



Using Paleoethnobotanical Data to Put the Prairie Back into “The Prairie State”



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Background

Current restoration and conservation efforts in Illinois fail to include paleoethnobotanical data in the formulation and construction of seed mixes. Instead, restoration practices are often modeled off of a pre-European “reference ecosystem”, or a model that “is used to define restoration goals.”¹ This reference state fails to acknowledge the role Native Americans had in shaping the landscape.² Native peoples practiced agriculture, domestication, mound building, and extensive landscape modification through the use of controlled burning and fire which created the prairie Europeans observed.³ This research focuses on discovering species present at different periods in the archaeological record but neglected in restoration efforts today. It is the goal of this project to obtain a broader view of the ecological history of Illinois through the use of paleoethnobotanical data. Acknowledgement of the role Native people had in shaping their environment is essential to understand the current landscape of Illinois.

Materials and Methods

- Ethnographic methods were used throughout the project to gain insight into conservation efforts in the region. Representatives from local farms, the Illinois Extension Office in Jacksonville, the McCully Heritage Project, Emiquon National Wildlife Refuge, and the Dickson Mounds Museum were all interviewed.
- Modern seed mixes from Kelly’s Seed in Peoria, Pheasants Forever website⁴, and Ion Exchange website⁵ were all acquired to determine the number of taxa present.
- Seed list records from a local farmer and the McCully Heritage Project were analyzed as both entities currently have contracts with the Conservation Reserve Program
- Plant lists of biodiversity were obtained from Emiquon National Wildlife Refuge
- Paleoethnobotanical species lists were examined from the archaeological sites of Smiling Dan, Hill Creek, Lamb, Napoleon Hollow, and C.W. Cooper.^{6,7,8,9}
- Data on taxa counts from different sites were compared using graphs



Examples of Native American practices that modified the landscape of Illinois including anthropogenic fire¹⁰, agriculture¹¹, occupation, and mound building¹².

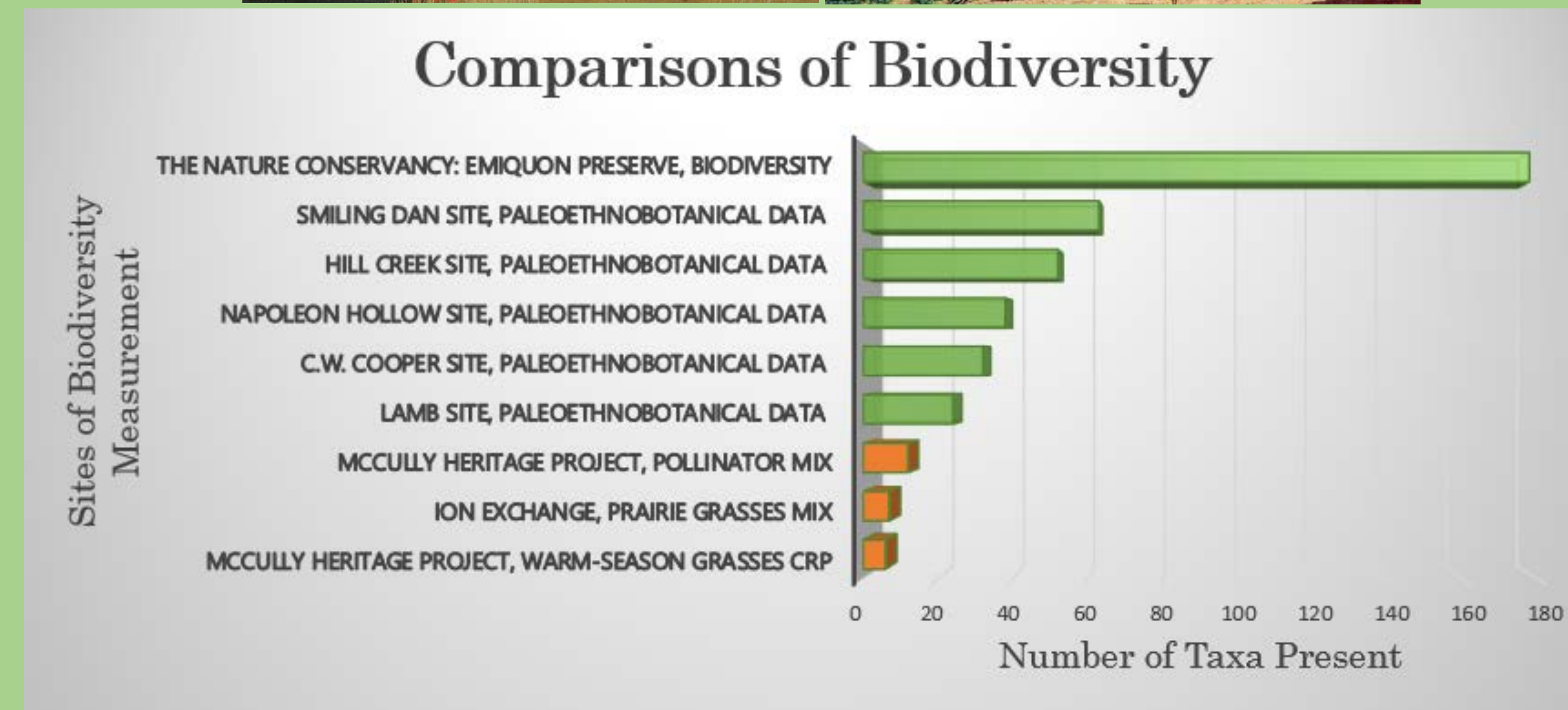


Figure 1. This graph is a visual comparison of species diversity represented in different locations in Illinois. Modern conservation patches are compared to both archaeological data^{6,7,8,9} and programs like the Emiquon National Wildlife Refuge Center. *Note: McCully Heritage Project and Ion Exchange data is highlighted because it does not include trees.

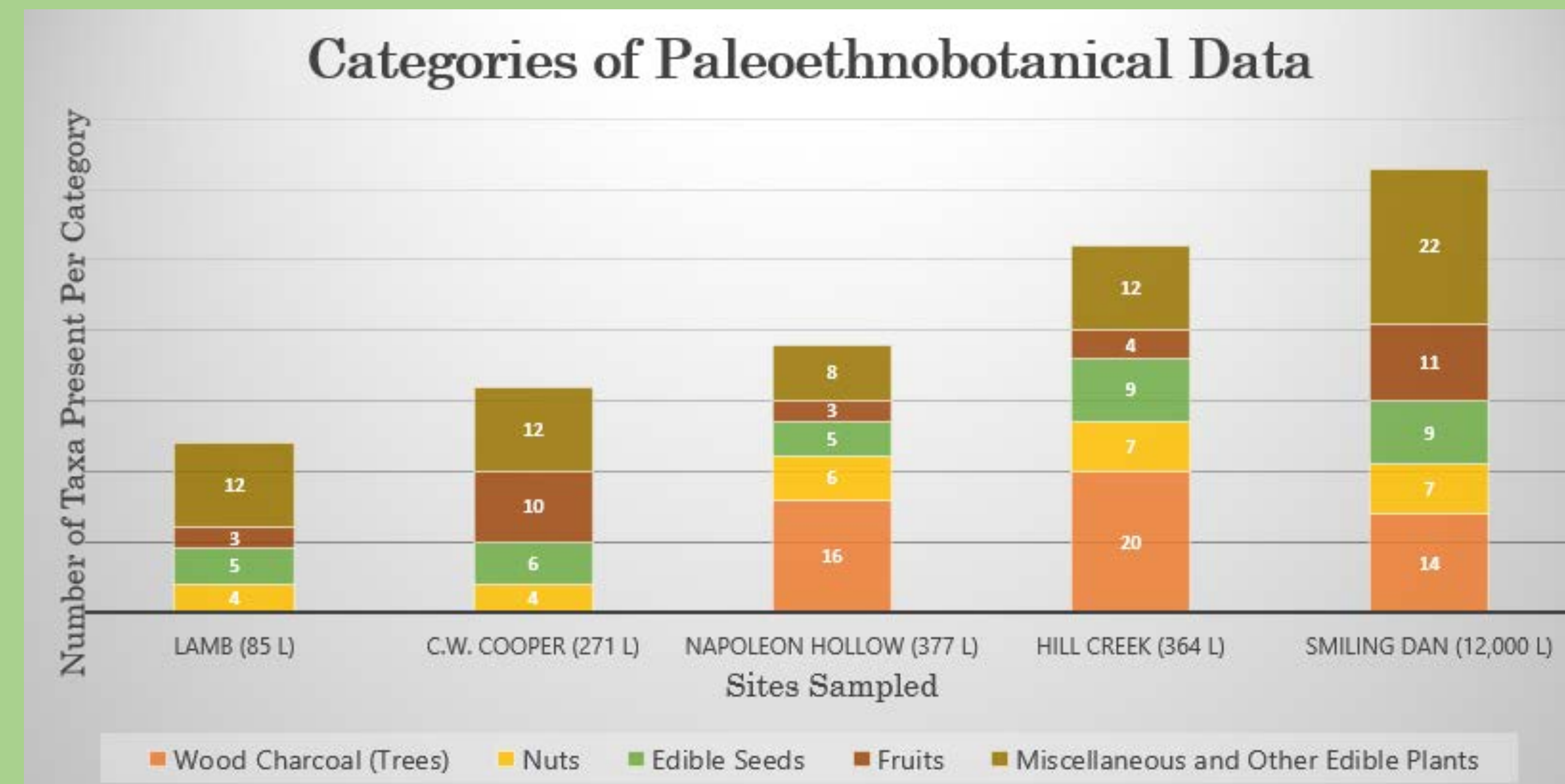


Figure 2. Categories often used when reporting archaeobotanical data. The colors represent different divisions, while the numbers present on each color signify the amount of different taxa present in each categorical division in each site.^{6,7,8,9} Total liters of soil floated at each site are in parentheses. The maize, beans, squash and maygrass are omitted from this data, as they are not natives of Illinois.

The photo on the left is an example of the appearance of a Pollinator Mix Patch funded by the Conservation Reserve Program in Central Illinois. This patch contains 19 different species of native plants.



The photo on the right is an eleven-acre tract of restored prairie at the Emiquon National Wildlife Refuge. This patch of prairie exhibits 103 different taxa of native grasses and forbs.¹³

Results

- Conservation Reserve Program plots often contain fewer than 10 different taxa
- Seed mixes that contain 30-40 taxa cost more than seven times seed mixes that meet the minimum requirements.^{4,5}
- Prairie conservation, opposed to forest restoration, is more popular with landowners due to the possibility of re-conversion of prairie patches back into farmland
- Prairie conservation and restoration efforts are often based on historical data like GLO surveys and early European accounts, leaving out any kind of long-term archaeological perspective
- Undesirable, rare, and expensive plants are often absent in modern seed mixes. Plants considered weeds like *Chenopodium berlandieri* and *Iva annua* are common in the archaeological record but excluded in modern mixes, creating a bias in restoration
- Figure 1 expresses the biodiversity present in each area sampled, however it is important to note that in the paleoethnobotanical data used, taxa were identified to the genus or family level rather than the species level
- According to the USDA, Illinois has over 14,000 species of native plants, and conservation efforts fall far short of matching that biodiversity¹⁴

Discussion

Despite the biases of archaeological data, it is essential to make use of a cache of scientific information that extends 10,000 years of human history in the region. Future restorative practices in Illinois must adopt a new vision of an ecological ideal based on a multitude of archaeological and historical data rather than a single moment in time often dubbed a “pre-settlement” environment. The use of archaeological data gives unique insight into the environmental and anthropogenic history of the prairie of Illinois, and can perhaps guide a more accurate restoration of the region to its natural condition prior to human modification. As stated previously, the prairie environment of Illinois itself was created by centuries of Native American burning of the landscape. Therefore, data from houses and middens of Native people who created this prairie is essential in the restoration of this environment. Figure 2 illustrates some categories commonly used to group paleoethnobotanical data. This figure highlights one of the major biases of archaeological plant remains: the fact that paleoethnobotanical data only represents what was used by people, not the whole landscape. Other limitations of this data include differential preservation and under representation of plants used for roots or leaf products compared to plants used for seeds. Nevertheless, the unique lens of paleoethnobotanical data may provide key insights into discovering how past societies adapted to climate change over the past 10,000 years. Future research should focus on the feasibility of the application of paleoethnobotanical data to ecological practices.

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