

Fossil based restoration plan for La Brea Tar Pits and Museum

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Paleobiology in Novel Ecosystems





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(Paleobiology in Novel Ecosystems)

- **To create a generalized framework for approaching urban (re-)greening projects using long-term data.**
- **To apply this framework using paleobiological information to inform choices about revegetation at specific locations.**
 - what vegetation types characterized these areas prior to significant human modification and in past millennia?
 - What was the past variability of these communities over centuries and millennia?
 - Which species and communities have been resilient to climate change in the past?





VEGETATION PREHISTORY
of the Los Angeles Basin



Exciting?



WHY DO WE CARE???

WHY DO WE CARE?

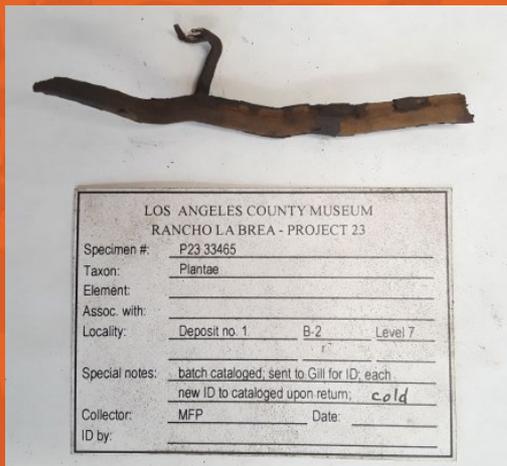
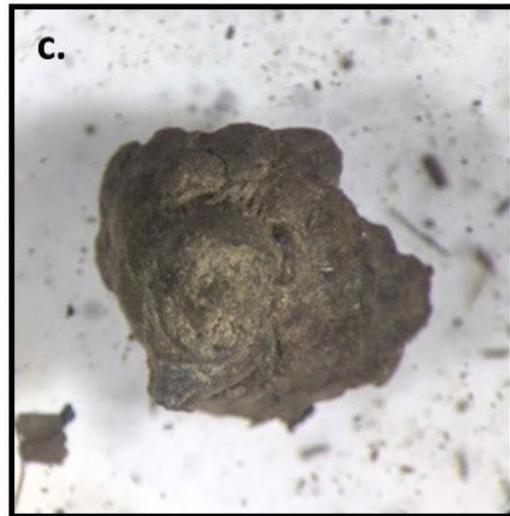
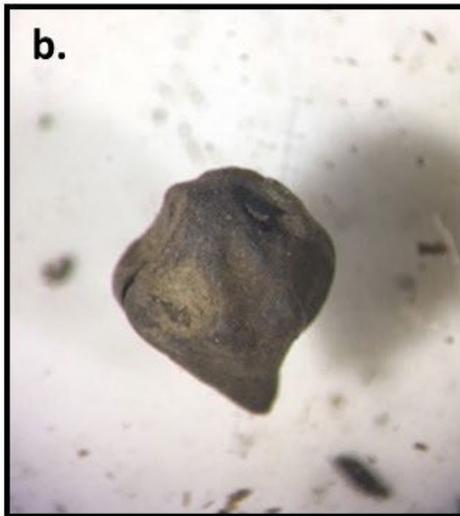
214 *The Catcher in the Rye*

know what I think about it. I'm sorry I told so many people about it. About all I know is, I sort of *miss* everybody I told about. Even old Stradlater and Ackley, for instance. I think I even miss that goddam Maurice. It's funny. Don't ever tell anybody anything. If you do, you start missing everybody.



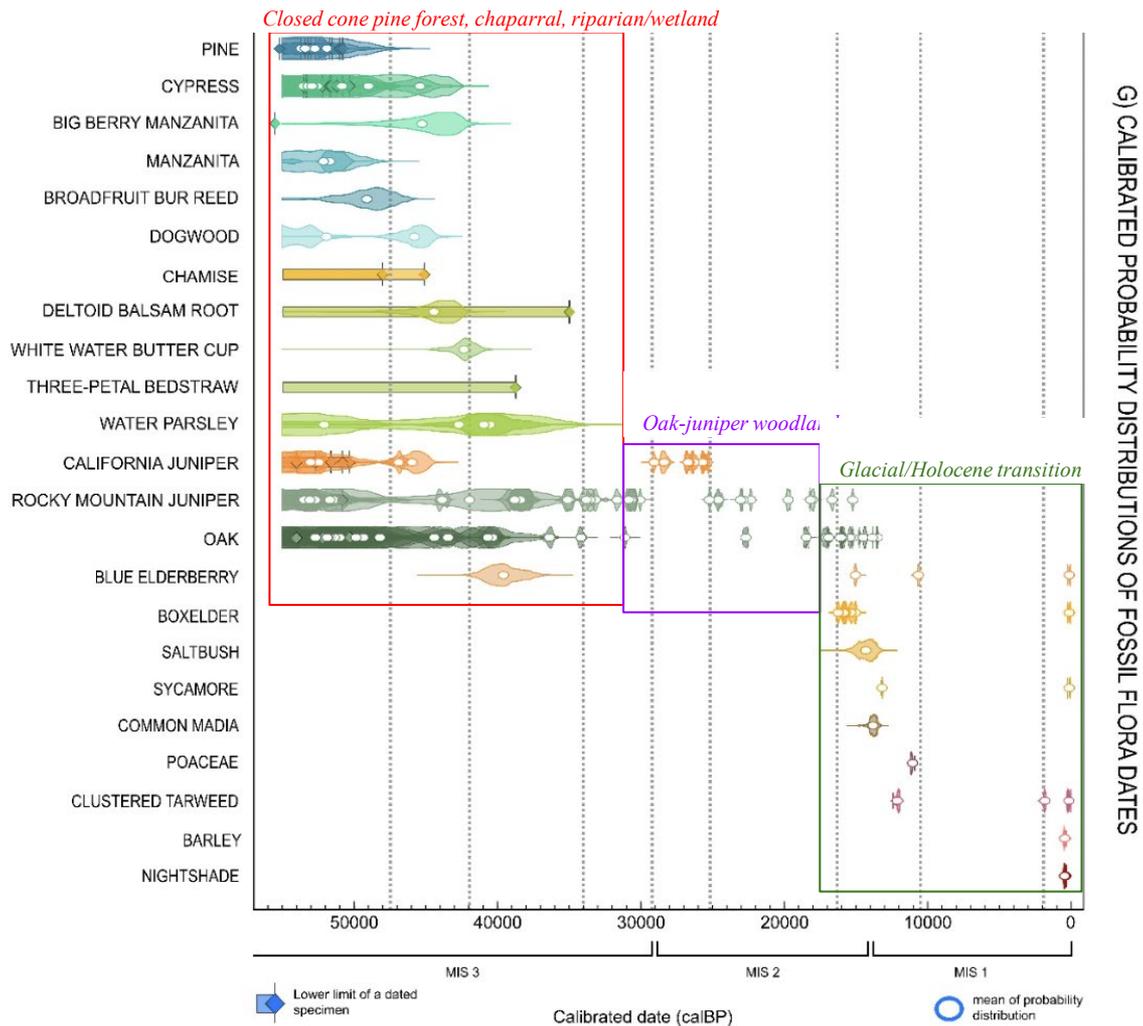


Charles Knight 1921

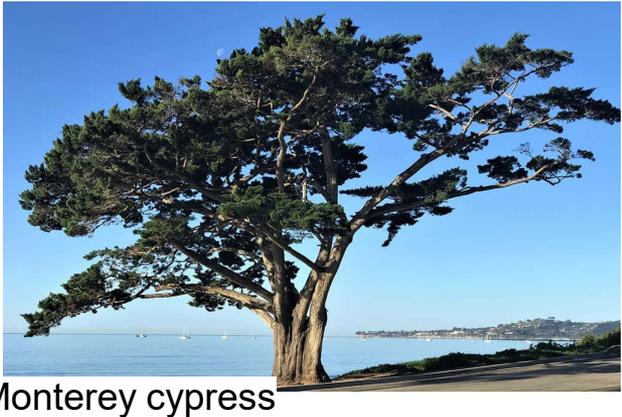
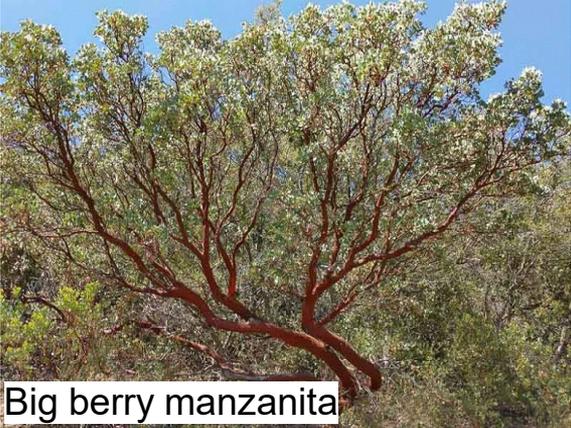


Project Goals:

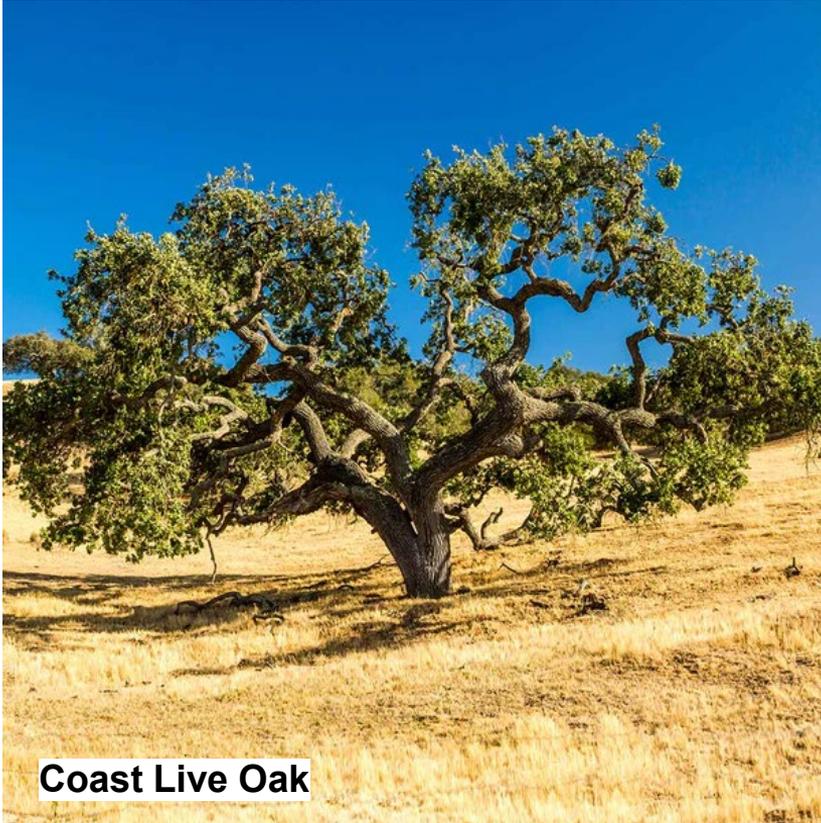
- **Use LBTP identified fossil species as a plant palette to create a conceptual “Pleistocene Park”**
- **This would serve as an immersive educational tool with interpretive signage that demonstrates how theoretical Pleistocene ecosystems may have looked.**
- **Also be used as a living lab to expand the emerging field of conservation paleobiology.**
- **Will help us broaden our perspectives as to what is “correct” in terms of modern conservation.**



Closed cone pine forest/chaparral 50 ka to 30 ka



Oak-juniper woodland 30 ka to 20 ka

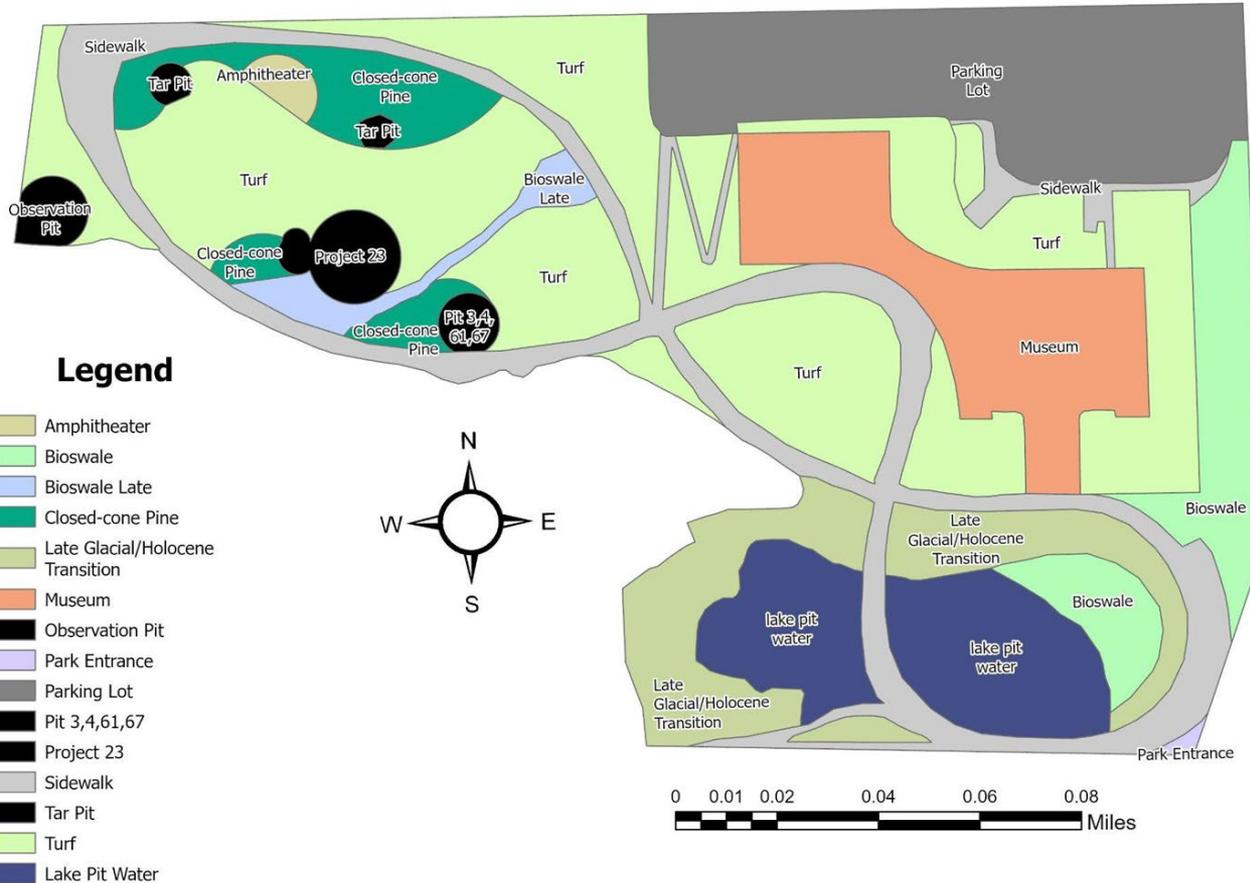


Glacial/Holocene Transition 20 ka to 10 ka





La Brea Tar Pits Fossil Based Restoration Plan Landscaping



You are in the Closed Cone Pine Forest

These are the plants that grew in Los Angeles from 50,000 years ago to 30,000 years ago

When you look around, is this the Los Angeles you are used to seeing? Probably not, but we find the fossils to all of these trees here at the La Brea Tar Pits. This gives us clues about the environment these trees shared with animals like sabertooth cats and Columbian mammoths 50,000 years ago here in L.A.

What types of animals do you notice in these trees today?
How many different types of bugs can you find crawling on the bark?
How are the plants here different than the plants closer to the museum?



You are in the Oak-Juniper Woodland!

These are the plants that grew in Los Angeles from 30,000 years ago to 20,000 years ago

Coast Live Oak trees like the one you see in front of you have an ancient history in Los Angeles. Coast Live Oak fossils are one of the most commonly found plant specimens excavated at the La Brea Tar Pits. Their iconic curved leaves with pointed ridges and acorn nuts are often found in almost perfect condition! They may have even provided a tasty acorn snack to ancient Ice Age animals like Harlan's ground sloths and short-faced bears! Next time you go out for a walk, keep an eye out for oak trees living in your neighborhood!

Would you be able to identify one of these leaves if you found it covered in "tar"?

How would you know the leaf belongs to an oak tree?

What types of critters can you find in the leaf litter on the floor?



You are in the Oak-Juniper Woodland!

These are the types of plants that grew in Los Angeles from 30,000 years ago to 20,000 years ago

Before you, there are two different species of juniper. The one on the right is called Rocky Mountain Juniper (*Juniperus scopulorum*), and the one on the left is called California Juniper (*Juniperus californica*). During the last Ice Age, both of these trees called Los Angeles home. They were probably food for some pretty large herbivores, like the American Mastodon!



Take a very close look at these two trees.

- What are some of the differences you notice between them?**
- When you rub the leaves between your fingers, what do they smell like?**
- What do the leaves look like up close?**
- Have you seen one of these trees before? Where?**

These are all key observations that scientists use to differentiate species like this from one another. You are conducting observations like a scientist!





- Due to gaps in the fossil record, it may be impossible to create a true “Pleistocene Garden”
 - No-analog assemblages continue to emerge today
 - Novel Ecosystems
 - Hybrid Paleo-ecosystems→ restore keystone species and some original ecosystem functions while maintaining novel ecosystems and human infrastructure.
 - “Pleistocene Park” is largely oriented towards the general public
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Workshop Goals



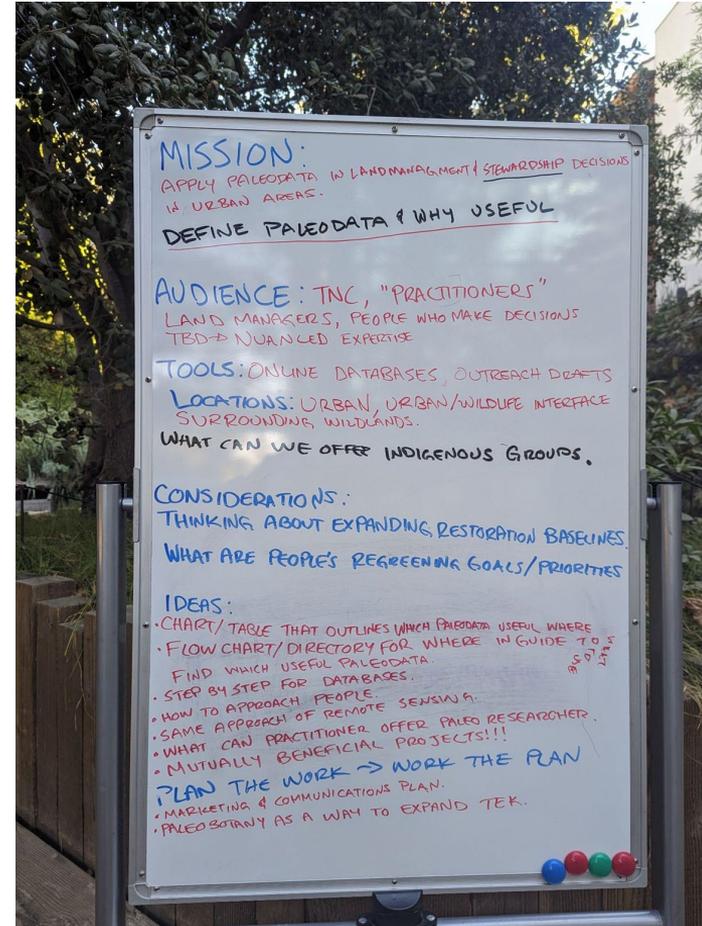
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Paleobiology in Novel Ecosystems

- ❖ Identify ways we can leverage paleobiology in restoring and re-greening urban settings.
- ❖ Explore how our various expertise can expand the emerging field of conservation paleobiology.
- ❖ Foster a creative space for collaboration, communication, learning, networking and sharing expertise.
- ❖ Create a Practitioner's Guide to aid in people conducting these projects.
- ❖ Create a framework that others can follow.

We are drafting!

1. What are paleodata?
2. Why/when/how to use paleodata for restoration?
3. Available resources and how to use them
4. Steps to using paleodata
5. Case Studies
6. Communication & Community Support
7. Best Practices and lessons learned





SCAN ME

We would love to hear from you!