

# Changing Communities:

## An interdisciplinary look at land use changes along the Maury River

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### Overview

People have altered their landscape since the beginning of time. This study uses the Maury River located in Rockbridge County, Virginia as a case study for how ontology, or world view, impacts how we change the landscape. Combining geologic and archaeological data with bodies of ontology, an interpretation of land-use history can be created. A collection of sediment from Jordan's Point Dam, outside Lexington, was used for this research.

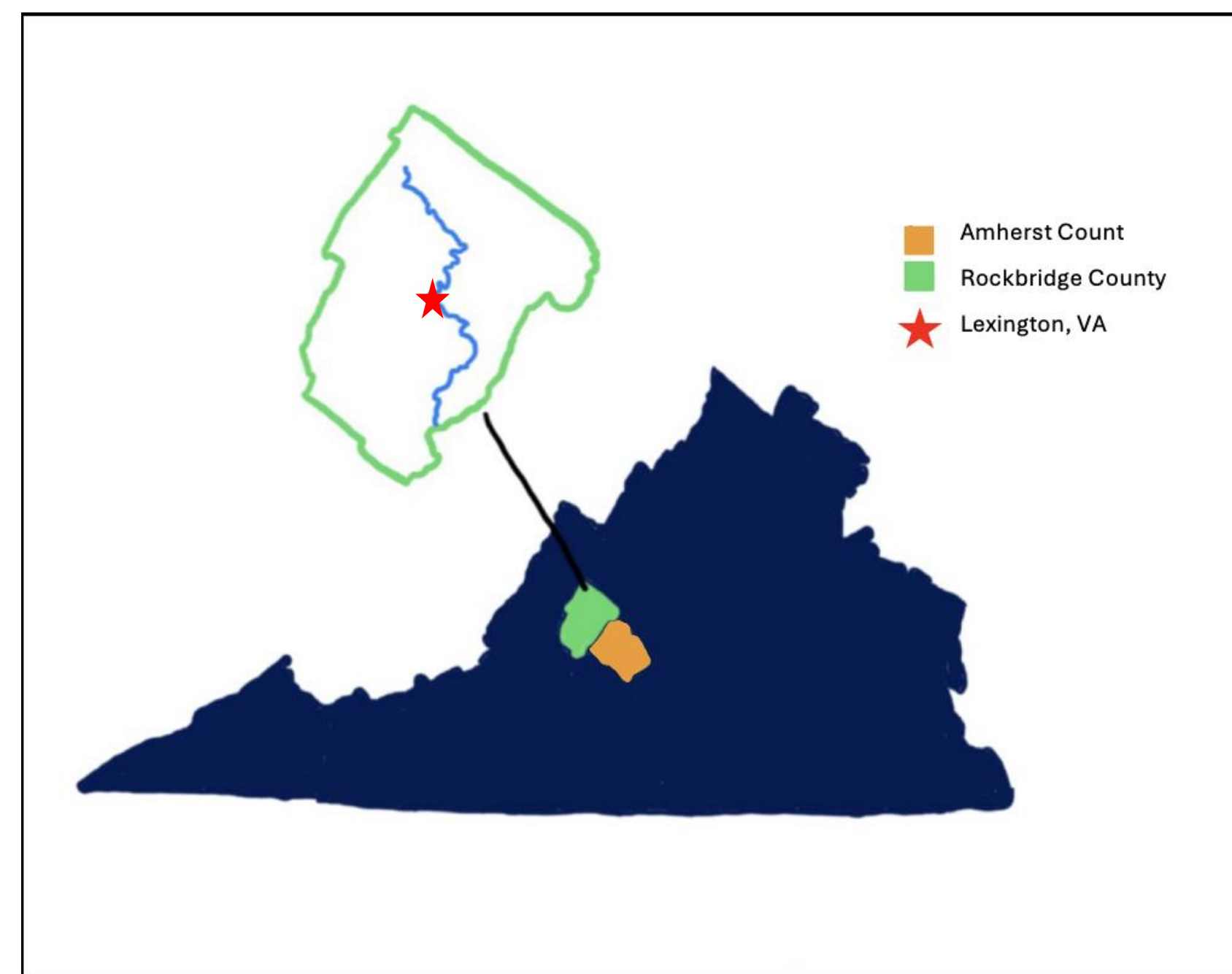


Figure 1: A map of Virginia with Rockbridge County (green) and Amherst County (orange). Lexington is indicated by a red star and the blue represents the Maury River

### Theory and Methods

Existing data for this site was collected by the Keck Geology Consortium in the summer of 2021. This data included grain size analysis and isotopic values which were used in this study. Five radiocarbon dates were collected during this thesis and three were used in creating an age model of the Jordan's Point Dam site. Indigenous knowledge and stories were also used to create an understanding of ontology for the Monacan Indian Nation.

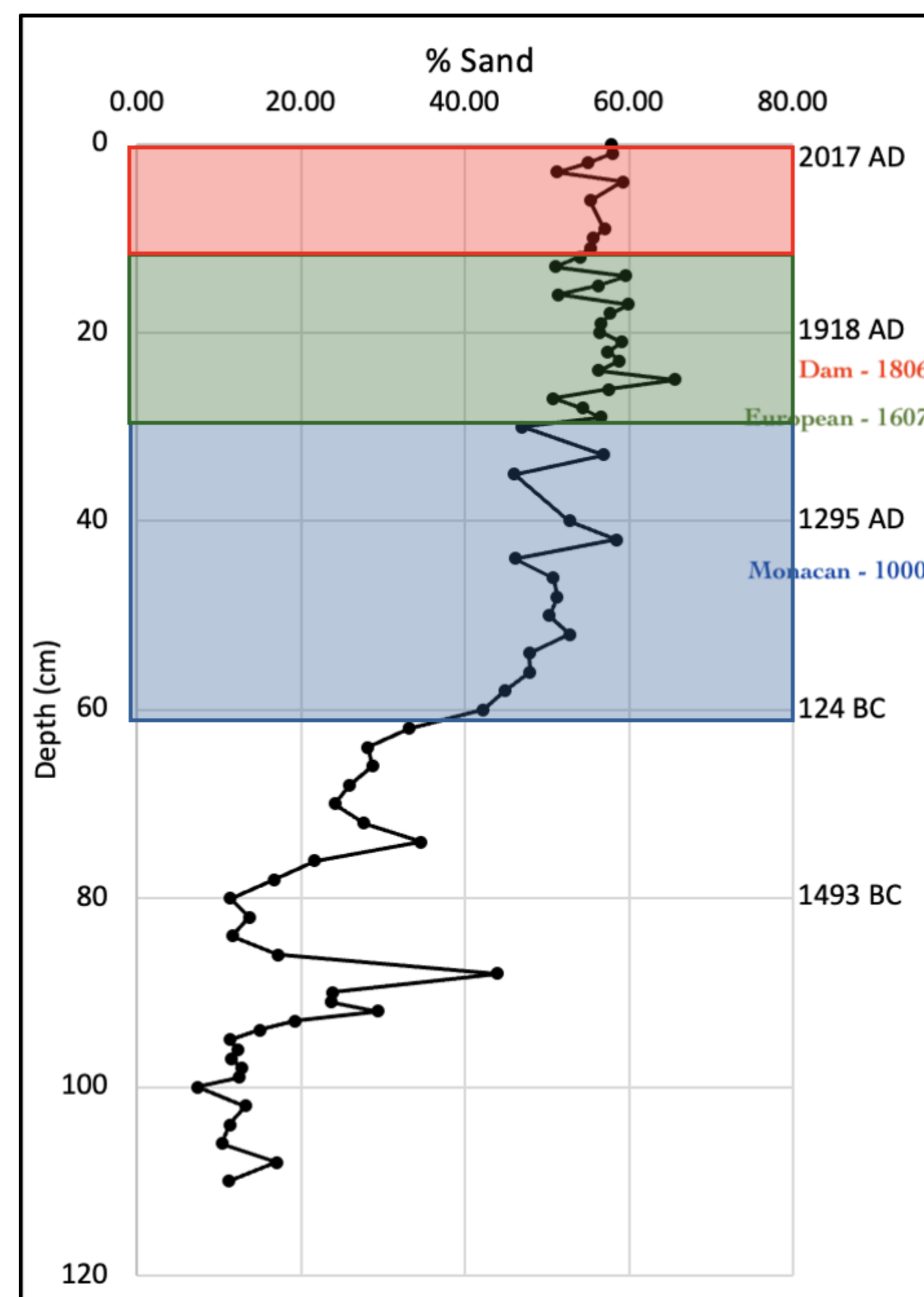


Figure 2: Percent sand with time periods colored in and indicated to the right.

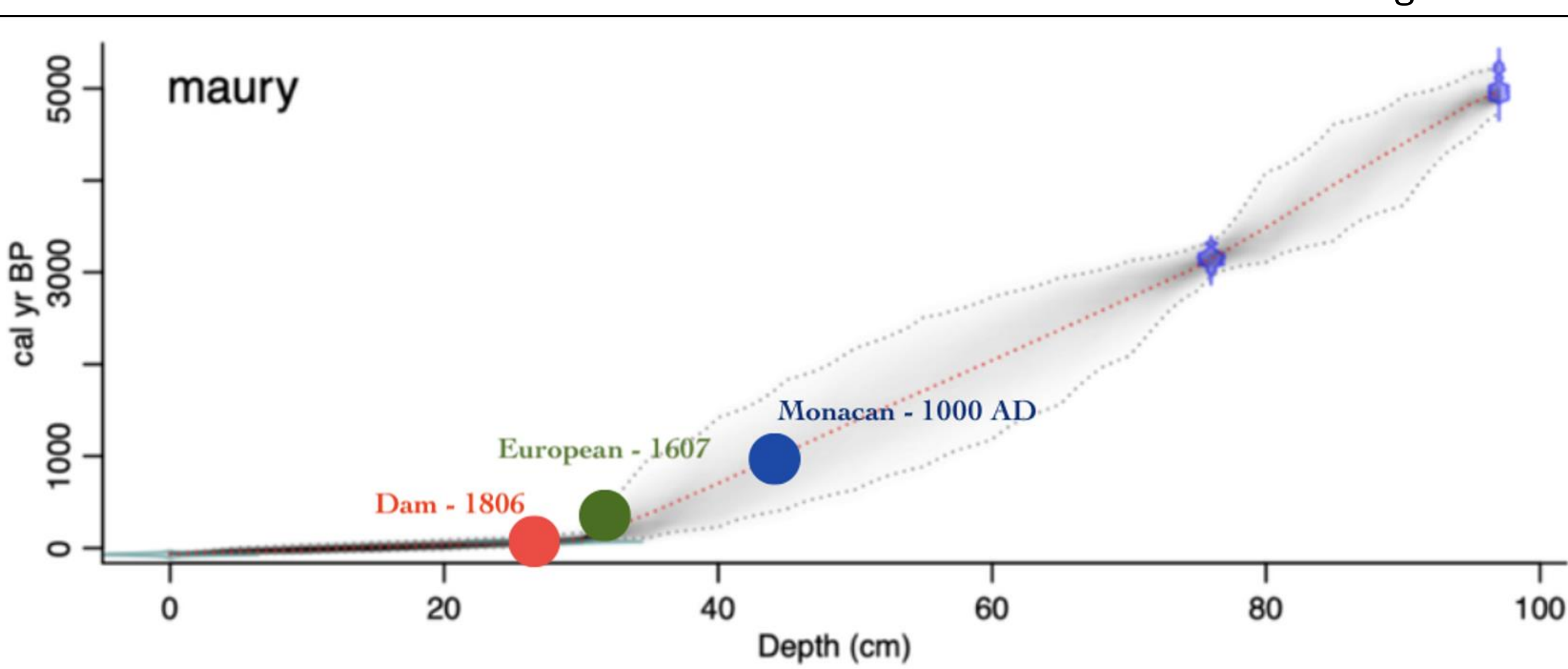


Figure 3: Age model created for Jordan's Point Dam with date indicators

### Indigenous Land Use

The Monacan Indian Nation is a federally recognized tribe now located in Amherst County, VA (shown in Figure 1). Monacan ontology involves an animate world, which involves all beings (human or otherwise) having agency and power. Figure 2 shows a drastic increase of sand in the sediment and figure 5 shows a shift from C3 to C4 plants. These changes are indicative of increased erosion and a significant change in the land plants present. The East coast would have been covered in Long Leaf Pine forests at the time of contact. They were maintained by indigenous fire regimes and would have caused the increased erosion and flora shift seen in the record. These forests allowed for humans to live within the landscape easier but also maintained habitats for animals.



Figure 4: An image of a typical longleaf pine forest. Photo credit to Mark Daniels

### Historical Land Use

It was in 1607 that European settlers documented interacting with the Monacan Indian Nation. Majority of the settlers, and their descendants, held a Protestant, Evangelical world view. A large foundation of this world view can be found in the book of Genesis; where God gives man dominion over all He has created. This world view along with prejudice against their indigenous neighbors helped support land practices which were detrimental to the landscape. Industrial activities, such as logging and milling, would have high erosion rates, which can be seen in the geologic record. These activities would have continued throughout this time as Lexington (seen in Figure 1) continued to grow.

### Modern Land Use

Post 1950s, many of the existing dam sites closed and/or were removed. Industrial activities slowed but continued, and urbanization increased as the city of Lexington grew. During this time there is a noticeable shift from C4 to C2 plants. This is because the warm season grasses (C4 plants found in longleaf pine forests) were replaced with grasses such as Kentucky Bluegrass (C3 plant) which is better for yards.

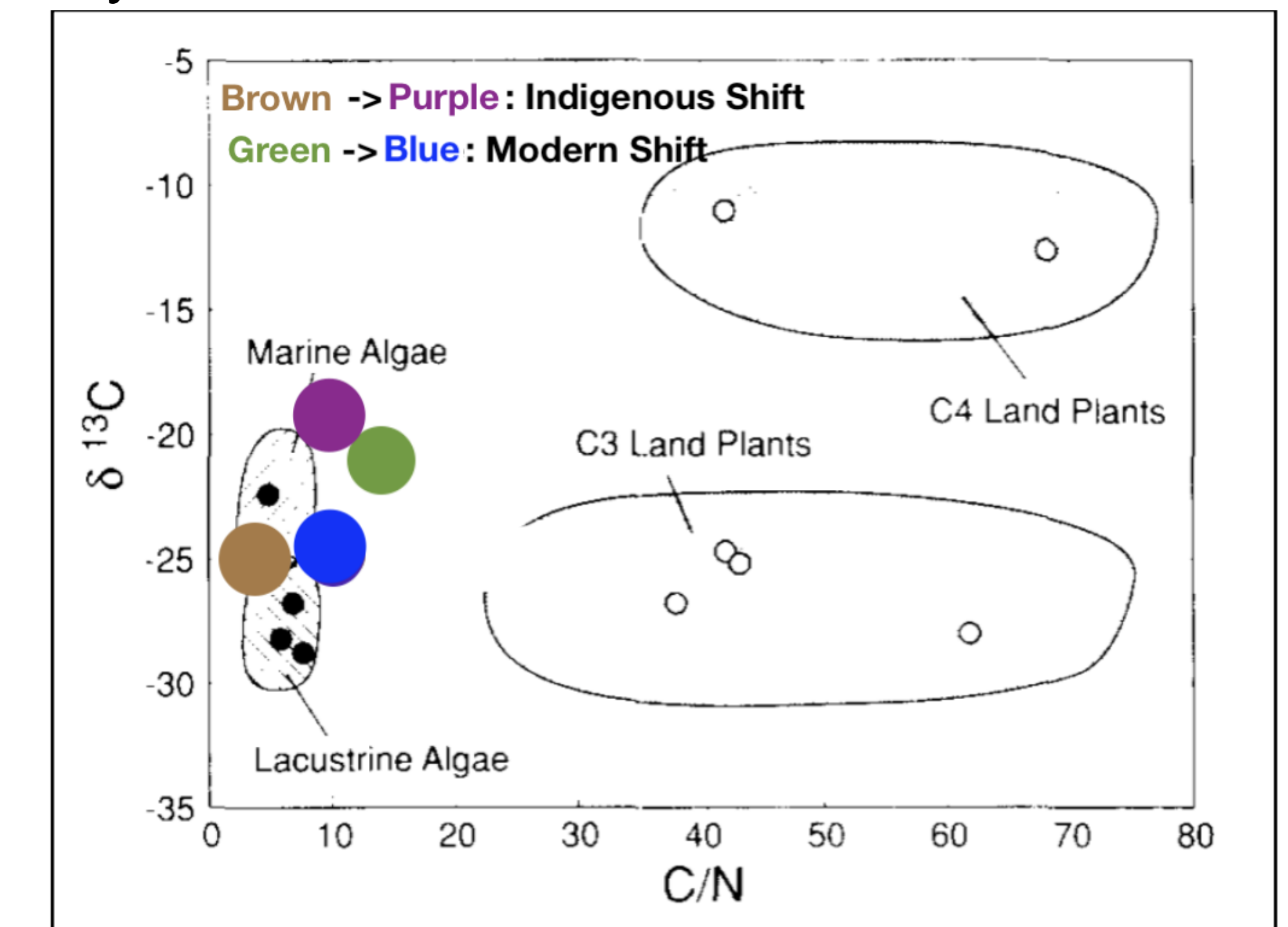


Figure 5: Diagram adapted from Meyers 1994 showing C3:C4 ratio

### Impact/ Future Applications

Hopefully this research can help continue and support the involvement of Indigenous peoples and their knowledge in the fight to help heal the damage done to our non-human neighbors. This framework of incorporating archaeological, geologic, historical, ecological, and Indigenous data is one that I hope is applied to as many future studies as possible. Recognizing the extent of our community and its knowledge in academia will surely help the communities of the world come together with better solutions as well. An example of this being done is the "Save Rassawek" project which successfully protected the historical Monacan Indian Nation capitol in 2022 from harmful development.



Figure 6: Image of Rassawek from Preservation Virginia

### References

Meyers, Philip A.. 1994. Preservation of elemental derivation of elemental and isotopic source identification of sedimentary organic matter. *Chemical Geology*. 114: 289-302.

### Acknowledgments

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