

Tissue collection for piñon pines and co-occurring junipers to characterize landscape genomics

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We now care about piñon-juniper ecosystems!



[Administration](#) [Priorities](#) [The Record](#)

DECEMBER 19, 2023

FACT SHEET: Biden-Harris Administration Advances Commitment to Protect Old Growth Forests on National Forest System Lands

[BRIEFING ROOM](#) [STATEMENTS AND RELEASES](#)

Collaborative Efforts to Conserve Piñon Juniper: Piñon and juniper woodlands encompass tens of millions of acres of federal lands across the West, and have significant biodiversity, climate, and cultural values. [Piñon-juniper woodlands](#) are the most abundant forest type in the federally managed inventory of mature and old-growth forests, and are the majority of mature and old-growth forests managed by the BLM. While much management focus has been rightly placed on piñon-juniper encroachment onto sagebrush ecosystems, less attention has been paid to the importance of mature and old-growth piñon-juniper ecosystems.

<https://www.whitehouse.gov/briefing-room/statements-releases/2023/12/19/fact-sheet-biden-harris-administration-advances-commitment-to-protect-old-growth-forests-on-national-forest-system-lands/>

Culturally significant species

The trees themselves:

- Piñon nuts calorically dense
- Medicinal purposes
- Ceremonial purposes
- Fuelwood
- Building material

The trees are also foundations for an ecosystem of equally important species!



Blake McCord <https://www.grandcanyontrust.org/advocatemag/spring-summer-2024/cultural-history-pinon-juniper>

Ecological significant species

These trees are **foundation species**, or species that have a large role in determining abiotic and biotic ecological function and structure, and biological community composition.

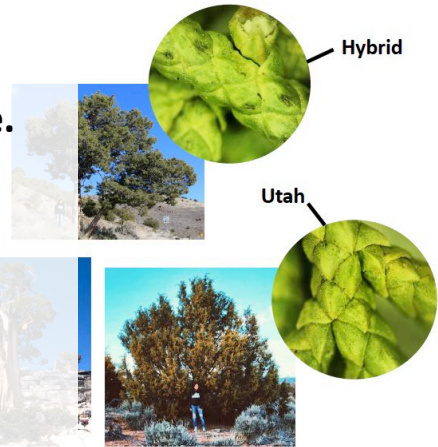


<https://abcbirds.org/bird/pinyon-jay/>

Why do we care about widespread species, and what can genetics tell us?



- Understand unique evolutionary histories within piñon and juniper groups.
 - **If we know what has happened to species in the past, we have more knowledge about what may happen to them in the future.**
- Understand how each species is locally adapted to different environmental and ecological conditions
- Understand hybridization: Hybridization occurs throughout their ranges. Hybrids can occupy unique environmental space

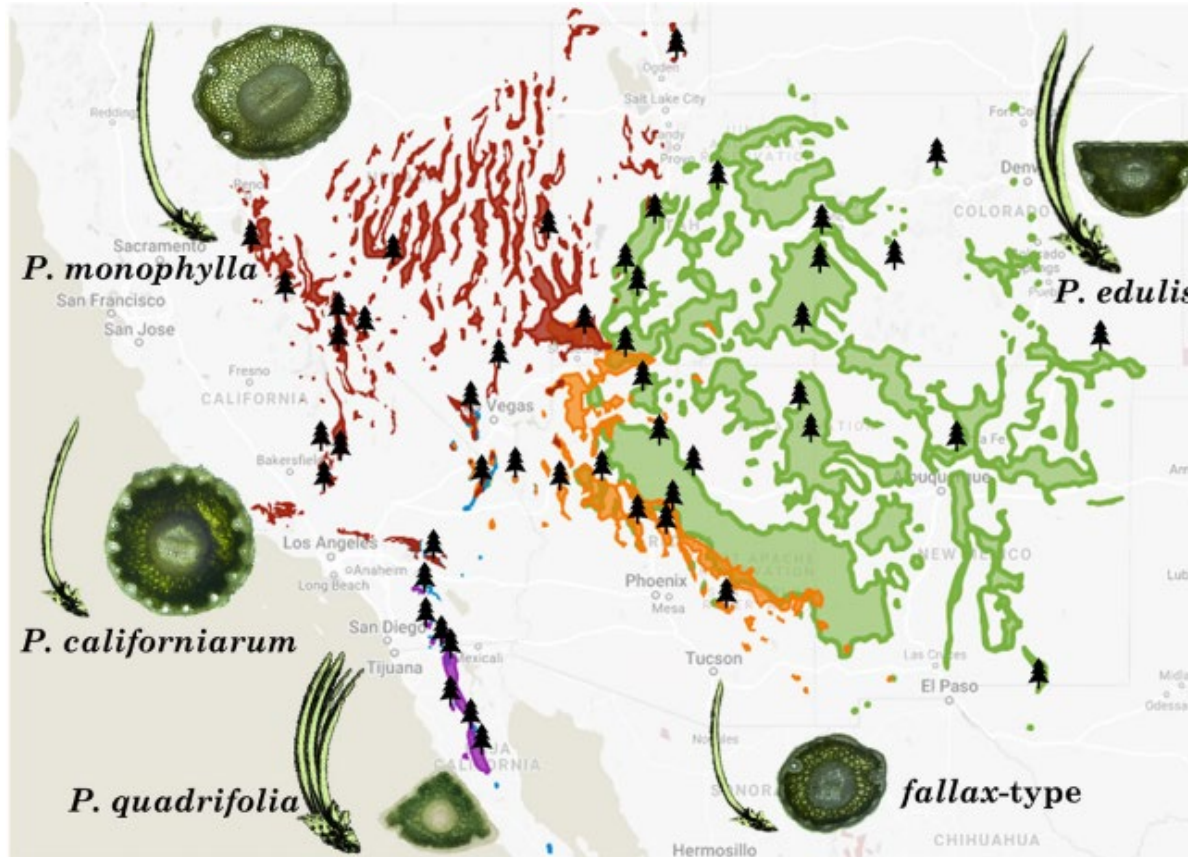


Buck, Ryan, et al. "Sequential hybridization may have facilitated ecological transitions in the Southwestern piñon pine syngameon." *New Phytologist* 237.6 (2023): 2435-2449

K.Uckele, Unpublished data

Why do we care about widespread species, and what can genetics tell us?

Piñon range

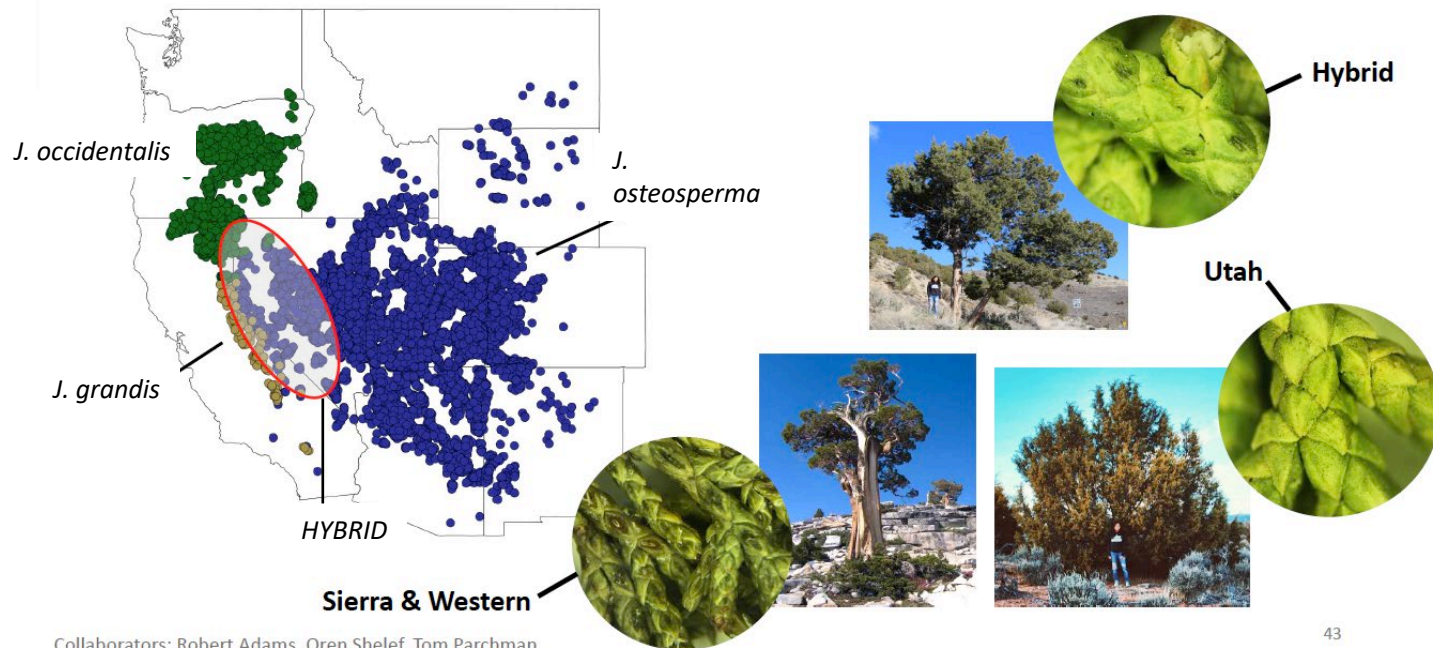


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Why do we care about widespread species, and what can genetics tell us?

Juniper

How is landscape genetic variation structured across a juniper hybrid zone?



Collaborators: Robert Adams, Oren Shelef, Tom Parchman

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K. Uckele, Unpublished data

Who are we interested in?

Pinus Subsection *cembroides*...

- *P. edulis*
- *P. X fallax*
- *P. monophyla*
- *P. cembroides*
- *P. californarium*
- Ranges extending into Mexico: any collaborators??



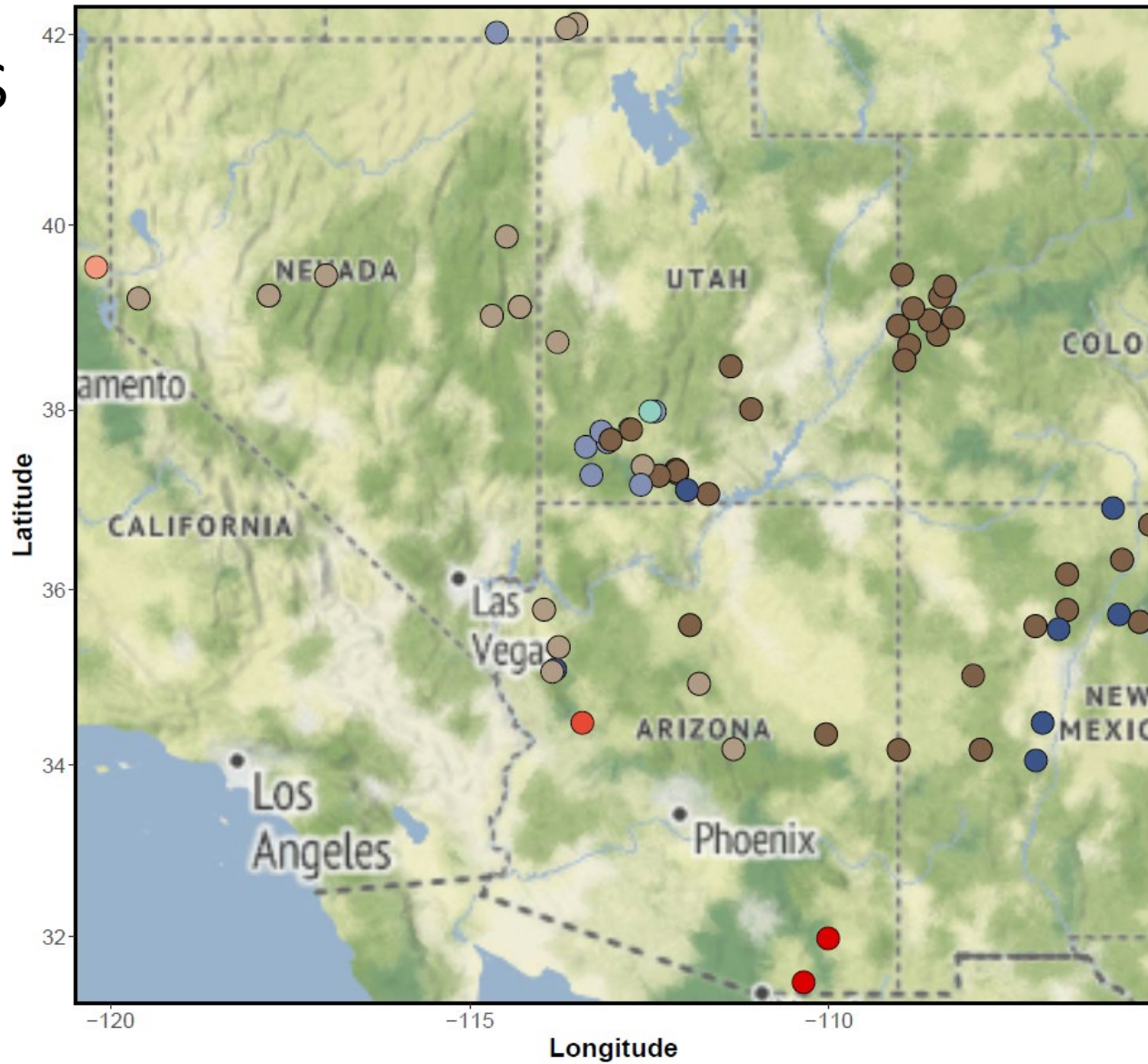
And co-occurring Juniperus, including but not limited to...

- *J. monosperma*
- *J. osteosperma*
- *J. scopulorum*
- *J. deppeana*
- *J. occidentalis*
- *J. grandis*



Collections as of December 2023

- 10 species
- 62 sampling locations
- > 1300 individuals



What can you Do? Send us tissue!

1. Need supplies? I'll send you some!



2. Make sample kits (i.e., put silica in baggies).

Do outside—Inhaling silica dust is bad.



3. Go outside, collect tissue!



4. Send Tissue to:

Carla Roybal
2255 N. Gemini Rd
Flagstaff, AZ 86001

Information to include with a sample:

Species Name: _____
Population ID: (If collecting more than 1 population of a species): _____
Latitude: _____
Longitude: _____
Size class (seedling/sapling/young adult/old growth) or DBH: _____

Species Name: **P. edulis X fallax**
Population ID: (If collecting more than 1 population of a species): **Granite Mountain**
Latitude: **34.639907**
Longitude: **-112.576885**
Size class (seedling/sapling/young adult/old growth) or DBH: **Sapling, old growth stand**





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