

# Seed Collections for *Ex Situ* Seed Conservation

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“I have great faith in a seed...Convince me you have a seed there, and I am prepared to expect wonders.” – Henry D. Thoreau



School of Environmental and Forest Sciences  
College of the Environment

RARE  
PLANT  
CARE  
& CONSERVATION

# Seed Collection Best Practices

- Do No Harm!
- All collections be acquired legally
- Follow the 10% rules – for population and individual
- Capture represented genetic diversity

## 10 Percent Rule

### How many seeds should I collect in a year?

CPC recommends collecting no more than 10% of an individual or population seed production in one season.

### How many years can I collect from the same population without doing harm?

CPC recommends collecting no more than 10% of an individual or population seed production in one season and no more than 10 out of 90 years.



**Center for Plant Conservation**

<https://saveplants.org/best-practices/why-protect-rare-plants/>



# Some Questions to Ask Before Collecting Seeds

- Does the collection pose a threat to the wild population?
- What is the purpose of the collection?
- How many populations exist, and how big are they?
- What is the breeding system? How is it pollinated? What is the dispersal mechanism?
- Does the species have orthodox seeds? If not, how will the material be stored?
- Has a collection already been done on the population?

## Can the seeds be stored in a conventional freezer?

Trait	Likely to Be Orthodox (Desiccation and Freezing Tolerant)	Questionable Tolerance to Orthodox Storage
Habitat	Arid is especially likely; If it is not growing in a wetland, it is likely	Wetland, riparian
Conditions in nature	Seeds normally experience dry down and/or hard freezes	Seeds normally remain moist and do not experience hard freezes.
Season of seed production	Not spring	Spring
Life form	Not tree	Trees
Seed bank	Persistent	Not persistent
Dormancy	With dormancy	No dormancy
Seed moisture content at time of maturation	Dry when it is naturally shed from plant	High (30%–70%)
Seed size		Very large (avocado seeds aren't desiccation tolerant) or very small (orchid seeds and fern spores require storage in liquid nitrogen)

# Seed Collection Guidelines

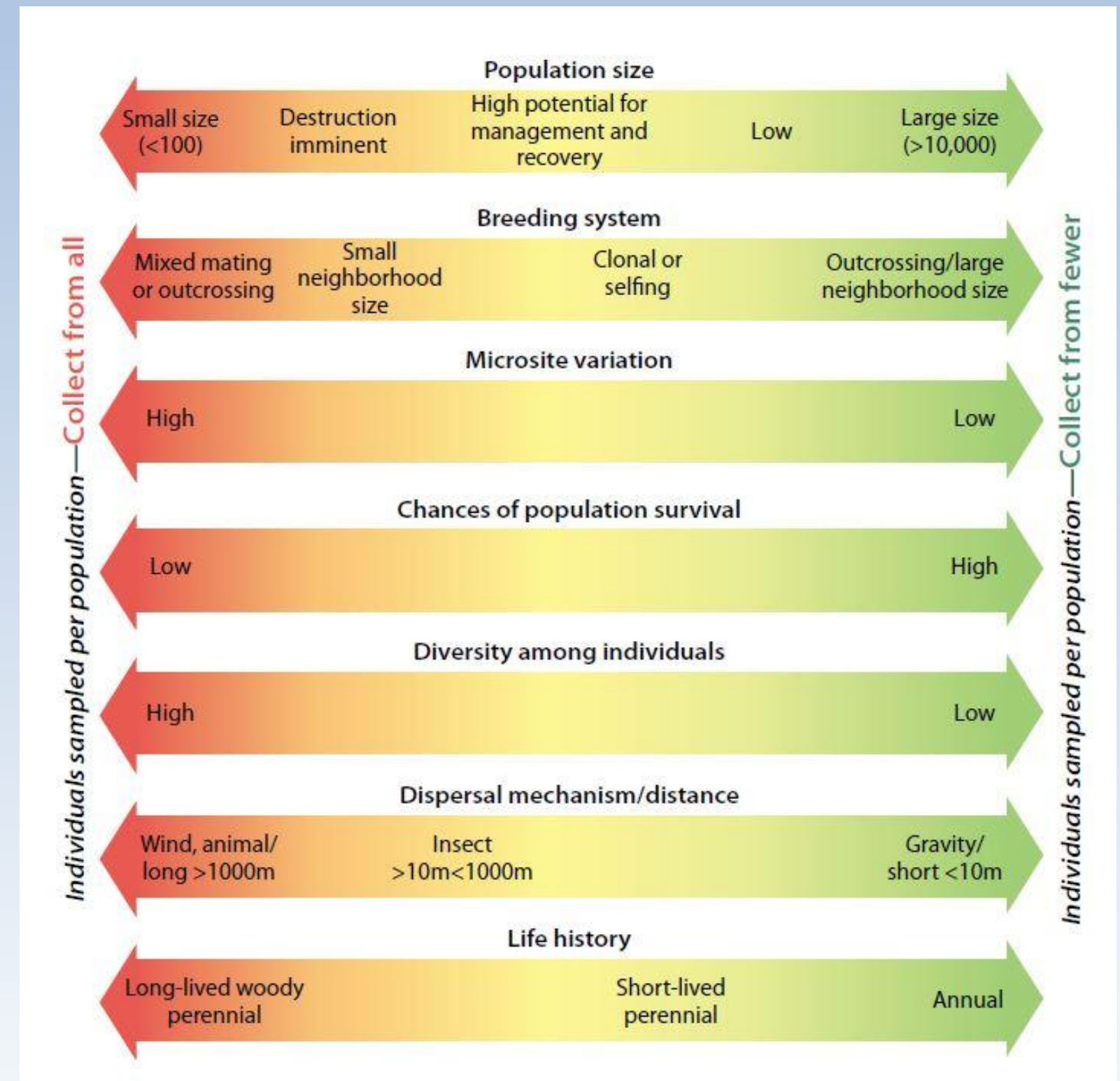
- Maintain maternal lines separately
- Recommended collection size is 3,000 seeds
- Collect from 50-60 maternal lines



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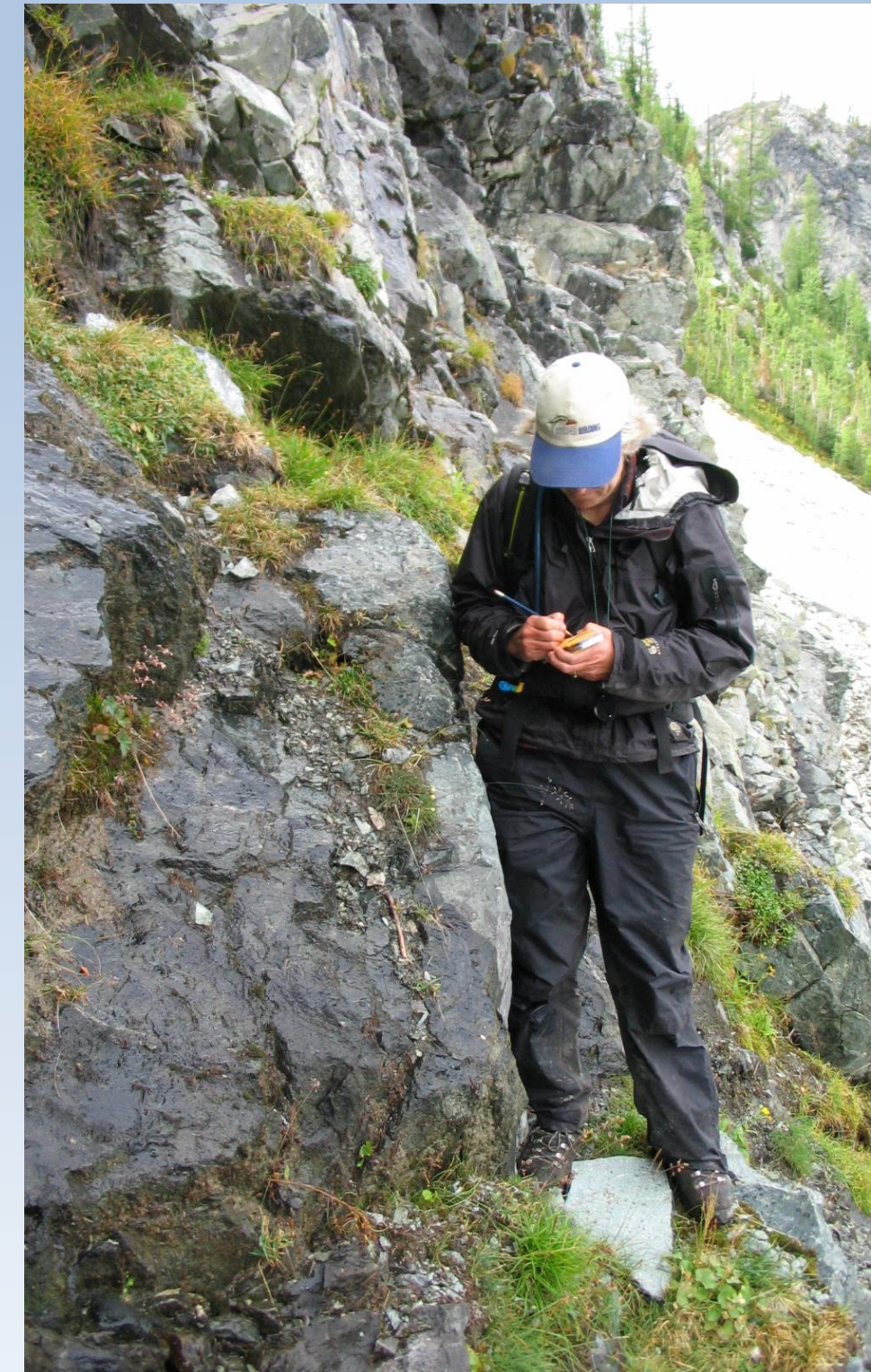
Umtanum desert buckwheat (*Eriogonum codium*) G1, LT

How many individuals should be sampled in a population?

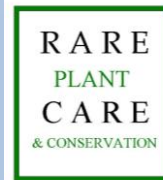


# Seed Collection Strategy

- Determine effective population size and extent
- Sampling strategy
  - Collect across spatial expanse
  - Diverse maternal morphology
  - Sample plants in different microhabitats
  - Collect multiple times in a season
- Collect as little material as possible
- Collect mature seeds, don't count on after-ripening
- Dry seeds within 3-5 days of collection
- Collect herbarium specimen and good photos



# Seed Collection Documentation



**MSV Accessions Record**  
**Washington Rare Plant Care and Conservation**  
 University of Washington Botanic Gardens  
 Center for Urban Horticulture ♦ Box 354115 ♦ Seattle, WA 98195  
 206 616-0780 ♦ FAX: 206 685-2692 ♦ email: [rarecare@uw.edu](mailto:rarecare@uw.edu)

*For office use only*  
 Date Received: \_\_\_\_\_  
 Accession # \_\_\_\_\_  
 Copy to: \_\_\_\_\_ Date: \_\_\_\_\_

**Taxon Name:** \_\_\_\_\_ **Date of Collection:** \_\_\_\_\_  
**Element Occurrence #:** \_\_\_\_\_ **Land Ownership:** \_\_\_\_\_  
**Managed Area:** \_\_\_\_\_ **Site Name:** \_\_\_\_\_  
**Collector(s):** \_\_\_\_\_ **Email:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

**Location** (indicate area where seeds were collected from, attach map):

**GPS Coordinates:** \_\_\_\_\_ **Datum:** \_\_\_\_\_  
 (UTMs preferred, attach another sheet if needed)  
**Altitude:** \_\_\_\_\_  
**Legal Description:** \_\_\_\_\_

**HABITAT:**  
**Slope:** \_\_\_\_\_ **Aspect:** \_\_\_\_\_ **Soils:** \_\_\_\_\_  
**Associated Species:** \_\_\_\_\_

PHOTOGRAPHS/IMAGES			DETERMINATION (Please circle & note references)	
<i>Circle:</i>	Digital (350 dpi)	Slides	Prints	Keyed reference:
	Whole plant	Close-ups	Habitat	Personal authority:
	Other:			Other:

SEEDS COLLECTED			VOUCHER	
<b>Population Size:</b> _____	individuals	stems	<b>Is there a voucher for this population?</b>	
<b>No. plants sampled:</b> _____	individuals	stems	<b>YES</b>	<b>NO</b>
Does each seed packet hold seeds from one individual/ramet?	<b>YES</b>	<b>NO</b>	<b>If so, where deposited:</b> _____	

**NOTES** (population information, collector information, other, attached additional sheets if needed):

Please do not write in margins. If more space is needed, use back.

