

A close-up photograph of cave formations, likely stalactites, with a semi-transparent dark grey rectangular overlay in the center. The formations are light-colored, ranging from off-white to light tan, and have a textured, somewhat crystalline appearance. The background is a darker, more rugged rock surface. The text is centered within the overlay.

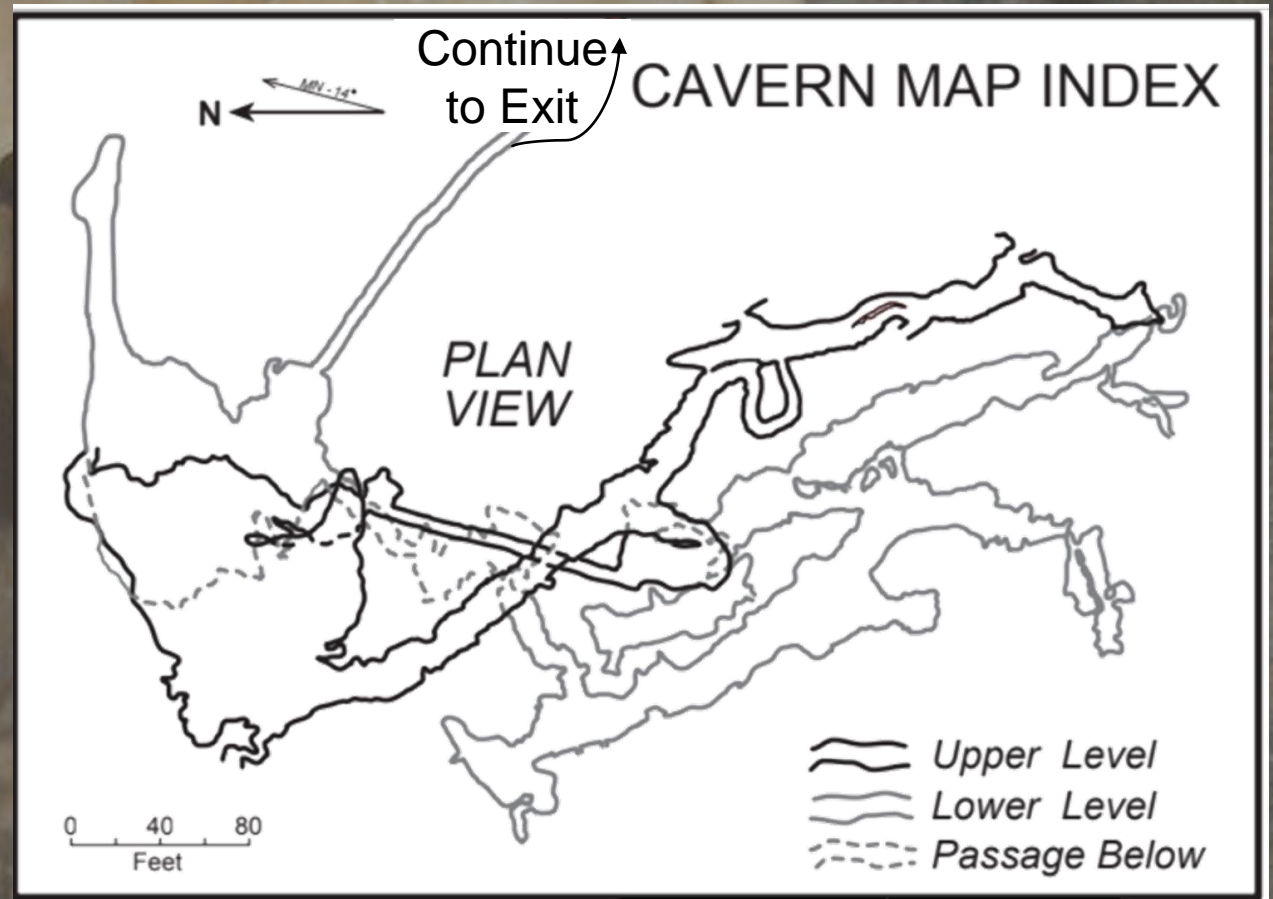
# Cave Dwelling Dust Bunnies: Lint Accumulation in Lewis and Clark Caverns State Park

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# Lewis and Clark Caverns

## Montana's only show cave

- 3 miles of mapped passage
- Highly decorated cave system
  - Rare helectite formations
- Heavy use since the early 1900's
- Townsend Big Eared Bats Maternity Colony
- Lint Accumulation and heavy human footprint



# Effects of Lint on Cave Systems

Lint has detrimental effects throughout an entire cave system

- Nutrient load and pH changes
- Cave formation damage
- Microplastic abundance
- Lint impacts on macro organisms



# Project Development

## Measuring and Quantifying lint accumulation

### Questions

- What is the lint?
- What is the rate of deposition annually?
- How is lint accumulation related to human activity?

### Hypotheses

- Identification of lint fibers is possible
- More Use = More Lint
- Microplastics/synthetic fibers are present
- More Time = More Lint

# Objectives

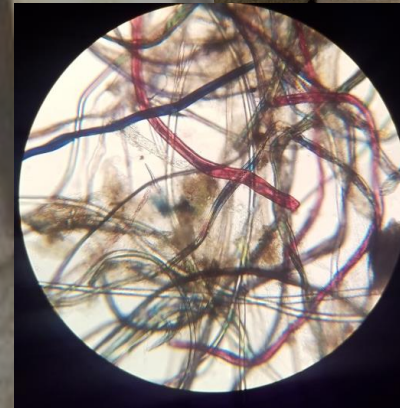
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- Develop lint accumulation collection techniques
- Quantify amount, content and accumulation rates of lint
  - heavy vs light use
- Provide preliminary assessment of lint distribution
- ID areas for future research potential

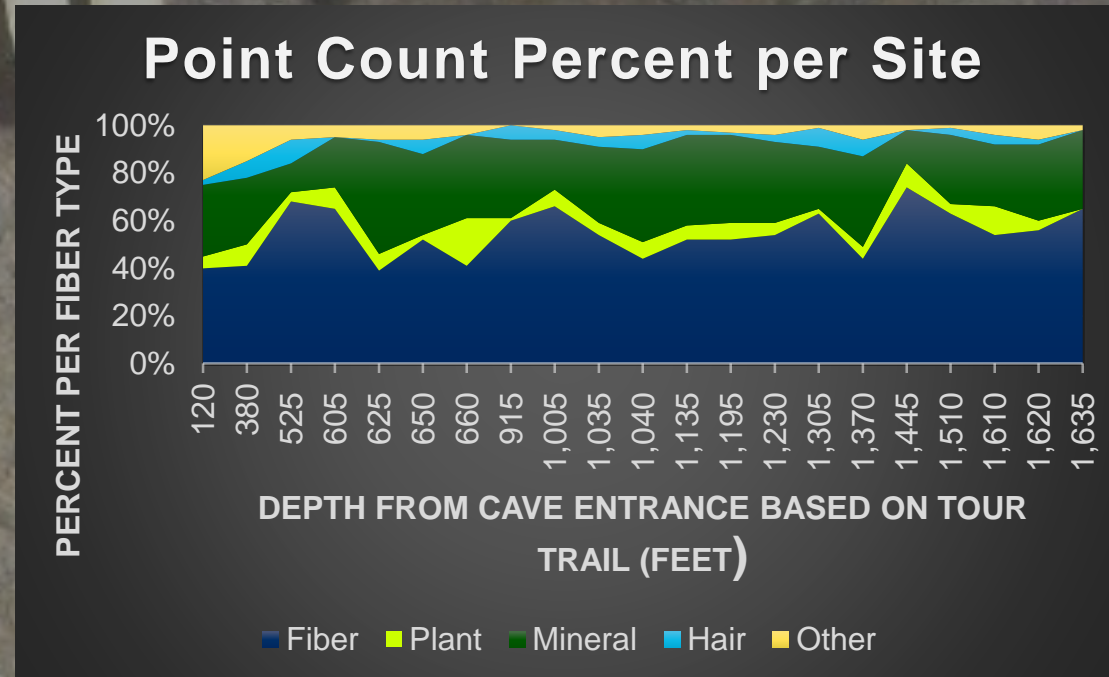
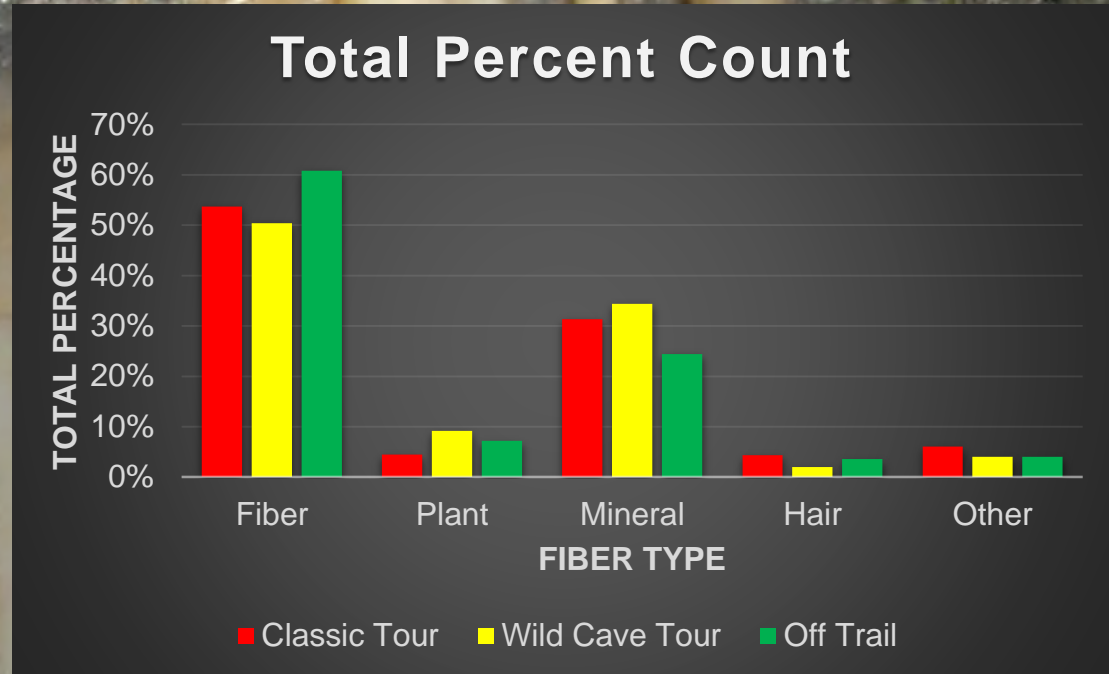


# Methods

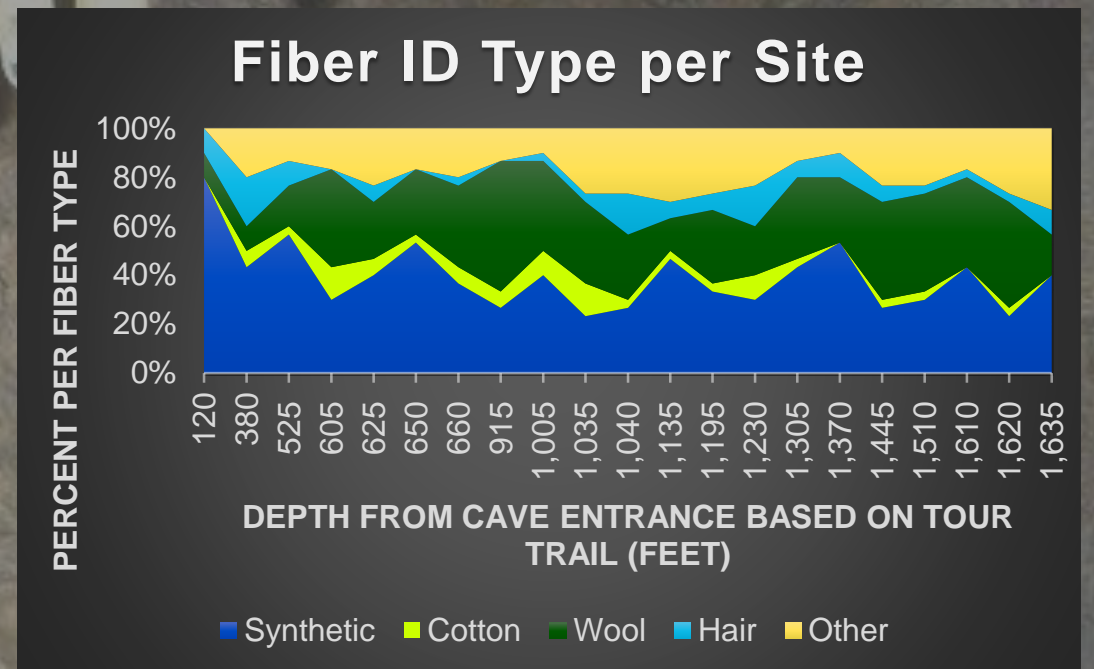
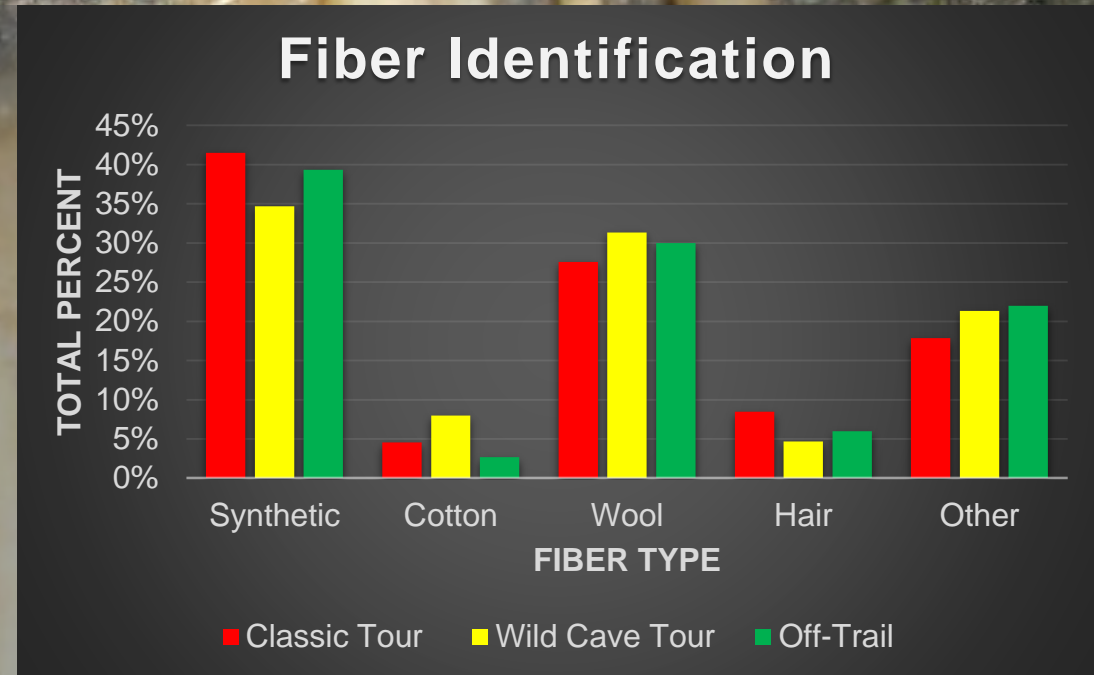
- Lint collection techniques
  - Lint Traps
  - Lint Ball collection
  - Pool Sampling
- Type, amount, accumulation rate
  - Microscopic analysis
  - Point Count for percents
  - Net Weight (Numbers Pending)
- Assessment of lint distribution and future research areas
  - Net Weight
  - Fiber identification with microscopic analysis



# Point Count Results



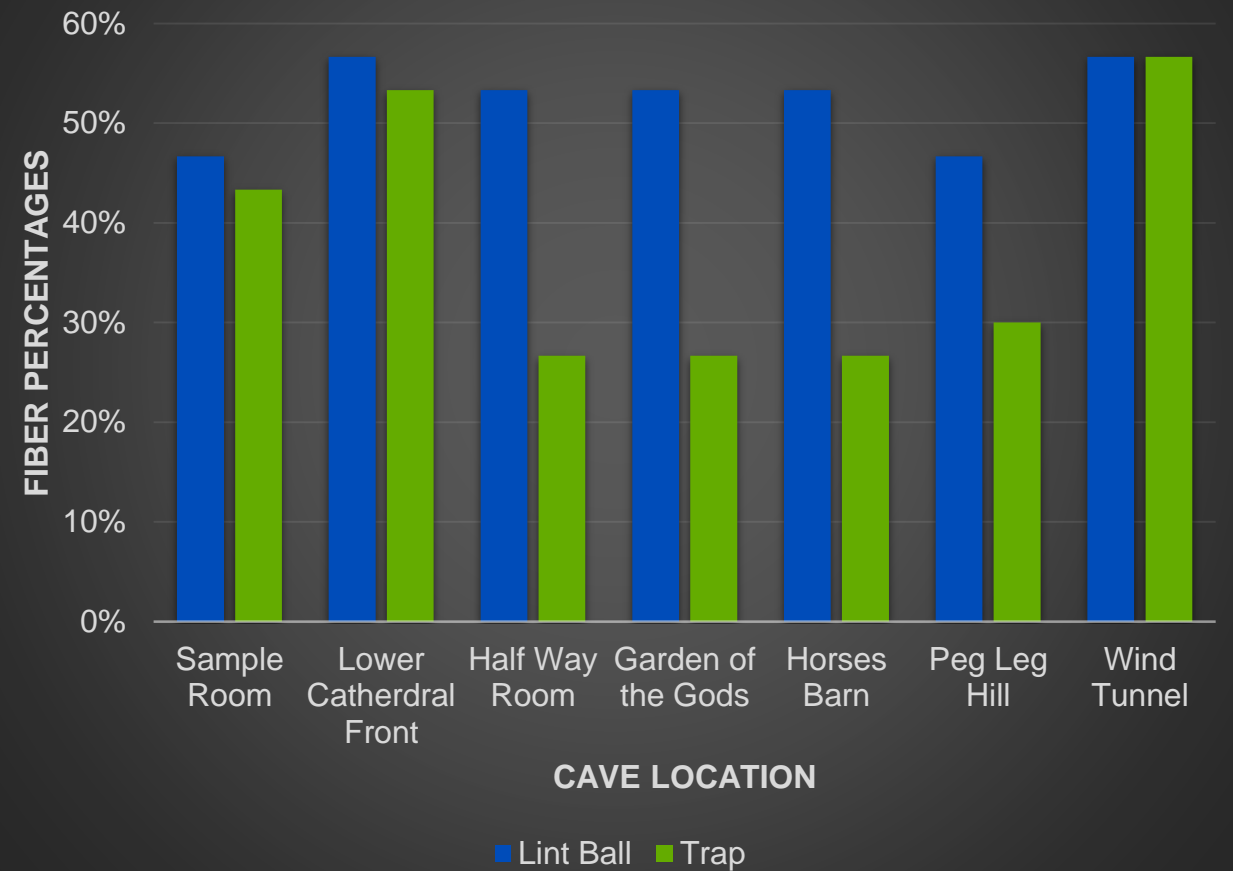
# Fiber Identification Results



# Old vs. New Lint

Old lint has more synthetic fibers (generally)

## Synthetic Fibers: Old (Lint Ball) vs. New (Lint Trap)



# Dealing With Lint

Lewis and Clark Caverns future resource management



Questions?