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- SINCE 1875 -

Climate Resilient Reforestation at Scale

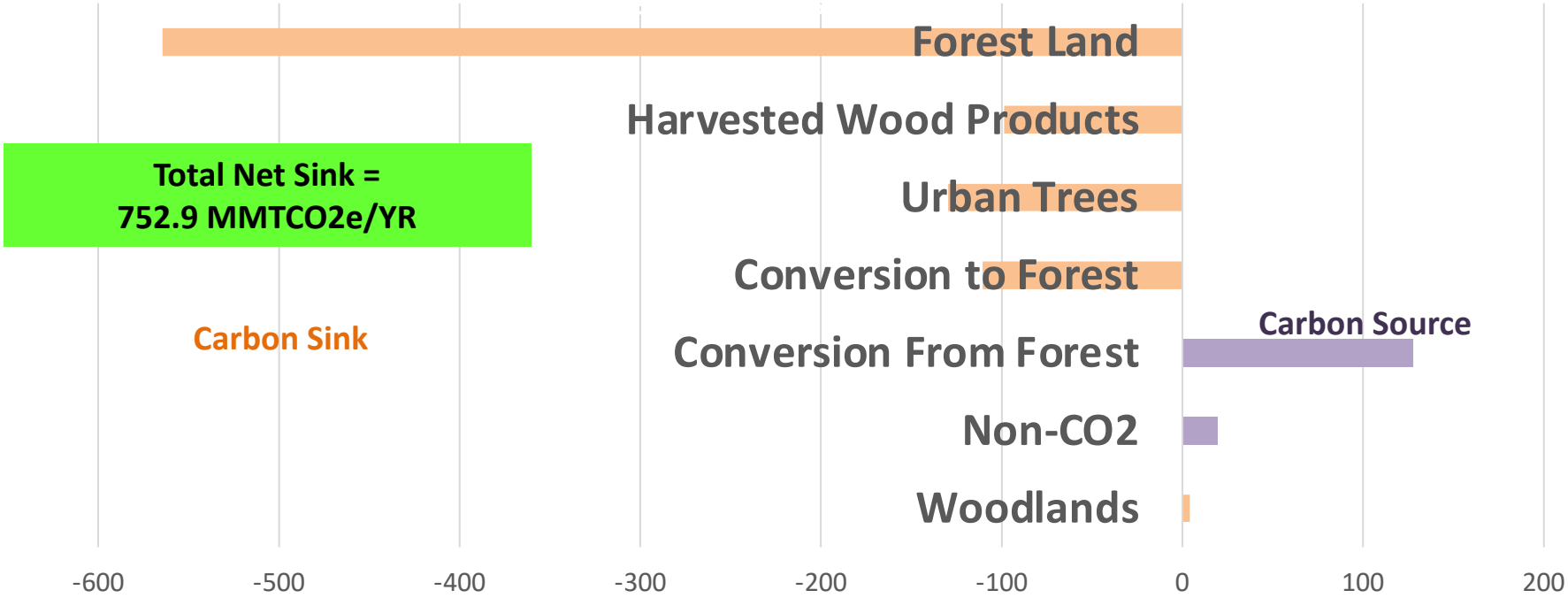
Austin Rempel, Forest Restoration Manager

1. Thornforest in the Lower Rio Grande Valley, Texas

2. The 2018 Camp Fire scar - Paradise, California

Examples of large-scale, climate-informed reforestation

Components of the Nation's Forest Sink
EPA 2020 GHG Inventory
https://doi.org/10.2737/FS-RU-227



	Woodlands	Non-CO2	Conversion From Forest	Conversion to Forest	Urban Trees	Harvested Wood Products	Forest Land
Sink/Source	4	19.4	127.4	-110.6	-129.8	-98.8	-564.5

Our Forests Are Delivering for Climate

1. Tree Species
2. Tree Genetics
3. Planting Techniques
4. Adaptive Management

+ Partnerships and information-sharing

Climate Resilient Reforestation

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Thornforest in the Lower Rio Grande Valley, Texas

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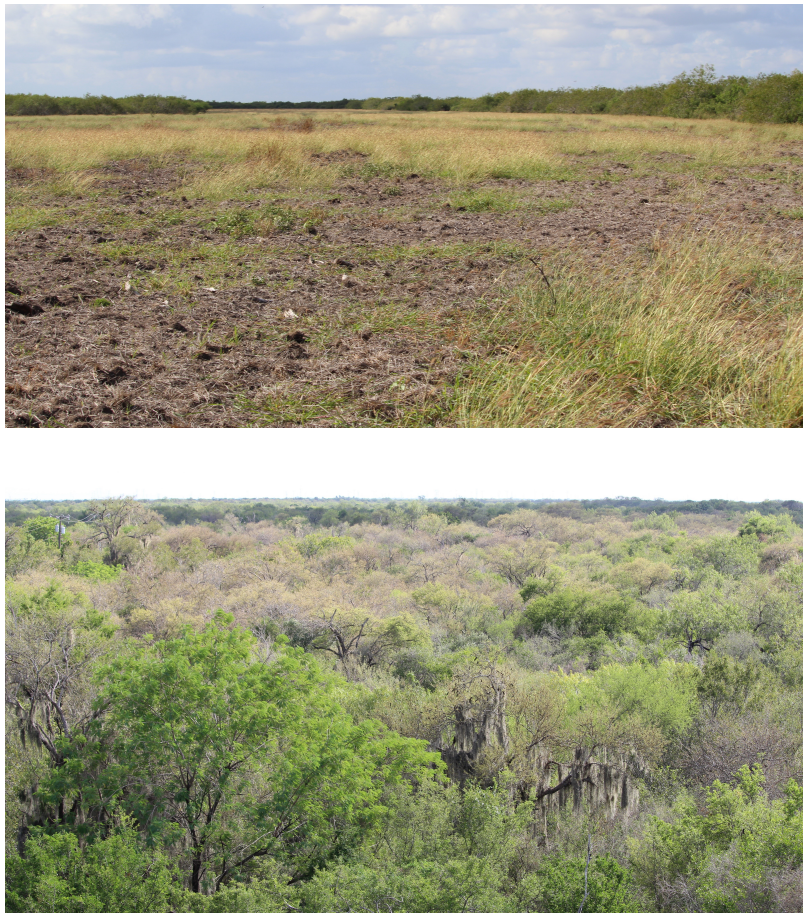
- **~55 unique thornforest species (e.g. Texas ebony)**
- **4,000 acres of marginal ag lands converted to wildlife refuge**



Thornforest Restoration

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530 species of birds, 300 species of butterfly and 11 threatened and endangered species including Texas tortoises, jaguarundis and ocelots

Biodiversity

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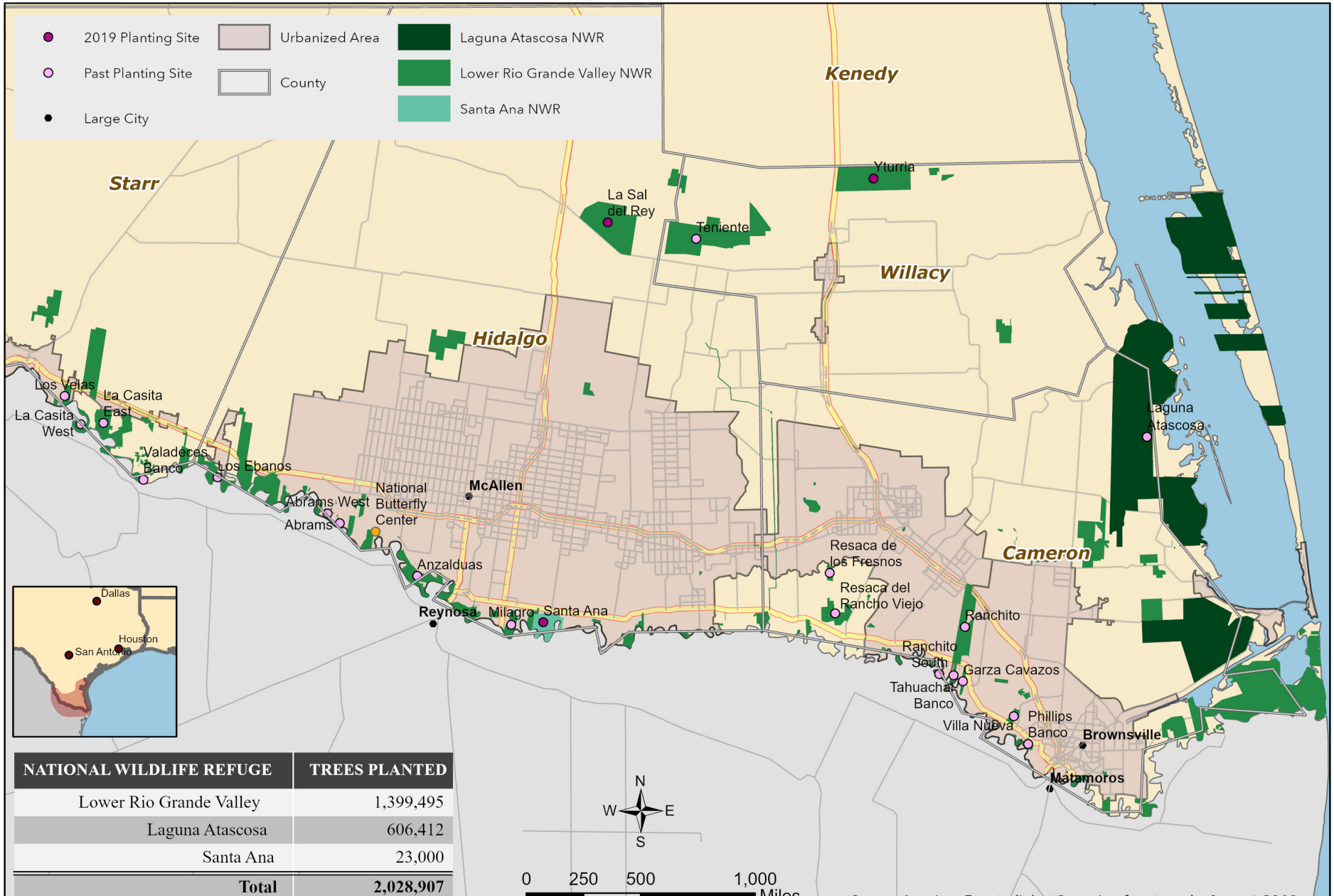
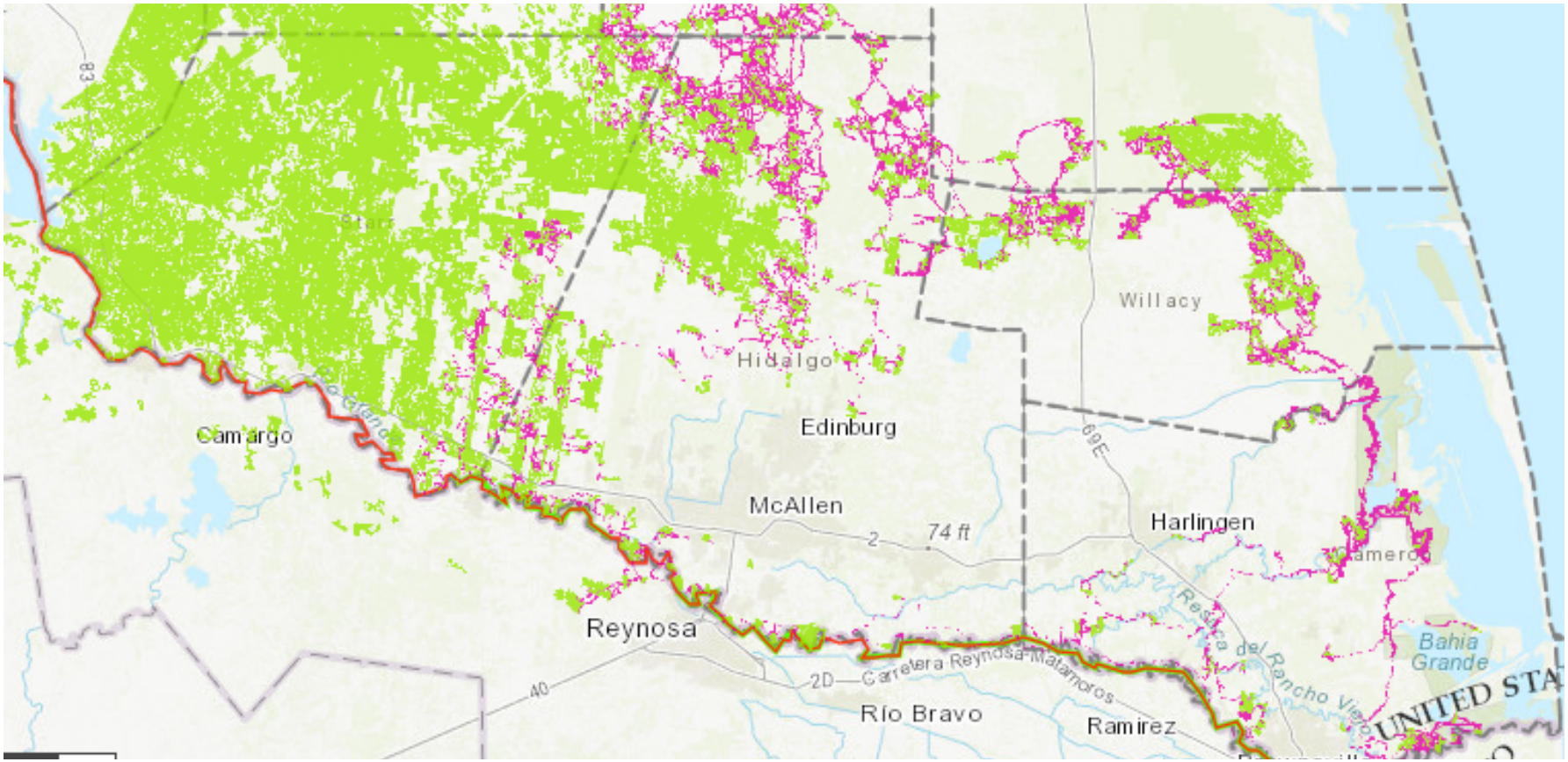
Lower Rio Grande Valley

American Forests has planted over 2 million trees in 22 years!

AMERICAN FORESTS



NATIONAL WILDLIFE REFUGE	TREES PLANTED
Lower Rio Grande Valley	1,399,495
Laguna Atascosa	606,412
Santa Ana	23,000
Total	**2,028,907**



Connectivity and Prioritization

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- Planting species that will be able to better withstand **future conditions**
- Selecting and growing genetically **diverse seeds**
- **Site preparation** tactics that help native plants outcompete invasive species
- Seedling **shelter tubes** that dramatically increase plant survival

Adaptation Tactics

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Thornforest Conservation Partnership

Climate-informed Reforestation and Regeneration in the Camp Fire

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Camp Fire (2018, 153,336 ac)
- ‘pyrosilvicultural’ founder stands, provenance tests, oaks, refugia

Adaptation Trials

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RESOURCE
CONSERVATION DISTRICT
OF BUTTE COUNTY

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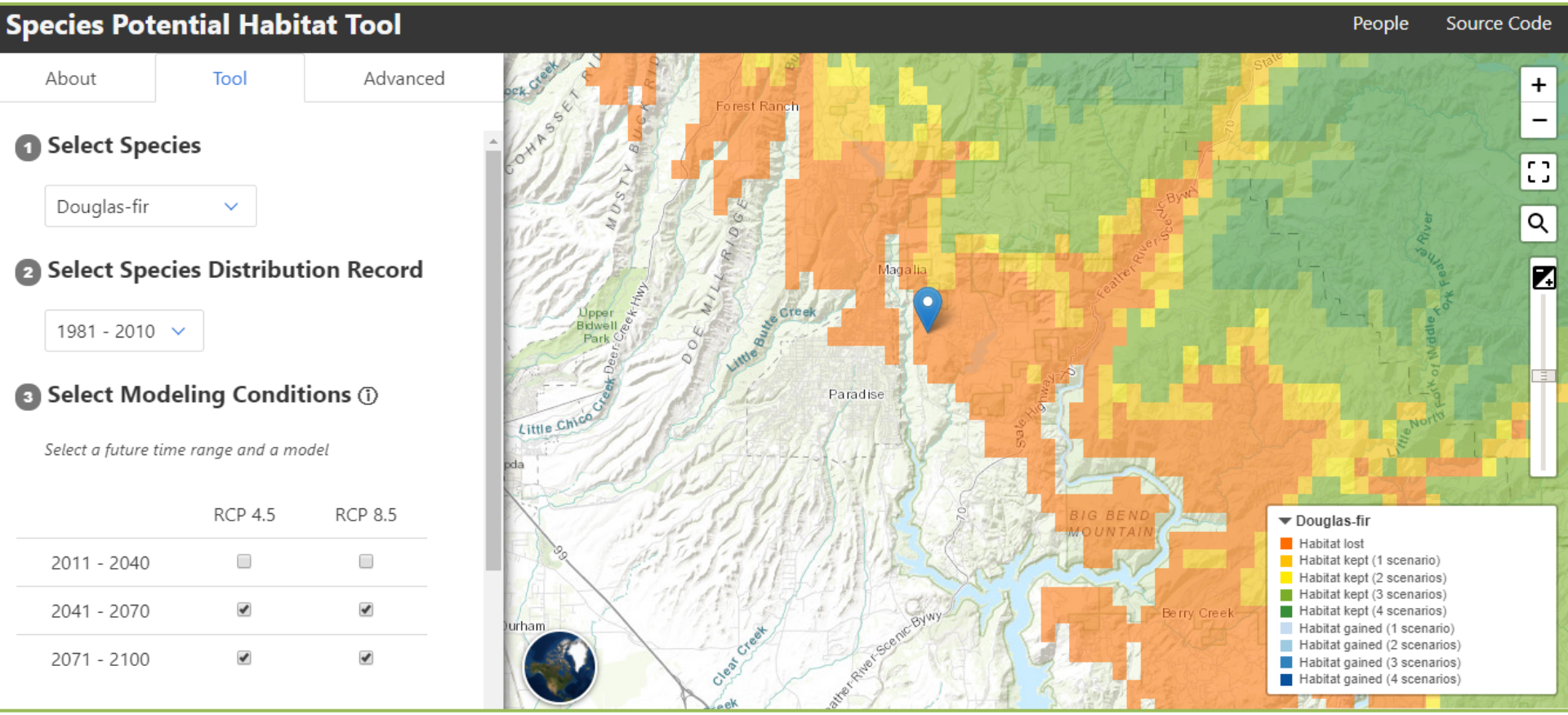
Restoration Partners

Species	2030	2060
Black oak	59%	42%
Interior live oak	55%	54%
Blue oak	52%	46%
Canyon live oak	49%	35%
Ponderosa pine	39%	34%
Douglas-fir	31%	25%
Sugar pine	13%	10%

Conifer Transition Zone



Transition Zone - Douglas Fir

42.33° N

127.41° W

Klamath
Modoc National Forest
Shasta National Forest
Pit
Trinity
Sacramento
Feather
Eel
Truckee
SIERRA NEVADA MOUNTAINS
Carson City
Sacramento
San Francisco
San Jose
SAN JOAQUIN VALLEY
Fresno
Salinas
Las Vegas
MOJAVE DESERT
CALIFORNIA
119.5 mi

N

113.24° W

34.97° N

Low — High

Match

Generated 01/19/2020 by the Seedlot Selection Tool

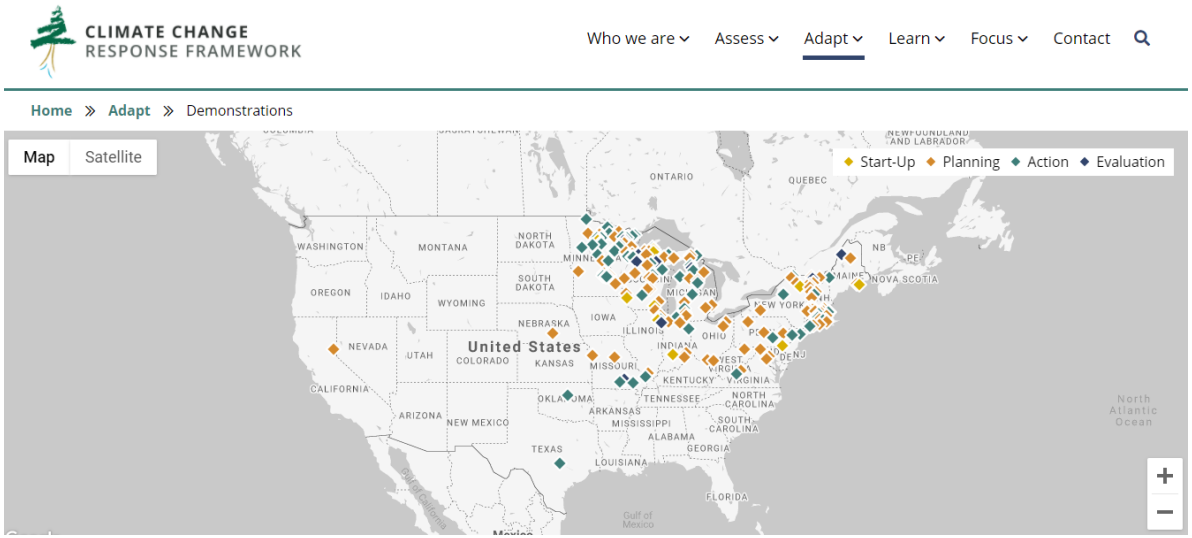
Post-fire shrub dominance

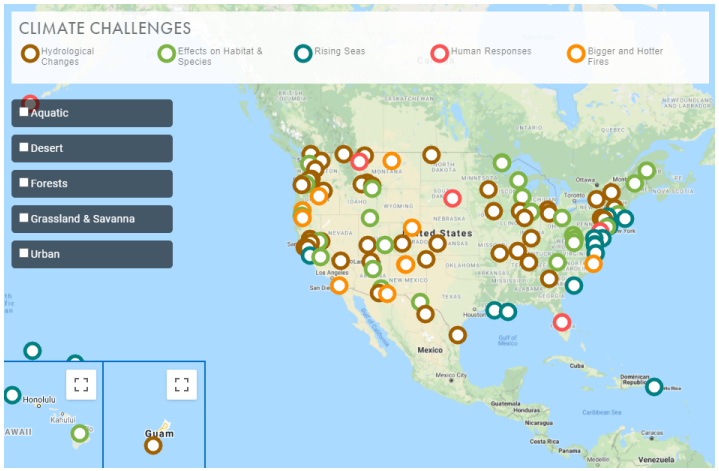
California mixed conifer

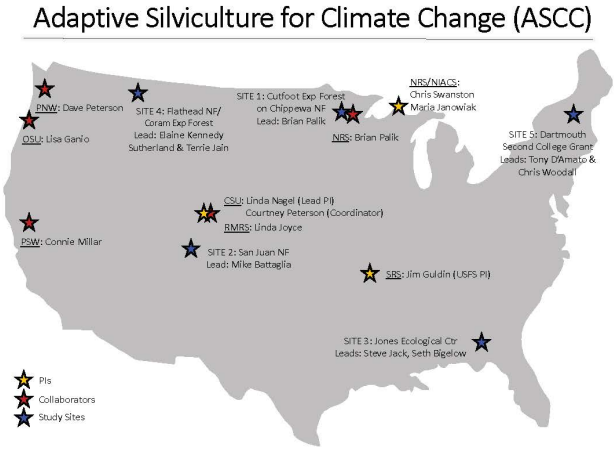
Oak and Gray Pine woodland/savannah

Transition

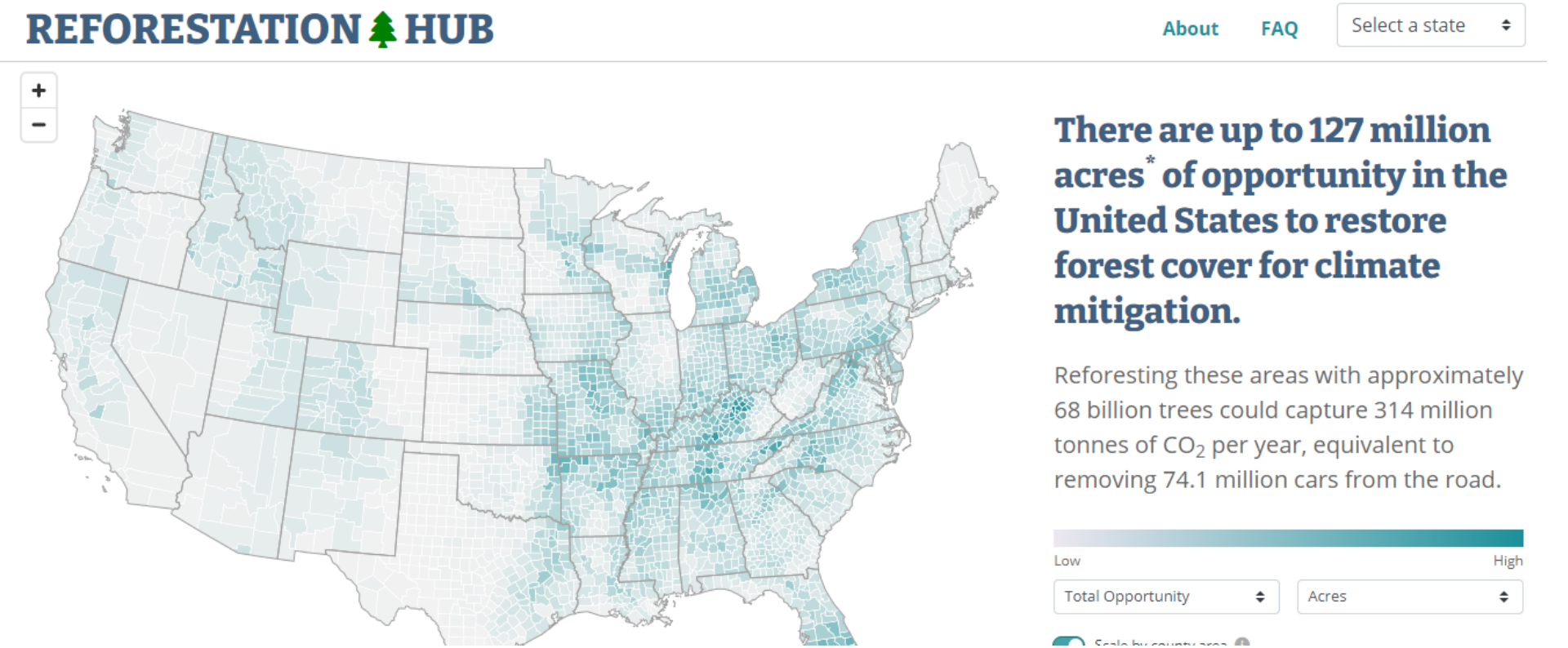
Monitoring and learning







This is Happening Everywhere



Reforestation Hub

ORIGINAL RESEARCH ARTICLE

Front. For. Glob. Change | doi: 10.3389/ffgc.2021.629198

Challenges to the reforestation pipeline in the United States

Joseph Fargione[1*], Diane L. Haase[2], Owen T. Burney[3], Olga A. Kildisheva[1], Greg Edge[4], Susan C. Cook-Patton[5], Teresa Chapman[6], Austin Rempel[7], Matthew D. Hurteau[8], Kimberley T. Davis[9], Solomon Dobrowski[10], Scott Enebak[11], Rafael De La Torre[12], Arvind Bhuta[13], Frederick Cubbage[14], Brian Kittler[15], Daowei Zhang[11] and Richard W. Guldin[16]

[1]The Nature Conservancy (United States), United States

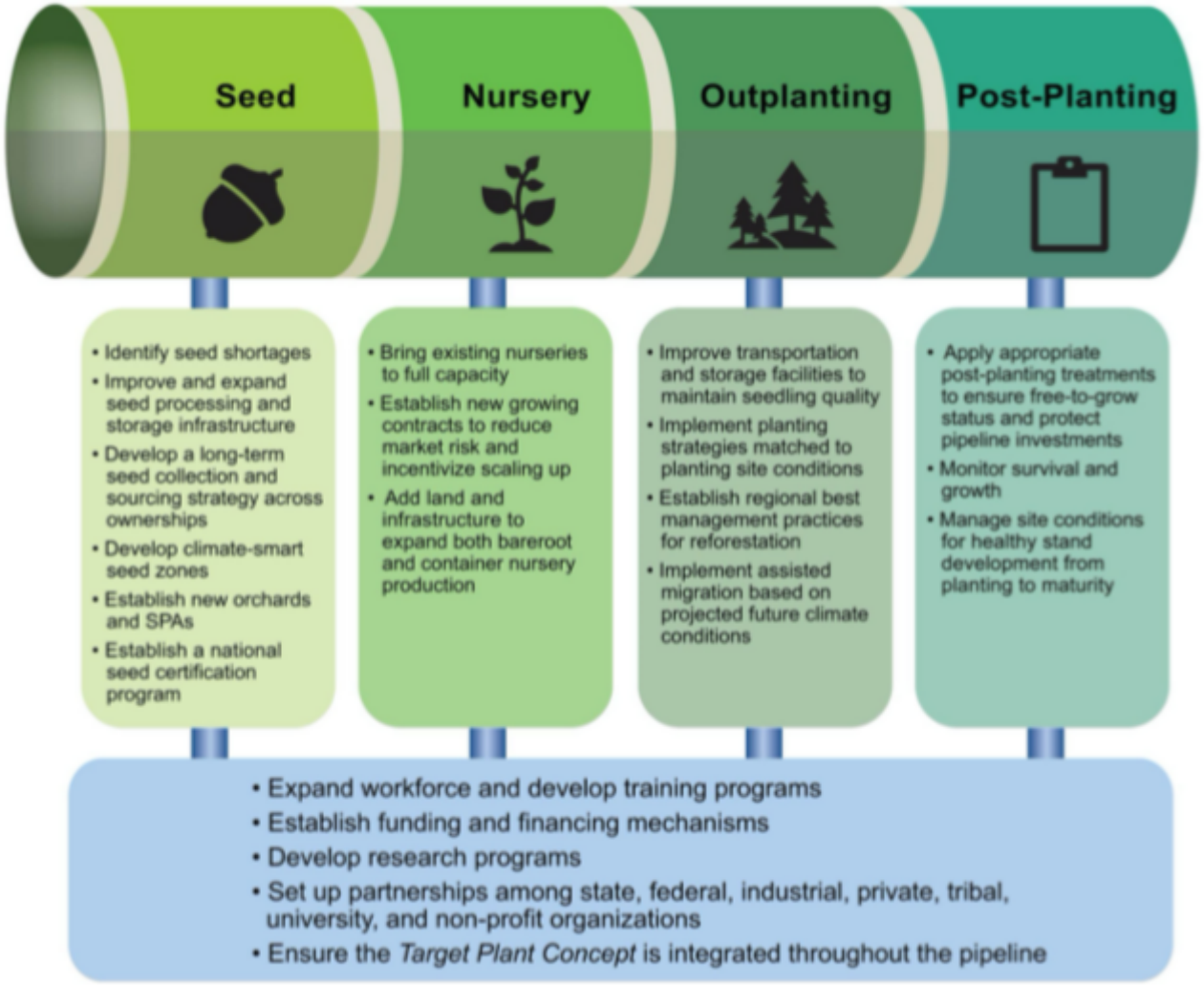
[2]Other, United States

[3]John T. Harrington Forestry Research Center, New Mexico State University, United Kingdom

[4]Division of Forestry, Wisconsin Department of Natural Resources, United States

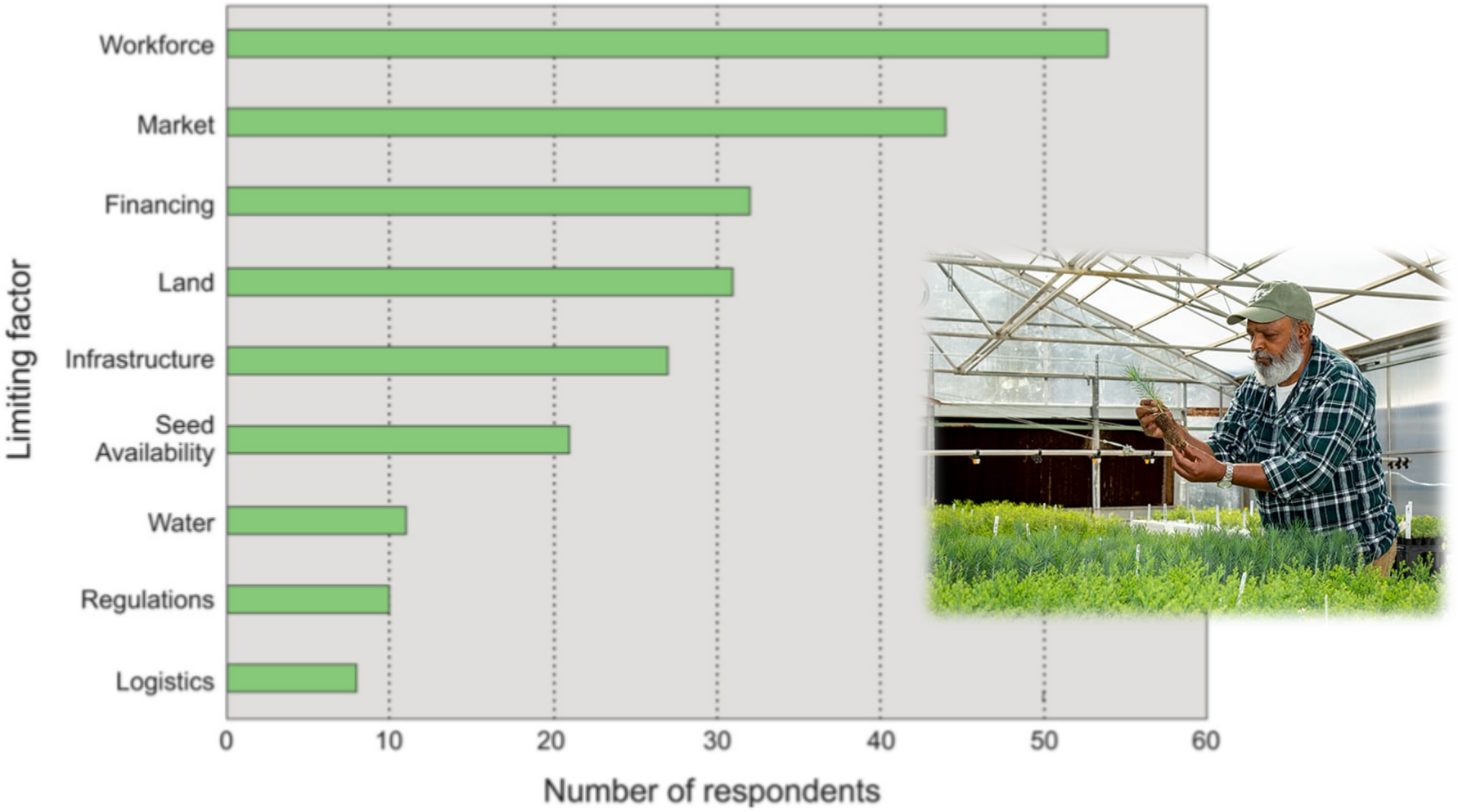
[5]Natural Climate Solutions Science, The Nature Conservancy, United States

Assessing the Reforestation Pipeline



Assessing the Reforestation Pipeline

Seedbanks and nurseries are the engine for landscape-scale reforestation



Challenges to the Nursery Sector

Thank you!

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