



BORDERLANDS RESTORATION NETWORK

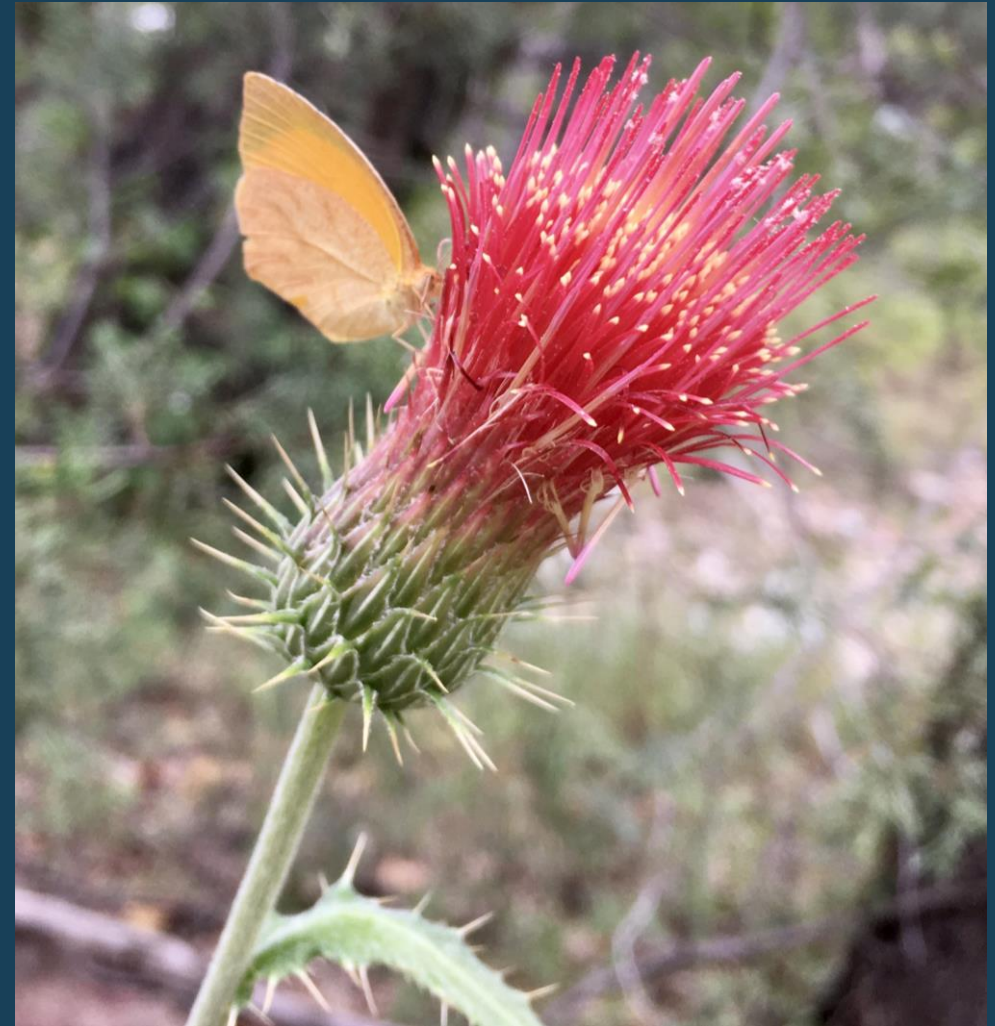
REBUILD.
RESTORE.
RECONNECT.

Stewarding Native Seeds in the Southwestern U.S.

Perin McNelis, Native Plant Program Manager

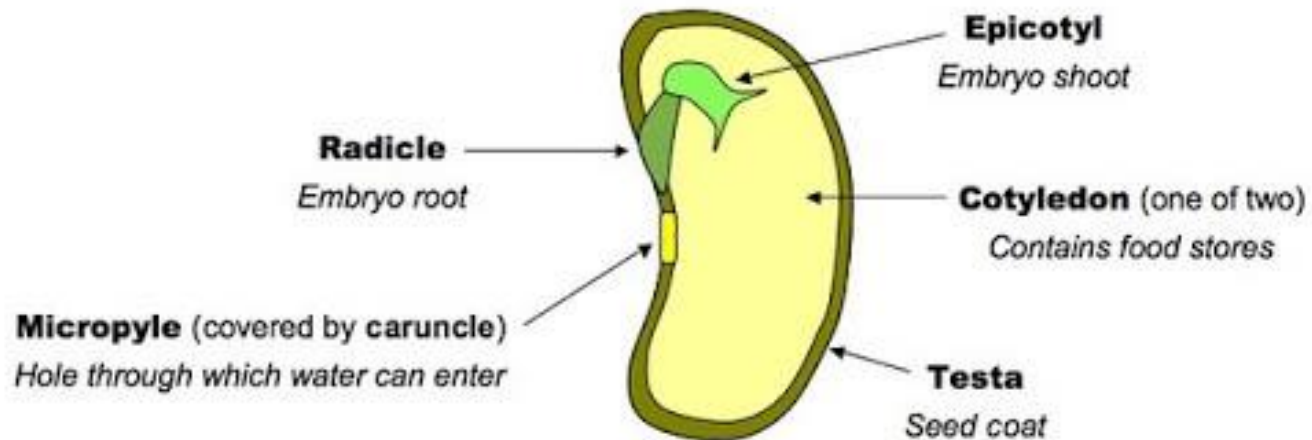
WHAT IS A NATIVE PLANT?

Native plants are those that have evolved in the places they live over thousands of years. Plants are usually considered 'native' if they were not introduced to a landscape by humans, and have been present since before colonization. Native plants have coevolved with animals where they live and are usually depended upon as a source for food and/or shelter.



WHAT ARE SEEDS?

- Seeds are living, breathing beings! The embryo is an immature plant with all of the parts of an adult plant!
- Seeds are a result of plant sex and cross pollination, so are an important source of genetic diversity!



WHY ARE NATIVE PLANTS & SEEDS IMPORTANT?

- Healthy native plant communities are foundational for ecosystem function and diversity.
- Plants provide a myriad of ecosystem services including soil stabilization, food and habitat for animals, aquifer recharge, and resources that sustain human communities and economies.
- Native plants are thought to be an important buffer against climate change by supporting ecosystem recovery after climate related impacts
- Cornerstone of ecological restoration!

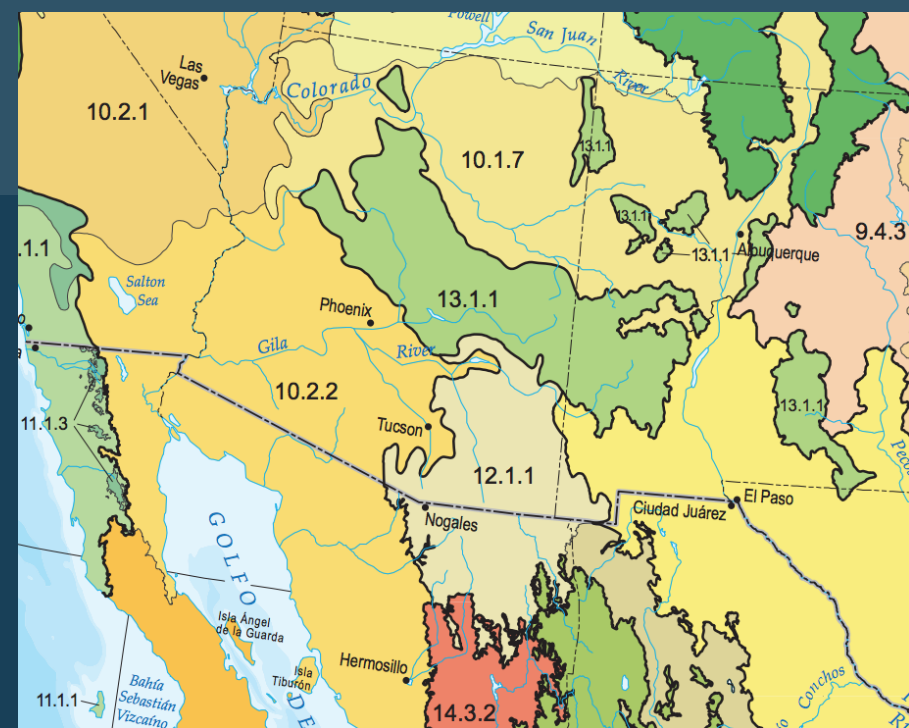
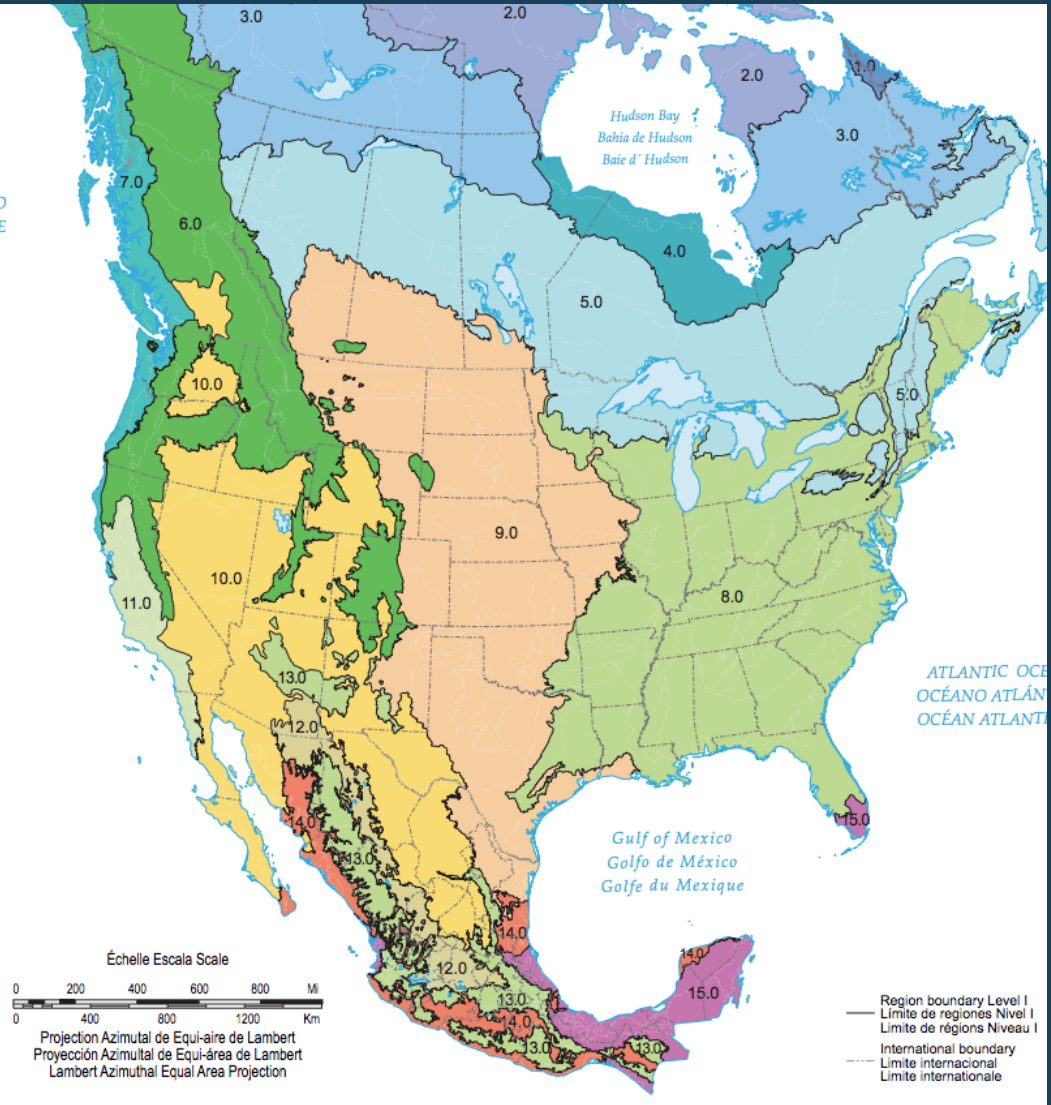
SEEDS CONSERVATION AND RESTORATION

- Preservation of plants/seeds *within* the habitat where they naturally occur (i.e. protected landscapes like National Parks, activities like grazing exclusion, etc.)
- Preservation of plants/seeds *outside* of the habitat where they naturally occur (i.e. botanical gardens, seed banks, etc.)
- A combination of preservation of plants in their natural habitats as well as at home in your garden!

Ecological Restoration- Activities that aim to return ecosystem function and health to a landscape that has been disturbed/thrown off balance

ECOTYPES

- 1.0 ARCTIC CORDILLERA
CORDILLERA ÁRTICA
CORDILLÈRE ARCTIQUE
- 2.0 TUNDRA
TUNDRA
TOUNDR
- 3.0 TAIGA
TAIGA
TAÏGA
- 4.0 HUDSON PLAIN
PLANICIE DE HUDSON
PLAINE D' HUDSON
- 5.0 NORTHERN FORESTS
BOSQUES SEPTENTRIONALES
FORÊTS SEPTENTRIONALES
- 6.0 NORTHWESTERN FORESTED MOUNTAINS
MONTAÑAS BOSCOAS NOROCCIDENTALES
MONTAGNES FORESTÈES DU NORD-QUEST
- 7.0 MARINE WEST COAST FOREST
BOSQUE COSTERO OCCIDENTAL
FORÊT MARITIME DE LA CÔTE OCCIDENTALE
- 8.0 EASTERN TEMPERATE FORESTS
BOSQUES TEMPLADOS DEL ESTE
FORÊTS TEMPÉRÈES DE L'EST
- 9.0 GREAT PLAINS
GRANDES PLANICIES
GRANDES PLAINES
- 10.0 NORTH AMERICAN DESERTS
DESERTOS DE NORTEAMÉRICA
DESÉRTS DE L'AMÉRIQUE DU NORD
- 11.0 MEDITERRANEAN CALIFORNIA
CALIFORNIA MEDITERRÁNEA
CALIFORNIE MÉDITERRANÉENNE
- 12.0 SOUTHERN SEMI-ARID HIGHLANDS
ELEVACIONES SEMIÁRIDAS MERIDIONALES
HAUTES TERRES SEMI-ARIDES MÉRIDIONALES
- 13.0 TEMPERATE SIERRAS
SIERRAS TEMPLADAS
SIERRAS TEMPÉRÈES
- 14.0 TROPICAL DRY FORESTS
SELVAS CALIDO-SECAS
FORÊTS TROPICALES SÈCHES
- 15.0 TROPICAL WET FORESTS
SELVAS CALIDO-HUMEDAS
FORÊTS TROPICALES HUMIDES



Region boundary Level I
Limite de régions Niveau I
Limite de régions Niveau I

International boundary
Limite internacional
Limite internationale

Source: Level I and Level III Ecoregions of North America maps from The United States Environmental Protection Agency



BORDERLANDS RESTORATION NETWORK

REBUILD.
RESTORE.
RECONNECT.

OUR MISSION

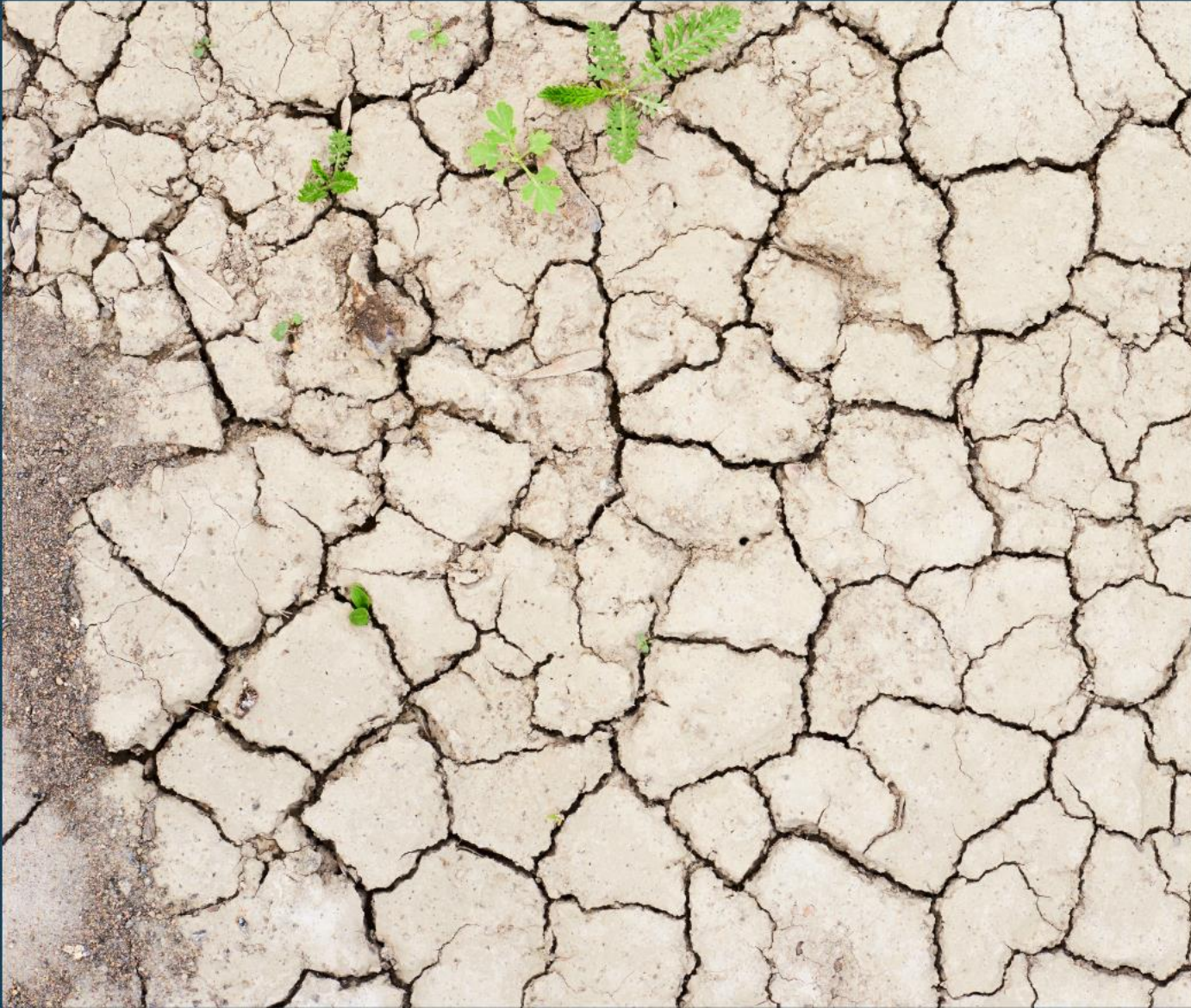
We partner to grow a restorative economy by rebuilding healthy ecosystems, restoring habitat for plants and wildlife, and reconnecting our border communities to the land through shared learning.

WHERE?

Sky Islands or Madrean Archipelago Ecoregion: A binational biodiversity hotspot area



WHY ECOLOGICAL RESTORATION?





REBUILD

healthy ecosystems.

RESTORE

habitat for plants and animals.

RECONNECT

to the land through shared learning.



Native Plant Program

We promote biodiversity by providing access to restoration-quality native plant materials:

- Native seed collection, processing, and storage
- Native plant container production
- Farmed native seed production
- Restoration outplantings and seed-based revegetation
- Native plant education for communities in the borderlands
- Retail plants and seeds for home gardeners



600+

Different native plant
species worked with

WILD COLLECTION



SEED COLLECTION



Collecting
Seeds



SEED COLLECTION



Identify your population!



SEED COLLECTION

Observe your
plant!



SEED COLLECTION



SEED COLLECTION

Natural state
of dispersal!



SEED COLLECTION PROTOCOLS

Know the ways of the ones who take care of you, so that you may take care of them.

Introduce yourself. Be accountable as the one who comes asking for life.

Ask permission before taking. Abide by the answer.

Never take the first. Never take the last.

Take only what you need.

Take only which is given.

Never take more than half. Leave some for others.

Harvest in a way that minimizes harm.

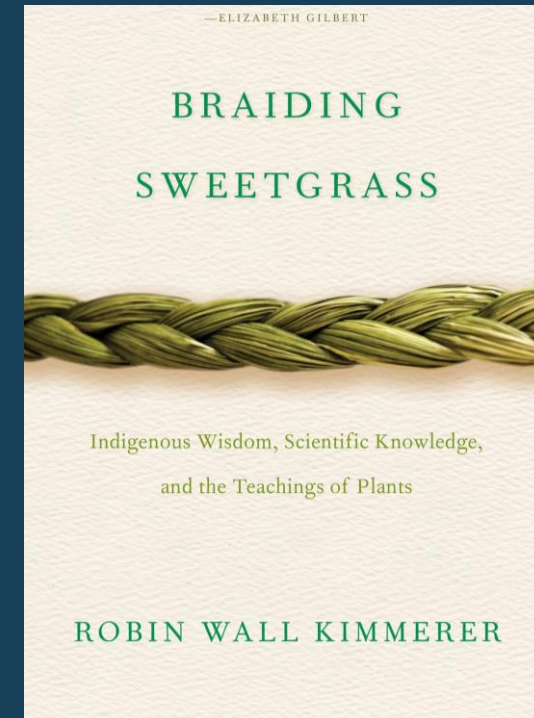
Use it respectfully. Never waste what you have taken.

Share.

Give thanks for what you have been given.

Give a gift, in reciprocity for what you have taken.

Sustain the ones who sustain you and the earth will last forever.



SEED COLLECTION TOOLS/METHODS



PROVENANCE DATA COLLECTION

Collection Information

Family	<input type="text" value="Rosaceae"/>	Accession Number	<input type="text" value="2022_0010"/>
Scientific Name	<input type="text" value="Vauquelinia californica"/>	Alternate Collection #	<input type="text"/>
Common Name	<input type="text" value="Arizona rosewood"/>	Sent to:	<input type="checkbox"/> SWSP <input type="checkbox"/> SOS
Collection Locality	<input type="text" value="Rock Corral Canyon"/>		<input type="checkbox"/> SWEPM <input type="checkbox"/> USFS
Country	<input type="text" value="USA"/>	State	<input type="text" value="AZ"/>
		County	<input type="text" value="Santa Cruz"/>
Collection Type	<input type="text" value="Wild"/>	SOS Collection ID	<input type="text"/>
Commercial Status	<input type="text" value="Commercial"/>	Associated Project	<input type="text"/>

Habitat Information

Biotic Community	<input type="text" value="Madrean Evergreen Woodland"/>	UTM Zone #	<input type="text"/>
Mountain Range	<input type="text" value="Tumacacori Mountains"/>	UTM E	<input type="text"/>
Watershed	<input type="text" value="Upper Santa Cruz"/>	UTM N	<input type="text"/>
Collector	<input type="text" value="J. Dennison, P. McNelis, T. Gerckens"/>	Lat (Decimal Degrees)	<input type="text" value="31.55439"/>
Date Collected	<input type="text" value="4/13/2022"/>	Lon (Decimal Degrees)	<input type="text" value="-111.08275"/>
Landowner	<input type="text" value="CNF"/>	Elevation	<input type="text" value="3573'"/>
Specimen Collected	<input type="checkbox"/> Yes <input type="checkbox"/> No	Specimen Dated	<input type="text"/>
Photo Checklist	<input type="checkbox"/> Habitat <input type="checkbox"/> Plant <input type="checkbox"/> Seed Pod	Datum	<input type="text" value="WGS84"/>
Directions to Location	<input type="text" value="Drive into WCBA to Rock Corral Canyon. Population is along wash left of road just before campground."/>		

# Acquired	Est Seed Count	Cuttings	Live Plants	Population Size	# Plants Sampled
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="100"/>	<input type="text" value="1"/>

- We conduct seed collection from wild populations following protocols based on those established by the BLM's Seeds of Success program

BRN SEED BARN and COLD STORAGE



CLEANING AND STORING SEEDS



CLEANING AND STORING SEEDS



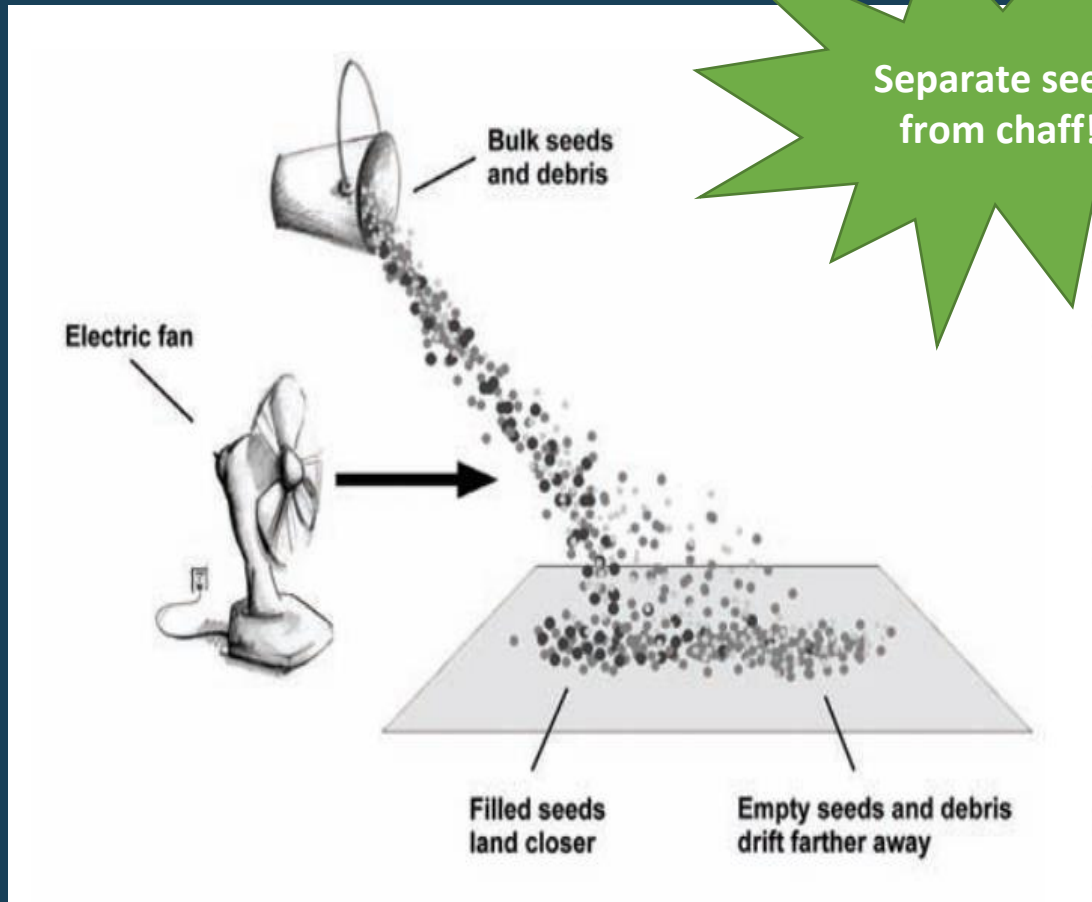
Dry and eliminate
pests!



household dehumidifier are good tools for keeping lab spaces at low humidity and around drying seeds (left). Large lots of seed should be left open in paper bags or (right). Seed should be mixed and tossed multiple times per day.



CLEANING AND STORING SEEDS



Separate seed from chaff!



Homemade screens using commercially available hardware cloth are some of the most useful tools for seed cleaning, as they can be built in large sizes to match the containers.

CLEANING AND STORING SEEDS



Store in cool, dark,
and dry conditions!



SEEDS FOR NURSERY PRODUCTION



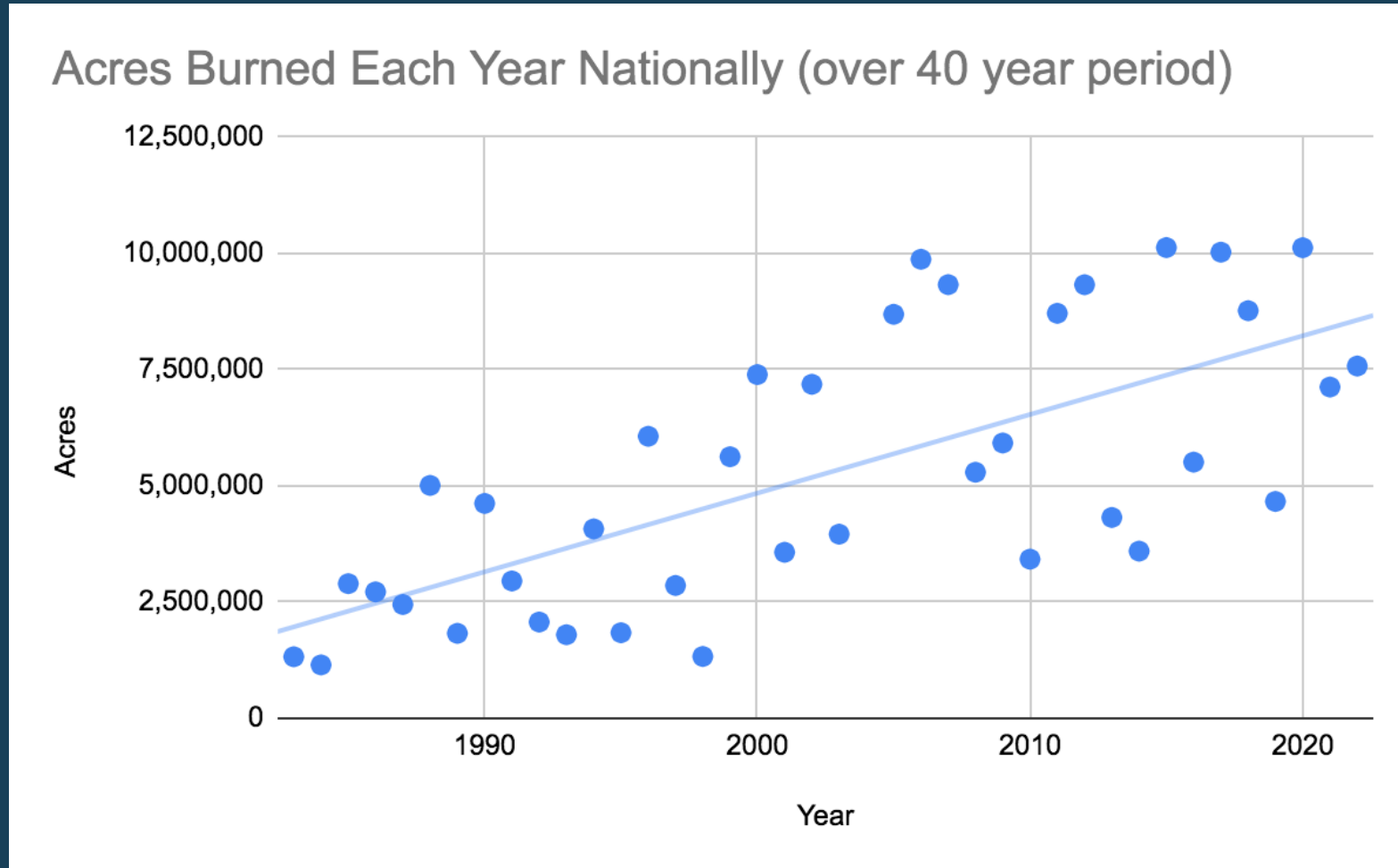
SEEDS FOR FARMED SEED PRODUCTION



SEEDS FOR REVEGETATION



GROWING SEED NEEDS



Based on data from the National Interagency Fire Center: <https://www.nifc.gov/fire-information/statistics>



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RESTORATION
NETWORK**

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Thank you!



phmcnelis@borderlandsrestoration.
org



horticulture@borderlandsrestoration.org

www.borderlandsplants.org
www.borderlandsrestoration.org