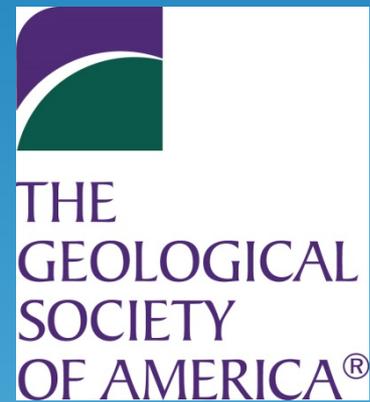


# The Marine Paleozoic Fossil Record of Great Basin National Park, Nevada



Kaytan Kelkar  
Mosaics in Science Program 2014

# Project Goals

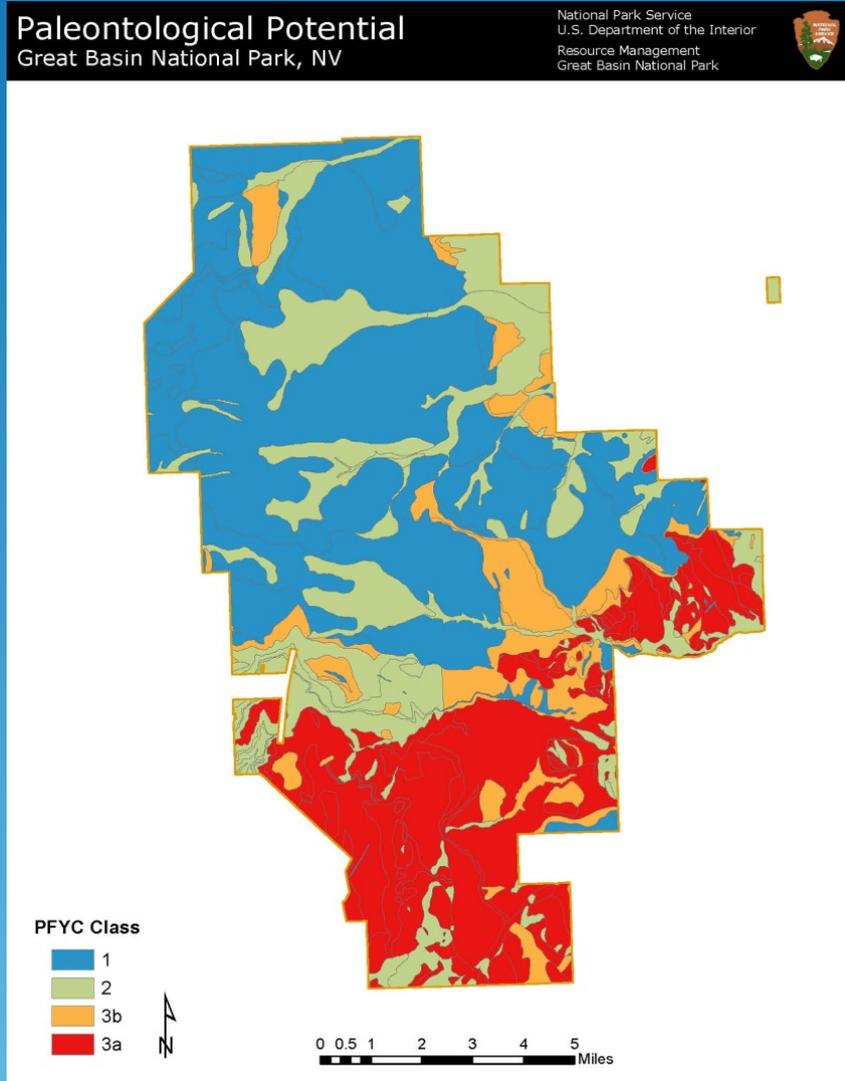
- To conduct an inventory of the paleontological resources.
- To prospect known fossil localities for new specimens.
- Documentation of new fossiliferous sites.
- Collection of rare well preserved specimens for future scientific study.
- Completion of fossil locality condition assessments.

# Great Basin National Park



- The park is situated in the Basin and Range Province.
- The Great Basin is a unique hydrological system.
- Large elevation change has lead to varied ecosystems.
- Park attractions include Wheeler Peak, Lehman Caves and the Bristlecone Pines.

# Prospecting Probability

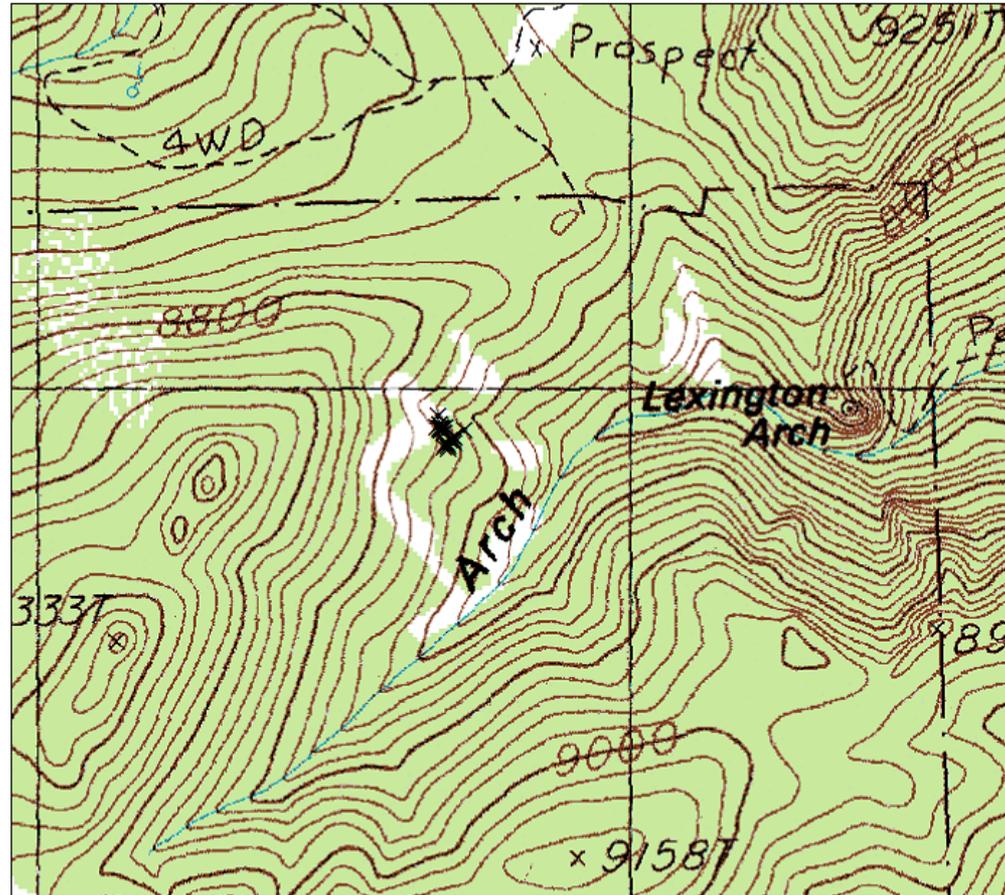


- Primary lithology found in park is Sedimentary and Metamorphic.
- BLM Potential Fossil Yield Classification developed before inventory.
- Map of paleontological potential based on park geology.

(Resource Management, GRBA)



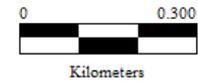
# Data Collection



GRBA  
PAL  
Locality  
00077  
GPS  
points



Scale 1:10,000



UTM  
11 North  
NAD 1983 (Corus)  
Multiple Files  
7/16/2014

GPS Pathfinder® Office  
 Trimble™

GPS points plotted in Trimble Pathfinder to identify fossiliferous areas.

# Macrophotography Metadata

P6021345 Properties

General Security Details Previous Versions

Property	Value
<b>Description</b>	
Title	GRBA PAL 00047 - Chain ...
Subject	Paleo specimen - not collec...
Rating	☆☆☆☆☆
Tags	00047; 140602-2-1; Siluria...
Comments	GRBA PAL 00047, FSPID# 140602-2-1, Silurian, Laketown
Origin	Dolomite, Chain Coral (Halysitidae); 3 Chain Coral colonies on slightly
Authors	Version 1.1
Date taken	
Program name	
Date acquired	6/5/2014 4:59 PM
Copyright	NPS
<b>Image</b>	
Image ID	
Dimensions	3648 x 2736
Width	3648 pixels
Height	2736 pixels
Horizontal resolution	72 dpi

[Remove Properties and Personal Information](#)

OK Cancel Apply



# Locality Registration

## PALEONTOLOGICAL LOCALITY FORM

### GREAT BASIN NATIONAL PARK

Locality Number: GRBA PAL 000?? Locality Name: \_\_\_\_\_

Field Number: \_\_\_\_\_ Other Number: \_\_\_\_\_

Sensitivity rating: Sensitive \_\_\_\_\_ Very Sensitive \_\_\_\_\_ Extremely sensitive \_\_\_\_\_

1. Type of Locality: Invertebrate \_\_\_\_\_ Plant \_\_\_\_\_ Vertebrate \_\_\_\_\_ Trace \_\_\_\_\_ Other \_\_\_\_\_

2. Group: \_\_\_\_\_ Formation: \_\_\_\_\_ Member: \_\_\_\_\_

3. Age: Period: \_\_\_\_\_ Series: \_\_\_\_\_ Stage: \_\_\_\_\_

4. Location of Outcrop: UTM Z11 NE ± m (NAD 1983)  
UTM Z11 \_\_\_\_\_ N \_\_\_\_\_ E ± m (NAD 1927)  
Lat/Long \_\_\_\_\_ N \_\_\_\_\_ W (WGS 1984)

5. Position source: GPS File: \_\_\_\_\_ Derived from topography \_\_\_\_\_ Estimated from memory \_\_\_\_\_

6. USGS Quad Name: \_\_\_\_\_ Scale: 7.5 min. Edition: \_\_\_\_\_

7. County: White Pine State: NV

8. Lithology: \_\_\_\_\_

9. Ownership: NPS X BLM \_\_\_\_\_ USFS \_\_\_\_\_ Private \_\_\_\_\_ Other \_\_\_\_\_

10. Field notes reference:

Name	Date
_____	_____
_____	_____
_____	_____

11. Photographs: Digital: \_\_\_\_\_ Folder name \_\_\_\_\_  
Optical \_\_\_\_\_ Location \_\_\_\_\_  
(over)

12. Repository(s) for collected specimens

Name	Place	Contact name/number
Great Basin NP	Baker, NV	Cultural Resources staff

13. Locality recorded by: Gorden Bell Date: \_\_\_\_\_

14. Specimens observed (attach list if necessary):

Field #	Taxon	Element	In situ/float
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

15. Specimens collected (attach list if necessary):

Field #	Taxon	Element	In situ/float
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____
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PLF forms recorded for specimen sensitivity and fossil taxonomy.

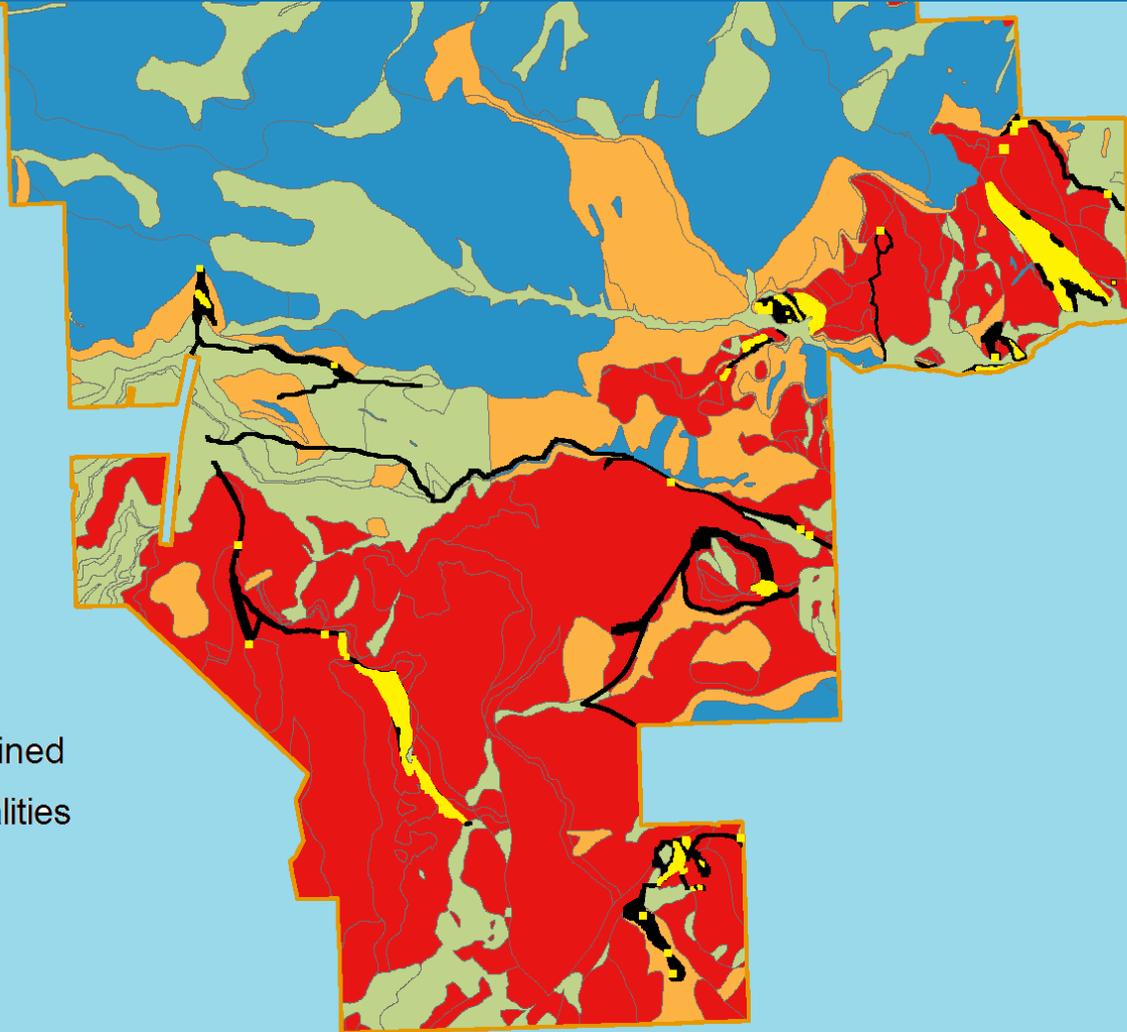
# Study Area

## Inventory

- Area Examined
- Fossil Localities

## PFYC Class

- 1
- 2
- 3b
- 3a



# Challenges

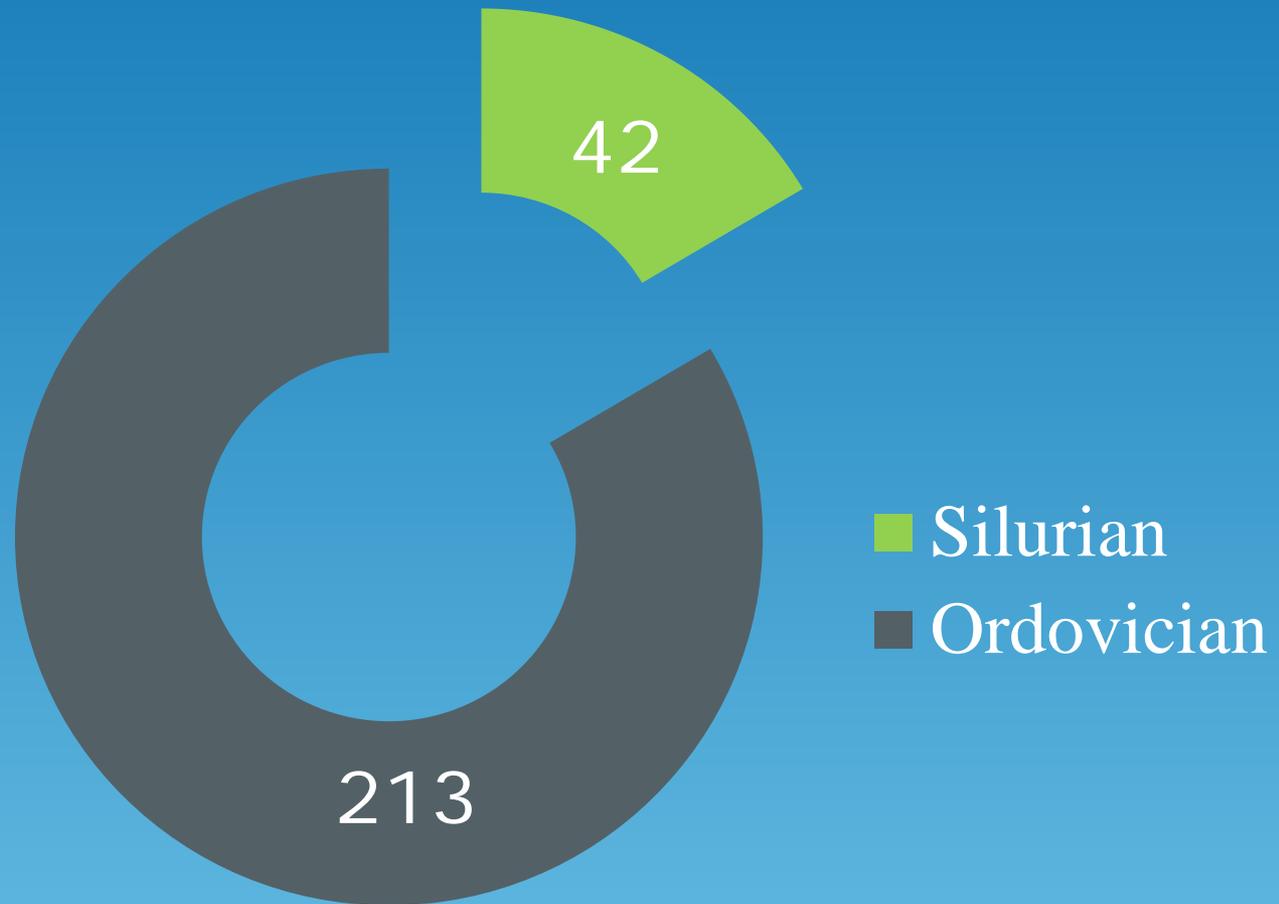
- Initially training the eye to develop a search image.
- Distinguishing stratigraphic units.
- Locating specimens in previously documented sites through photo interpretation.
- Overcast conditions not ideal for fossil prospecting.
- Assigning localities for small specimen yield areas.

# Conclusions

- 15 new localities documented in 2014.
- A total of 255 GPS points recorded.
- The Lehman Formation was identified as the most fossiliferous stratigraphic unit.
- Further scientific research required for rare specimens including Corals, Stylophoran (Echinoderm) and Stelleroid (Starfish) .
- A paleontological inventory is a continuous process.
- Further cataloging of collected samples to be completed.

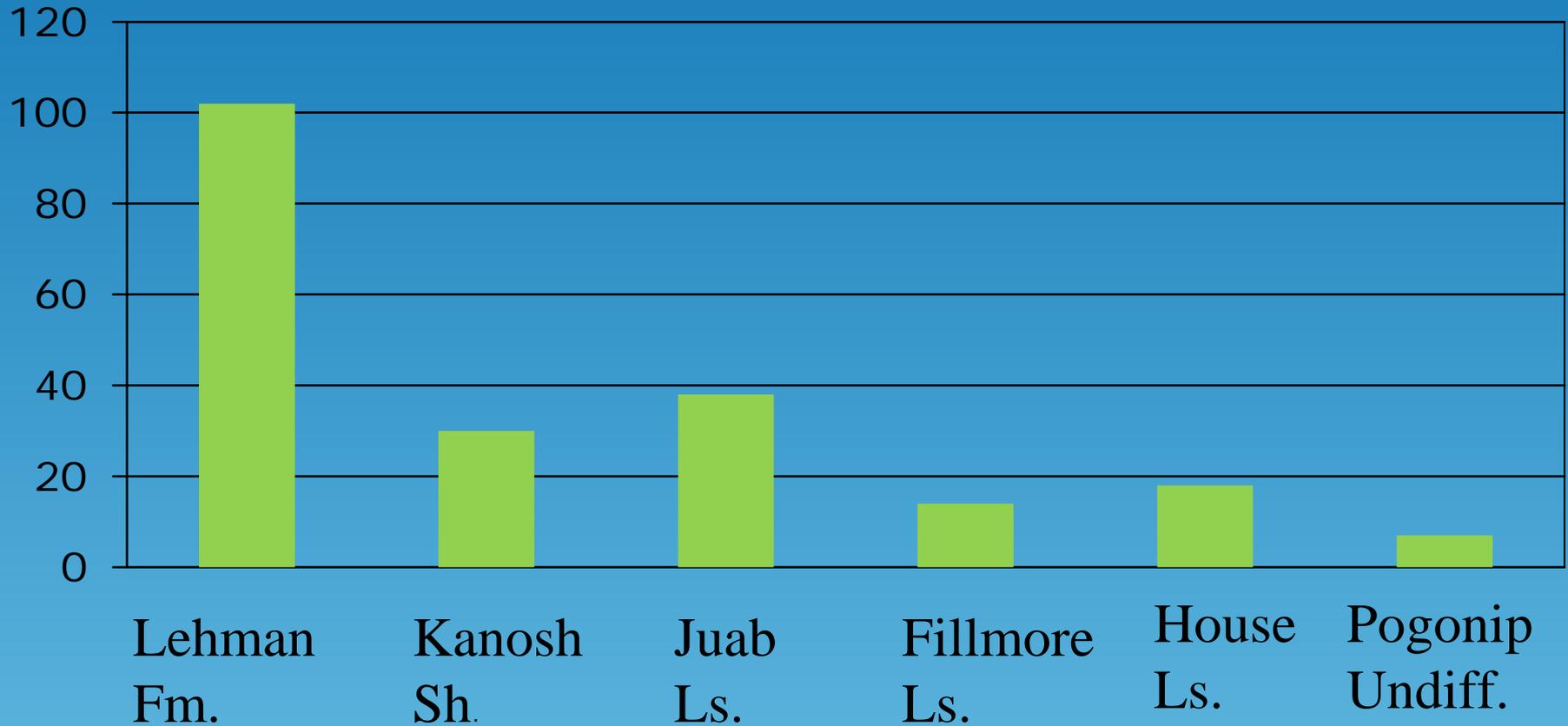
# Data Analysis

## GPS Data Collection per Geologic Period



# Field Observations

Specimen GPS Points for Pogonip Group per Unit



# Future Research Subjects



Early coral evolution not very well understood.

# Stylophoran (Echinoderm)



A new species of Stylophoran could offer valuable morphological information.

# Starfish (Stelleroid)



The Stelleroid is being closely studied by Echinoderm specialists.

# Early Sponges



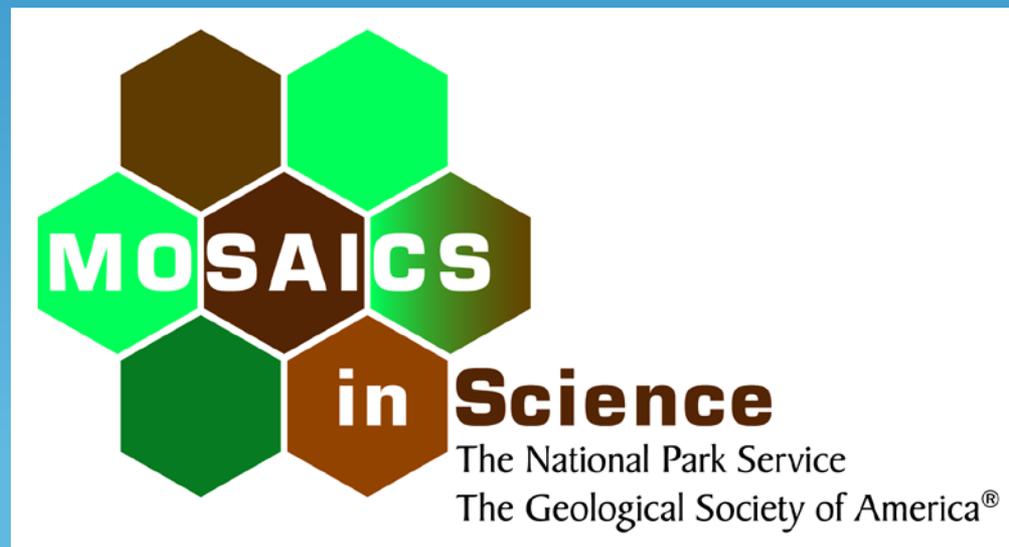
This specimen requires further biostratigraphic analysis.

# Acknowledgements

I am grateful to the Geological Society of America and the National Park Service for giving me this excellent opportunity.

I would like to thank Gorden Bell for his support and guidance towards this project.

I would like to thank AnnMarie Jones for her helpful inputs.



# Works Cited

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