are welcome (key species characteristics, other plants, wildlife, scenery, people, etc.) and should be tagged D, E, F, and so on.

Example – collection number 101 for the crew CA650 of an *Atriplex parryi* (ATPA3):



Section 13: Post-Collection Seed Care

Teams must carefully dry seeds to maximize longevity and avoid molding (section 13a) and treat them to minimize pest damage (section 13b) before shipping to a cleaning

facility. Different agencies may have different procedures for how to treat collections.

Section 14: Packing & Shipping Seed

- Each team must complete the data finalization and QC process (Figure 1.) before exporting data sheets or shipping seed
- Send seed early in the week with two-day or overnight shipping
- See section 14c if collecting fleshy fruits
- Fill out a seed tracking form as seeds are being shipped, not before
- See Table 7 in section 14d for contacts and addresses

Appendix R: List of Resources & Help Documents for Collectors

These lists are non-inclusive; visit the SOS website and your regional GeoPlatform group's Help Documents to view all available materials.

Available on the SOS website:

Protocols

- Technical Protocol 2026
 - Guide to the entire SOS program; policies, procedures, considerations, and resources when conducting scouting, seed collecting, data collection, seed shipping, and reporting
- Example Completed Data Forms 2026
 - Correctly filled out paper scouting and collection forms to refer to if there are data entry questions
- End of Season Checklist 2026
 - Reviews all necessary tasks to finalize collections and reporting

Guides

- Protocol Quick Guide and Glossary 2026
 - Abbreviated SOS protocol (not to be used in place of full protocol); includes full glossary
- Guide to Taking Quality Photos 2026
 - Tips for taking required SOS photos and end-of-season photo file format, naming convention, and submission
- Guide to Herbarium Specimens for SOS
 - Reviews best practice for collecting and submitting herbarium vouchers for the Smithsonian National Herbarium.
- Guide to Shipping Materials 2026
 - Reviews basics of pre-shipping data finalization process and where to send all end-of-season SOS materials including seeds, vouchers, and data

- Landform Dictionary with Images 2026
 - Contains a list, definitions, and pictures of all landform terms available in the data collection form; collectors should use this to assist in assessing the dominant landforms for the collection site

Tools

- Soil Texture Guide
 - Flowchart to assist in classifying soil texture at a collection site
- Bend Seed Yield Estimation Tool
 - Commonly collected SOS species, their average raw weight and cleaned seed yield
- Bend Seed Collecting Recommendations
 - Recommendations from the Bend Seed Extractory for collecting Great Basin-specific target species

Templates

- Target Species List Template 2026
 - Spreadsheet each team must have, documenting the species they are targeting for the season; sent to the SOS National Curator
- Annual Report Template 2026
 - Editable document each team must fill out at the end of the season
- Authorization Letter Template 2026
 - Editable document teams can use when requesting collection permission from a landowner who does not have a standard permit/permission process

Blank Data Forms

- Paper Scouting & Collection Forms 2026
 - Scouting and collection data forms to print and keep as backups in case of technical difficulties

Smithsonian Herbarium Submission

- Smithsonian Transmittal Notice (Federal or Non-Federal)
 - Fillable versions of the letter that must accompany all vouchers sent to the Smithsonian Institution
- Herbarium Label Template
 - Editable template for Vouchers destined for the Smithsonian. This is the same template that is exported from GeoPlatform, to be used as a backup if there are technical issues with exporting

Seed Request Forms

- All Facilities SOS Clearance Form 2026
 - Used to request seeds immediately after cleaning from all SOS seed cleaning facilities in the lower 48

- Non-Bend SOS Seed Order Form 2026
 - Form to request older seed that is in freezer storage at all SOS cleaning facilities (except collections at the Bend Seed Extractory)
- Bend SOS Seed Order Form 2026
 - Form to request older seed that is in freezer storage at the Bend Seed Extractory only

Available in regional GeoPlatform groups' Help Documents (*including all the above*):

Training Resources

- SOS Collector Resources 2026
 - National and ecoregional-specific resources to supplement collector knowledge
- SOS Training Recordings & Other Video Resources 2026
 - Streamable (not downloadable) recordings of a 2026 SOS training to refer to throughout the season
 - Short video tutorials
 - GeoPlatform onboarding
 - Setting up your mobile device: downloading Survey123, Field Maps, and creating offline areas in Field Maps
 - More added throughout the season
 - Supplemental videos
 - Bend Seed Extractory Overview
 - Why Location Descriptions Matter for Research
 - USDA-ARS SOS Partnership and GRIN Overview
 - Estimating Population Size with Quadrats
 - More added throughout the season
- SOS Examples Cut Seeds & TZ 2026
 - Images of cut seeds across a variety of genera and families that show what cut seed and embryos can look like; any red staining is from a seed viability lab test and will not be noticeable in fresh cut seeds in the field
- SOS Examples Completed Paper Data Forms 2026
 - Also available in Appendix C of the full protocol

Digital Data Resources

- SOS Digital Data QC Guide 2026
 - Guide for end of season data review and editing
- SOS Digital Data Collection Guide 2026

- Tutorials on completing various digital data collection tasks
- SOS Forms Walkthrough 2026
 - Field by field explanation of the SOS scouting and collection forms, and what data goes in each field
- SOS Device Configuration 2026
 - Common mobile Apple and Android device settings that could help streamline digital data collection

Field Resources

- USDA PLANTS 2025
 - Table of accepted species codes and synonyms to be used for the “Tricky Taxonomy” page of the Survey123 form
- State Noxious-Weed Seed List 2026
 - Info on labeling requirements and prohibitions; shows the scientific names and common names according to the law and regulations of the State in which the seed is noxious

Appendix K: Glossary

* = *required field on collection data forms*

^ = *filled in weekly by the SOS National Coordinating Office for all data submitted to GeoPlatform*

Accepted Taxa in USDA PLANTS – For taxonomic data, the SOS program uses the USDA NRCS PLANTS Database which has a code system for plant names in the United States. In this field, you can find a species by typing either the full Latin scientific name or, if you know it, the USDA PLANTS code.

Accession Number – A number representing a unique germplasm or collection, associated with a Seed Collection Reference Number. This number is consecutive and never to be reused. Collections made in different growing seasons from the same population are unique collections and assigned unique accession numbers (see *also* Seed Collection Reference Number *for the numbering format required in the SOS protocol*).

Alt. Collection Number – A secondary means of identifying a collection. This is not required for the SOS program and is usually assigned by a project partner. This may represent another organization or individual involved in the collection, a batch number, or other numbering system previously employed by an institution.

Examples: MSB378585, CH-101, or 2014-16.

Agency Coordinator – The SOS coordinator for the BLM, NPS, or USFWS; the primary point of contact for a collection team throughout a season. Teams will send this person all end-of-season materials. This person will also lead a corresponding agency breakout session during monthly collector calls.

***Approximate Number of Plants Found** – The estimated total number of individuals at a scouting or collection site, regardless of seed ripeness. If estimating on the day of a collection, this number includes those that were not collected from.

- *Approximate Slope in Degrees** – The degree of steepness at the site; a number between 0 and 90, where 90 would indicate something completely vertical, such as a sheer cliff face. This is measured with a clinometer. An area with a slope of 0-3 degrees is considered “Flat.”
- *Area within subunit** – The geographic area where a collection or scout point is made. A physical or logical area, beyond the geopolitical areas defined in the State, County, or Subunit fields. This may be a mountain range, river valley or trail name.
Examples: Marigold Trail, Red Rocks Canyon, or Maroon Bells.
- *Aspect** – The cardinal direction of the slope of the site. Measure this using a compass.
Examples: S, NW, SW, or N/NE.
- *Associated Species** – The scientific names of five or more of the most dominant species found coexisting with the collected species, and can be native or non-native. Do not include the species that was collected. Include any additional invasive or non-native species that are present in the collection area.
- Average number of seed-containing structures per plant** – This is estimated by counting the number of fruits, seed heads, capsules, pods, or other seed-containing structures on multiple individuals within a population.
- Average number of seeds per structure** – This is estimated by counting the total number of all seeds (including ripe, unripe, viable, and not viable seeds) per fruit, seed head, capsule, pod, or other seed-containing structure on multiple individuals within a population.
- *Average Plant Height in Feet** – The estimated average distance (in feet) from the ground to the top of any given individual within a population.
- *Collection Area Sampled in Acres** – The size of the area in which a seed collection was made (in acres).
- *Collector Code** – The code assigned to your collection team to denote your specific collections for the season. These are assigned by the SOS National Coordinating Office, see the Technical Protocol for more details on how codes are formulated.
Examples: AK930, NPMI00, NCBG or CP2.
- *Collector Name(s)** – All active contributors who participated in a seed collection. Collector names should be entered as Last Name, First Initial.
Example: Dawson, C., Howard, M., Haidet, M.
- *Collection Number** – The unique number assigned to a given collection and is the second part of the Seed Collection Reference Number. Collection numbers are sequential, continuing from season to season if under the same collector code. If UT030 ended the 2025 season with UT030-100, their first collection of 2026 would be UT030-101.
- Common Name(s)** – The vernacular or trade name(s) of the collected species. This field is automatically populated based on what is entered as the Accepted Taxa.
Examples: short bluegrass, Iowa tall grass, or creeping Jenny.
- ^*County** – The county where the collection was made.
- *Cut Test** – A test performed by splitting seeds in half to analyze the viability of a seed (or by other methods, species-dependent). Collection potential is evaluated by estimating the number of viable seeds per seed-containing structure across a population (see *also*

Viability Equation). Immature seeds are usually green and soft, while ripe seeds are usually brown and hard with a notable live embryo.

Dashboard – A GeoPlatform application within the Data Management Site that allows you to work with multiple data entries at once. For SOS, dashboards are used to highlight fields that may have been incorrectly entered, summarize seasonal statistics, or view data points on a map.

***Data Entered by** – The first and last name of the person filling out the digital data form.

Data Management Site – An immersive GeoPlatform page that can be used to QC submitted data, plan collections using a web map, view summary statistics, create reports, create herbarium labels, and submit seed tracking forms.

***Date 1 and 2** – The first two dates a collection was made from the same population within the same growing season. Use the pop-out calendar that appears on the Survey123 form or use the MM/DD/YYYY format.

Example: August 4, 2021 would be recorded as 08/04/2021.

Date range – If you indicate in the Survey123 form that the collection continued beyond the first two dates, this field will appear. Use the MM/DD/YYYY format and separate multiple dates with a comma.

Example: If the collection took place on August 4, 5, 7, and 9 of 2021, enter the first two dates in the first two fields and "08/07/2021, 08/09/2021" as the "Date range."

Duration – The length of the life cycle of the plant species. This field is automatically populated based on what is entered as the Accepted Taxa.

Examples: annual, biannual, or biennial.

^*Ecoregion – Areas with generally similar ecosystems as well as type, quality, and quantity of environmental resources. This field is automatically populated and appears on the Data Management Site and final data forms but not in Survey123. The SOS standards are Omernik Level III and IV Ecoregions (<https://www.epa.gov/eco-research/level-iii-and-ivecoregions-continental-united-states>)

Elevation – The distance above or below sea level. While there are separate fields to record this in meters or feet, the SOS standard is to use feet. Elevation of a source population is an essential data point for using native seeds. It is critical that accurate elevation is recorded.

***Family** – The taxonomic family to which the species belongs. This field is automatically populated based on what is entered as the Accepted Taxa.

Field Maps – A mobile application teams use to view, interact with, and download maps for offline use. SOS maps are created with layers that aid in collection efforts.

***Field Notes** – The noteworthy characteristics of a species and site. Include key plant features that might fade with time or when plants are pressed such as flower color, odor, or leaf texture. Anything entered in this field will automatically populate onto the herbarium label when it is generated through GeoPlatform.

***First and last name of the individual who identified the species** – The name of the botanist or plant specialist who confirmed the taxa of the collection.

Geology – The mineral structure of a collection site; either a formation type or specific rock

which makes up the parent material. This field is automatically populated and appears on the Data Management Site and in the final data form, but not in Survey123.

GeoPlatform – An Esri ArcGIS Online product; a geospatial platform that allows users from federal agencies and non-federal organizations to collaborate.

GPS Datum – A GPS device setting. The SOS standard is WGS84. When using a separate GPS device and digital map, check the datum in the margin or metadata of the map and adjust the GPS settings as needed.

Habitat Type – A description of the site as a community. Ecological site descriptions and/or national vegetation classifications are also accepted for this field.

Examples: oak savanna, Pinyon-Juniper stand, prairie, or sagebrush steppe.

Herbaria – A herbarium (plural: herbaria) is a collection of preserved plant specimens and associated data used for scientific study.

Examples: Smithsonian Institution, Oregon State University, or Price Field Office.

Historic Scouting (or Collection) Point – A scouting or collection data point made in prior seasons following the SOS protocol. These datasets are included as layers in SOS maps and should always be searched for a historic point of the same species being scouted or collected from in the current season.

Landform Category – The category in which the overall topography of the area fits best. This field is supplementary and serves to narrow down the options in the required Landform field, based on the selection(s).

***Landform** – The overall topography of the area. A landform dictionary (with images) is available on the SOS website and in each GeoPlatform group's Help Documents.

Examples: moraine, foothills, alluvial fan, or summit.

Land Managers – The agency, municipality, tribe, or organization responsible for managing and permitting the land on which a collection is made. Private lands should be marked 'private', with names omitted in the dataset. Prior to collecting you must obtain permission and keep the permit or other documentation on hand while in the field as well as stored digitally in anticipation of submitting it as part of end-of-season reporting. While official permits are not required for BLM land collections, you must still check in with the corresponding field office manager as they may issue a free use permit.

***Land Use** – All the ways the area of land being collected from is used by humans.

Example: recreation, grazing, and multiple use.

***Latitude** – The direction from the equator (N or S), measured in decimal degrees. This field is automatically populated based on the location where the Survey123 form was first created.

Layer(s) – An individual geographic dataset on a map.

Legend – A "key" that shows what each symbol, color, or graphic on a map represents.

***Location Calculations** – Location based data that is calculated by the SOS National Office on Fridays for all data submitted to the GeoPlatform. Data is sourced from the mapped point location of scouting and collection points. If the mapped point is incorrect, the location calculations will also be incorrect. The following fields are completed during location calculations:

- State, County, Level 3 and 4 Ecoregion, Geology, all Seed Transfer Zones, BLM State/District Office/Field Office

***Location Details** – The driving and hiking directions from a recognizable point to the collection site. Be detailed enough that someone could retrace these steps without a GPS and find the population using cardinal directions, mileage, and permanent landmarks. At minimum, write notes on the population extent and on-foot directions while in the field and then complete the rest back in the office.

Example: Starting at the intersection of Fifth St and Cole Ave in Harrington, head SW on Fifth St towards Albert St and turn right onto Albert St. In 6 miles slight right east onto Coffee Pot Rd E. In 5.4 miles turn S (right) to Coffee Pot Recreation area and continue for 3 miles. The population primarily lines the road just after the cattle guard and continues off to the right when facing the lake (N).

***Longitude** – The direction from the Prime Meridian (E or W), measured in decimal degrees. This field is automatically populated based on the location where the Survey123 form was first created.

Long-term storage portion – The first 3,000 viable seeds from any SOS collections are stored in long-term storage conditions for conservation purposes.

***Method used to collect seeds** – A field on the data form to indicate how seed was harvested, by selecting the option with the closest matching description.

Examples: hand stripped, cut entire stalk or stem, or plucked individual structures.

***Modifying Factors** – Any known event that has altered a site. If a species was seeded and is now a cultivated population, that species can no longer be considered for collection at that site. However, naturally occurring populations within a seeded area may be considered suitable for collection.

Native Plant Materials Development Process – The interagency process developed by the BLM which works to develop a reliable, stable crop of high-quality native seeds and seedlings from wildland collected species to be used for restoration, rehabilitation, and reclamation.

Natural Dispersal Stage – The point in a population's growing cycle where seeds would be distributed without human interference. This is the best time to collect seed.

***Number of Plants Sampled** – The exact number of unique individual plants that seed was collected from. SOS protocol has a minimum of 50 plants sampled. Do not count any individual more than once, even if it is sampled across multiple days.

***Number of pressed specimens** – The number of herbarium voucher plant specimens that were collected and pressed according to the SOS protocol.

Operational Collection – A seed collection made following the SOS protocol that is over 80,000 estimated PLS. The purpose of these collections is for restoration, particularly for seed increase via grow-out.

***Organizational affiliation of the person who identified the species** – The organization or agency where the botanist or plant specialist who confirmed the taxa of the collection is employed.

Examples: BLM, NPS, Brigham Young University, or Chicago Botanic Garden.

Habit – The way a species grows. This field is automatically populated based on the USDA PLANTS code that is entered.

Examples: tree, shrub, forb, succulent, or grass/grasslike.

Paper Data Forms – Paper versions of the scouting and collection data forms. Fields on the paper forms correspond to required fields in the Survey123 forms. If a team has an issue with their digital data collection device, they should collect on the paper forms, and enter the data onto a Survey123 form shortly after.

PLS – Pure Live Seed; the number of viable seeds in a collection.

***Phenology** – The life cycle stage of plants within a population. SOS protocol requires a new estimate of the percentage of the population in any given stage for every date you return to the same site to inspect or collect that species.

Population – A group of individual plants of the same species living within the same area, continuous in range and generally uniform in appearance. Geographic features such as roads, ridges, and rivers inhibit gene flow between populations, and elevation, soils, aspects, moisture gradients and other environmental factors can influence population traits. Consider multiple factors when identifying separate populations. See section 7a in the protocol for more information about how to determine the extent of a population.

QC (Quality Control) – The process of assessing data for potential errors and quality.

Recollection – A seed collection made from a population that has previously been collected from following the SOS protocol. If making a recollection, make a note by starting the Field Notes with “RECOLLECTION.” See the technical protocol for additional considerations for designating recollections.

***Scouting ID** – A unique identifier for SOS scouting data points. These are automatically generated the first time a Survey123 scouting form is created.

Scouting Notes – This field is used to record any relevant and useful information observed during scouting; it could be about the area, site, species, population, road conditions, wildlife, or any other aspect that is worth remembering later.

***Seed Collection Reference Number** – The collector code followed by the collection number; a consecutive and chronological number representing the unique collection or accession, never to be reused.

Example: CA170-42, OR110-347 or CBG-2481.

***Seeds Collected From** – A field on the data form to indicate where seed was sourced from: the plant, ground, or both. Collecting seed directly from a plant is best.

Seed Tracking Form – Provides real-time tracking for where each collection is sent for cleaning. Forms can be submitted via Survey123 or on the Data Management Site. Seed tracking forms can only be filled out after the QC process is complete, and only when seeds are shipped out, not before.

^*Seed Transfer Zones (STZ) – Geographic areas used to determine where seeds can be sourced and moved to within a region. These fields are automatically populated and appear on the Data Management Site and on collection forms, but not in Survey123.

- Provisional STZ – Defined by annual temperature and aridity.

Source: Bower et al. Provisional Seed Zones 2014.

<https://research.fs.usda.gov/pnw/products/dataandtools/seed-zone-gis-data>

- **Eastern States STZ** – Specific to the Eastern United States.
Source: Pike et al. New Seed-Collection Zones for the Eastern United States: The Eastern Seed Zone Forum, 2020. <https://academic.oup.com/jof/article/118/4/444/5811314>
- **Desert Southwest STZ** – Specific to the Southwestern United States.
Source <https://research.fs.usda.gov/pnw/products/dataandtools/seed-zone-gis-data>
- **Empirical STZ** – Climate matched, common garden, or landscape genetic for specific species which have been specifically researched.
Source: <https://www.fs.usda.gov/wwetac/seedzoneGISdata.php>

Short-term storage portion – The seed remaining in a collection after the long-term storage portion has been removed. These are kept in short-term storage conditions by the facility until requested. The original collection team has the right to first use or can make the seed available for other partners and projects.

Soil Color – The SOS standard is to use a Munsell Soil Color Chart. The abbreviated notation is “Hue Value/Chroma,” where the Hue is the number and letter combination found on the page tabs, the Value is the number of the vertical row of the best match, and Chroma is the horizontal. If a Munsell Soil Color Chart is unavailable, describe it in as much detail as possible.

Examples: 7.5YR 3/3 or “Light brown with a yellowish tint.”

Soil Texture – The SOS standard is to use the USDA NRCS Soil Texture “Feel” Method. This is done by wetting a sample of soil and performing various tests, including rolling a small subsample between your finger and thumb to analyze the “grittiness” of it. See the flowchart in the SOS Technical Protocol Appendix O, and videos tutorials in the Collector Resources help document for more information.

Source of Coordinates – The GPS used to obtain the latitude and longitude of the site. This will automatically populate on the form if they are obtained from Survey123.

Examples: Avenza, MapX, Google Maps, Trimble, or InReach.

***State** – The state in which the collection was made.

Standard Collection – A seed collection made following the SOS protocol that is under 80,000 estimated PLS.

***Subspecies** – If possible, subspecies is the ideal level of identification for SOS collections. Subspecies is the taxonomic designation below the species level to which the collection belongs. *Example: Brickellia longifolia var. multiflora.*

***Subunit** – The given name of a geopolitical area in which a collection or scout point is made. This may be a city, field office, park, forest, refuge, or other specifically defined area. *Examples: Antelope Island State Park, Ridgecrest Field Office, Shawnee National Forest, Blue Mountains.*

Survey123 – The mobile application used to complete scouting and collection forms and submit data to GeoPlatform. Even after sending, surveys may be reopened, edited, and resubmitted as many times as is necessary. Data flows one way, from the Survey123 form to the GeoPlatform Data Management Site. During the QC process, any changes made to a field on the GeoPlatform Data Management Site do NOT transfer back to the corresponding Survey123 form; however, changing data and resubmitting the Survey123 form will override any changes made in the Data Management Site.

***USDA PLANTS Code** – For taxonomic data, the SOS program uses the USDA NRCS PLANTS Database which has a code system for plant names in the United States. The codes or "symbols," as they're called in the PLANTS database, are comprised of the first two letters of the genus followed by the first two letters of the species, the first single letter of the variety name (if present), and often a number to differentiate it from others. Visit <http://plants.usda.gov/> and query a scientific name to find that species' unique code/symbol. *Example, BASA3, POSE.*

Viability Equation – The equation used to determine whether collecting only 20% of the ripe seed available on a given day, as is required by SOS protocol, will result in a collection greater than 10,000 estimated PLS. Use cut tests to determine the average viability of seeds per seed containing structure before using the equation.

Equation: (#ripe and healthy seeds from cut test / total # seeds assessed in cut test)(Average seeds per seed-containing structure) * (average # structures per plant) * (# plants in the population) * 0.2 = # estimated PLS*