MAKING STRATEGIC SEED COLLECTIONS FOR NATIVE PLANT RESEARCH AND PRODUCTION

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Outline

- Setting the stage for seed collection
  - Goals
  - Timeline
- Understanding and Evaluating Populations
- Collection
- Post-Collection Considerations

Setting the Stage for Seed Collection

- Determine your Goal
  - Understand the Problem
  - Define targets
  - Set geographic parameters
    - Seed Transfer Zones
- Keep Goal in Mind Throughout Project Implementation

Setting the Stage for Seed Collection

- Budget
- Create a Realistic Timeline
  - When are you planning to use seed?
  - How many seasons can you collect?
  - Consider weather and climatic impacts
- Recruit Collection Partners
  - Training is critical
  - Keep your eye on the prize

Seed Collection Priorities

- Workhorse species
- Species important for pollinators
- Wildlife support (forage, habitat, seasonal)
- Competitive with invasives
- Crop Wild Relatives
- Early, late and mid-successional species
- Suitable for commercial production

Understanding and Evaluating Populations

- Know Site history
- Accessibility
- Timing
  - Repeated visits
  - Monitor phenology
  - Collect throughout ripening period
- Equal and random sampling across extent
- Microsites

How much to collect?

- Depends on intended use
  - Direct Seeding
  - Nursery increase
  - Research
  - Conservation/Seed Banking
- Viability
- Yield

Before you Begin

- Estimate raw material to collect
  - Do your research – Bend is a resource
    - Average yield
    - Average PLS/lb
    - Average seed/lb
  - Understand which species need special attention

Species with yields below 5%

- *Monardella odoratissima* (MOOD)
- *Pleuraphis jamesii* (PLJA)
- *Artemesia tridentata ssp. wyomingensis* (ARTRW8)
- *Chrysothamnous viscidiflorus* (CHVI8)**
- *Krascheninnikovia lanata* (KRLA2)**
- *Salvia dorrii* (SADO4)
- *Tetradymia canescens* (TECA2)**
- *Atriplex polycarpa* (ATPO)

Remember Your Collection Goals

Atriplex canescens (ATCA2)

- 10,000 pure live seed (PLS) are required for long-term storage
- 5,000 PLS are needed for nursery grow out.

Average yield data show that approx 7,700 PLS/lb of raw wt. can be expected for ATCA2, so…

15,000 PLS/7,700pls/lb = 1.94 lbs raw material needed

* Average PLS/lb of raw wt. was used in this calculation instead of yield (%) or seeds/lb because ATCA2 typically finishes with a lower than desired percent purity and/or percent fill due to limitations in the extraction process. This is typical of many Atriplex species, conifers, and species producing fleshy fruit. If unsure, make calculations using all methods and take the highest number for field collection.

Site Verification

- Identify
- Monitor
- Assess
- Collect




Make Your Collections Count

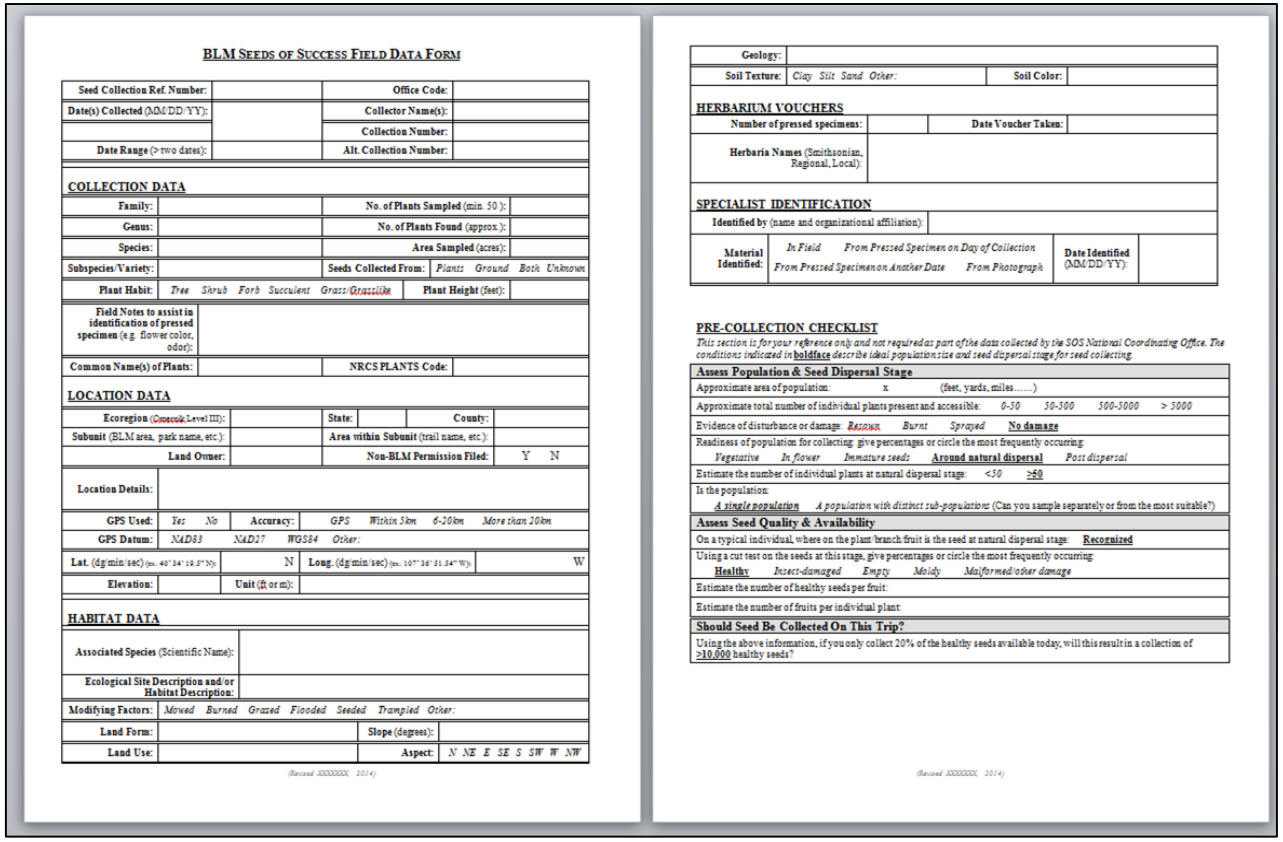
- Examine small, representative sample of seeds
  - Estimate percentage of undeveloped seed
- Be careful of weedy sites
- Collect mature seed
  - Collect around natural dispersal
  - Cut tests
  - Color as an indicator
  - Do not count on post-collection ripening

Collect Carefully

- Seed collection tools
- Determine collection methods
  - Stripping, clipping, shaking, beating
  - Avoid inert material and stems/branches >6”
  - No need to collect entire plant
- Don’t forget to leave some behind
  - 20% rule for conservation

Collection Data

- Consider intended use
  - Seed certification requirements
- Species
- Location Details
- Collector Details
- Herbarium Specimen
- Photos



BLM SEEDS OF SUCCESS FIELD DATA FORM

Seed Collection Ref. Number:		**Office Code:**	
Date(s) Collected (MM/DD/YY):		**Collector Name(s):**	
		Collection Number:	
Date Range (> two dates):		**Alt. Collection Number:**	

COLLECTION DATA

Family:		**No. of Plants Sampled** (min. 50):	
Genus:		**No. of Plants Found** (approx.):	
Species:		**Area Sampled** (acres):	
Subspecies/Variety:		**Seeds Collected From:** *Plants Ground Both Unknown*	
Plant Habit: *Tree Shrub Forb Succulent Grass/Grasslike*		**Plant Height** (feet):	
Field Notes to assist in identification of pressed specimen (e.g. flower color, odor):			
Common Name(s) of Plants:		**NRCS PLANTS Code:**	

LOCATION DATA

Ecoregion (Omernik Level III):		**State:**		**County:**	
Subunit (BLM area, park name, etc.):		**Area within Subunit** (trail name, etc.):			
Land Owner:		**Non-BLM Permission Filed:**		Y	N
Location Details:					
GPS Used: *Yes No*	**Accuracy:**	*GPS Within 5km 6-20km More than 20km*			
GPS Datum: *NAD83 NAD27 WGS84 Other:*					
Lat. (dg/min/sec) (ex. 40° 34' 19.5" N):	N	**Long.** (dg/min/sec) (ex. 107° 36' 51.54" W):			W
Elevation:	**Unit** (ft or m):				

HABITAT DATA

Associated Species (Scientific Name):	
Ecological Site Description and/or Habitat Description:	
Modifying Factors: *Mowed Burned Grazed Flooded Seeded Trampled Other:*	
Land Form:	**Slope** (degrees):
Land Use:	**Aspect:** *N NE E SE S SW W NW*

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Geology:			
Soil Texture: *Clay Silt Sand Other:*		**Soil Color:**	

HERBARIUM VOUCHERS

Number of pressed specimens:		**Date Voucher Taken:**	
Herbaria Names (Smithsonian, Regional, Local):			

SPECIALIST IDENTIFICATION

Identified by (name and organizational affiliation):			
Material Identified: *In Field From Pressed Specimen on Day of Collection From Pressed Specimen on Another Date From Photograph*		**Date Identified** (MM/DD/YY):	

PRE-COLLECTION CHECKLIST

This section is for your reference only and not required as part of the data collected by the SOS National Coordinating Office. The conditions indicated in **boldface** *describe ideal population size and seed dispersal stage for seed collecting.*

Assess Population & Seed Dispersal Stage
Approximate area of population: x (feet, yards, miles……)
Approximate total number of individual plants present and accessible: *0-50 50-500 500-5000 > 5000*
Evidence of disturbance or damage: *Research Burnt Sprayed* **No damage**
Readiness of population for collecting: give percentages or circle the most frequently occurring: *Vegetative In flower Immature seeds* **Around natural dispersal** *Post dispersal*
Estimate the number of individual plants at natural dispersal stage: *<50* **>50**
Is the population: ***A single population*** *A population with distinct sub-populations* (Can you sample separately or from the most suitable?)
Assess Seed Quality & Availability
On a typical individual, where on the plant/branch fruit is the seed at natural dispersal stage: **Recognized**
Using a cut test on the seeds at this stage, give percentages or circle the most frequently occurring: **Healthy** *Insect-damaged Empty Moldy Malformed/other damage*
Estimate the number of healthy seeds per fruit:
Estimate the number of fruits per individual plant:
Should Seed Be Collected On This Trip?
Using the above information, if you only collect 20% of the healthy seeds available today, will this result in a collection of **>10,000** healthy seeds?

(Revised XXXXXXX 2014)


IT'S
ALIVE!

Post-Collection Seed Care

- Appropriate packaging from collection to shipping
- Consider relative humidity
- Move to next step quickly
- Dry material
- Include data

THANK YOU!

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This and additional presentations available at http://nativeseed.info

NATIVE SEED NETWORK

Institute for Applied Ecology