

Mosaics in Science 2015



Geologic Setting

- Late Eocene: 34.07 MYA
- Guffey Volcano Complex
 - Formation of Lake Florissant
- Periodic depositional cycle
- Fossilization of petrified trees and paper shale



Big Stump, a petrified *Sequoia* (redwood); Photo Credit: Florissant Fossil Beds National Monument website; www.nps.gov/flfo



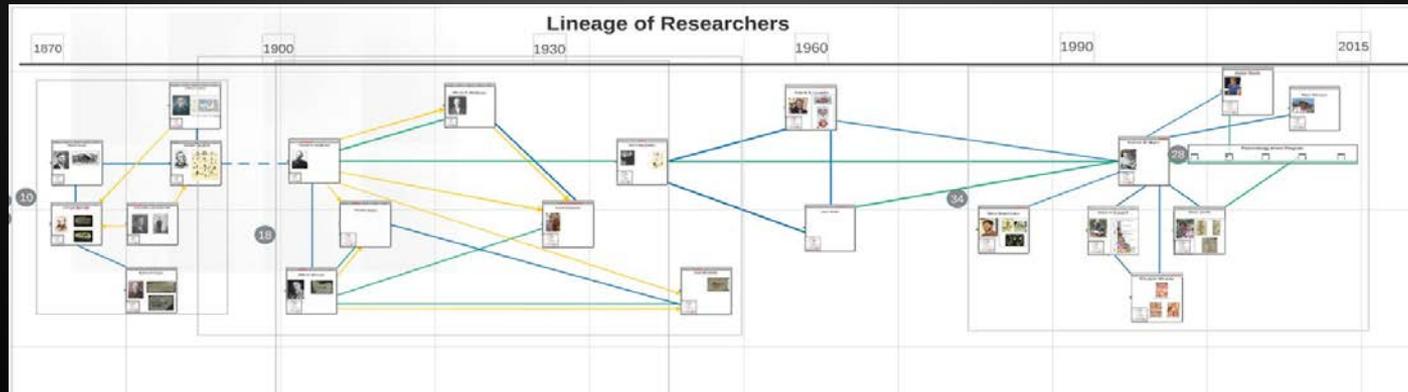
Paper shale thickness 0.85 mm; Photo Credit: Dipa Desai

Education and Outreach

- Lineage of Researchers
 - From 1870s to present Paleo Intern Program



Virtual Exhibit under construction;
Photo Credit: Dipa Desai



Education and Outreach

-Interpretive site bulletin

-Microfossils:

diatoms, pollen grains,
ostracods

-Interpretive handout for

Fossil Learning Lab

-Commonly found

fossils

Florissant Fossil Beds National Monument
the Microscopic World of Lake Florissant

Microfossils provide the most abundant Lake Florissant fossils to collect, compare, and study. The world's most famous fossil, the 38-million-year-old fossilized fly, is also found here. Other fossils include pollen grains, diatoms, ostracods, and plant remains. The site is a rich, well-preserved record of life and climate from the late Eocene epoch. The site is a rich, well-preserved record of life and climate from the late Eocene epoch.

Plant Fossils
Species Name: *Sequoia edifica*
Habitat: Wet valley bottom
Modern Relatives: Closely related to modern redwoods, in Family **Taxaceae**

Plant Fossils
Species Name: *Chamaecyparis linguata*
Habitat: Wet valley bottom
Modern Relatives: Closely related to modern redwoods, in Family **Cupressaceae** (Pine, Cypress / White Cedar)

Plant Fossils
Species Name: *Castanopsis*
Habitat: Wet valley bottom
Modern Relatives: Similar to modern oaks in Family **Fagaceae**

Plant Fossils
Species Name: *Castanopsis*
Habitat: Wet valley bottom
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Original Research Project

-Identify genera of fossil ostracods
1910: 1st and only description by TDA Cockerell

2015: Excavated ostracods from upper shale unit



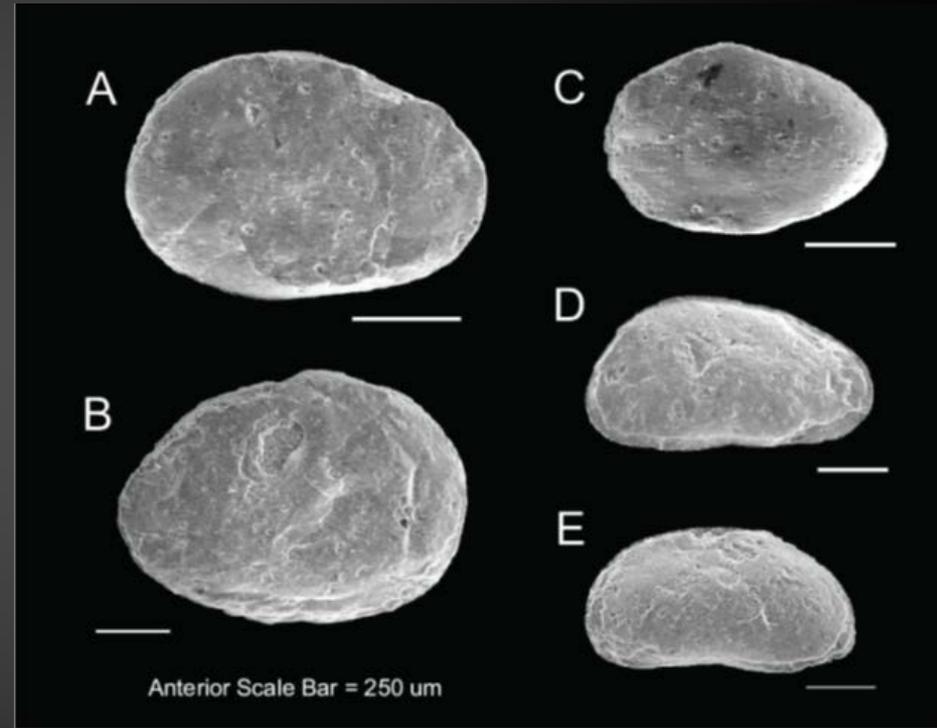
“Double holotype” for caddisfly larval case and ostracods (left); Photo credit: Florissant Fossil Beds Database
www.planning.nps.gov/flfo

Ostracod assemblage in situ (right); Photo credit: Dipa Desai



Original Research Project- Methods

- Collaboration with Dr. Neil Tibert (UMW)
- Methods outlined in Medley et al. 2007
- Variable-pressure SEM



SEM images of extracted ostracods.

Photo credit: Dr. Tibert, UMW

Images taken on Hitachi 3400S Variable Pressure SEM

PLATE I - Tibert & Desai

Original Research Project-Results*

- Re-assigning *Cypris florissantensis* to genus *Heterocypris*
- Reporting previously undocumented genus *Candona*
- Paleoecological implications



*These results are apart of an unpublished work in progress.

Range of instars suggests biocoenosis
Photo credit: Dipa Desai

Limitations

Education & Outreach

- Internet connection
- Collaboration across departments
- Scientific content vs interpretation

Original Research

- Internet connection
- Collaboration across the country
- Few ostracod experts
- Type material considerations

Benefits of the Mosaics Program

For the participant:

- Career-building experiences
- Research opportunities
- Scientific collaboration
- Networking
- Hands-on learning

For the park:

- Educational materials
- Novel research
- Recruitment
- Diversity in the workforce
- Outreach and publicity

Acknowledgements

- Dr. Herb Meyer (NPS)
- Dr. Neil Tibert (UMW)
- Conni O'Connor (NPS)
- Ken Cochran (UNC)
- Dr. Emmett Evanoff (UNC)
- Kelly Hattori, Emily Thorpe, Christine Johnson, Ryan Haupt, Paige Latendresse, Mariah Slovacek
- Michelle Wheatley, Jeff Wolin, and the staff at Florissant Fossil Beds National Monument

