

From Grave to Cradle:

Petrified Forest National Park
Mosaics in Science Internship

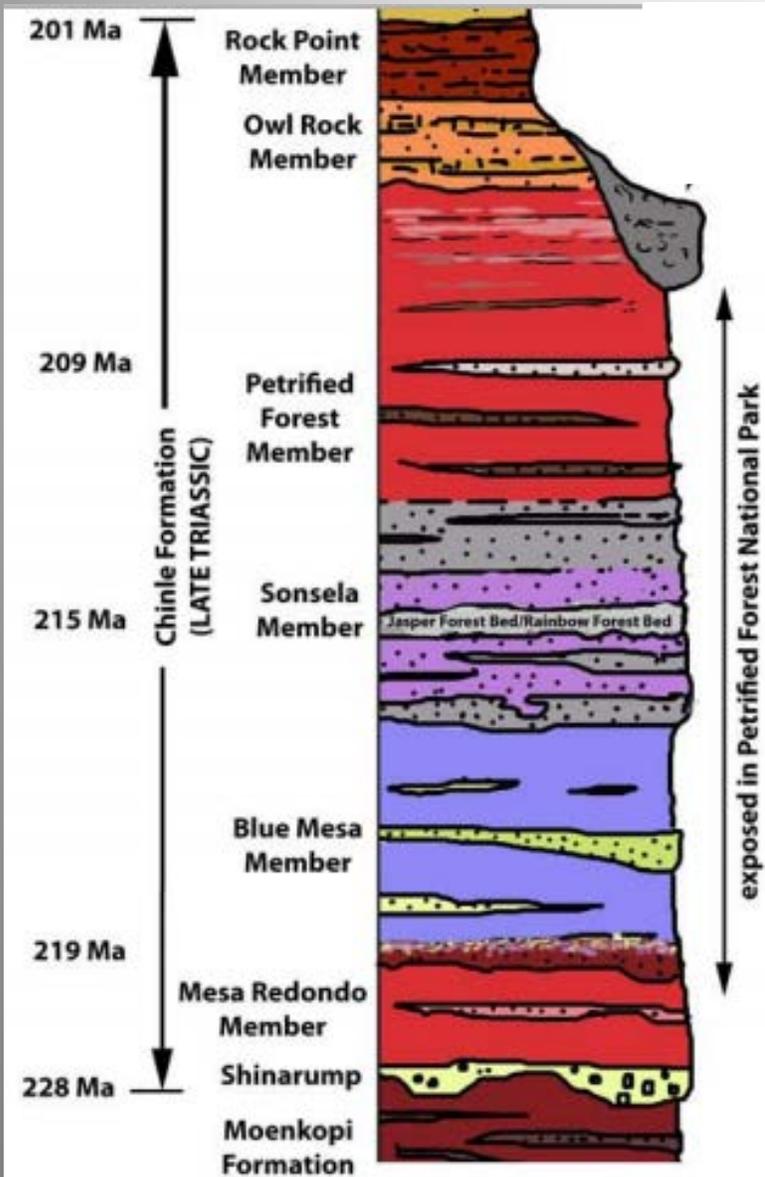
Shelby Matsuoka



Overview

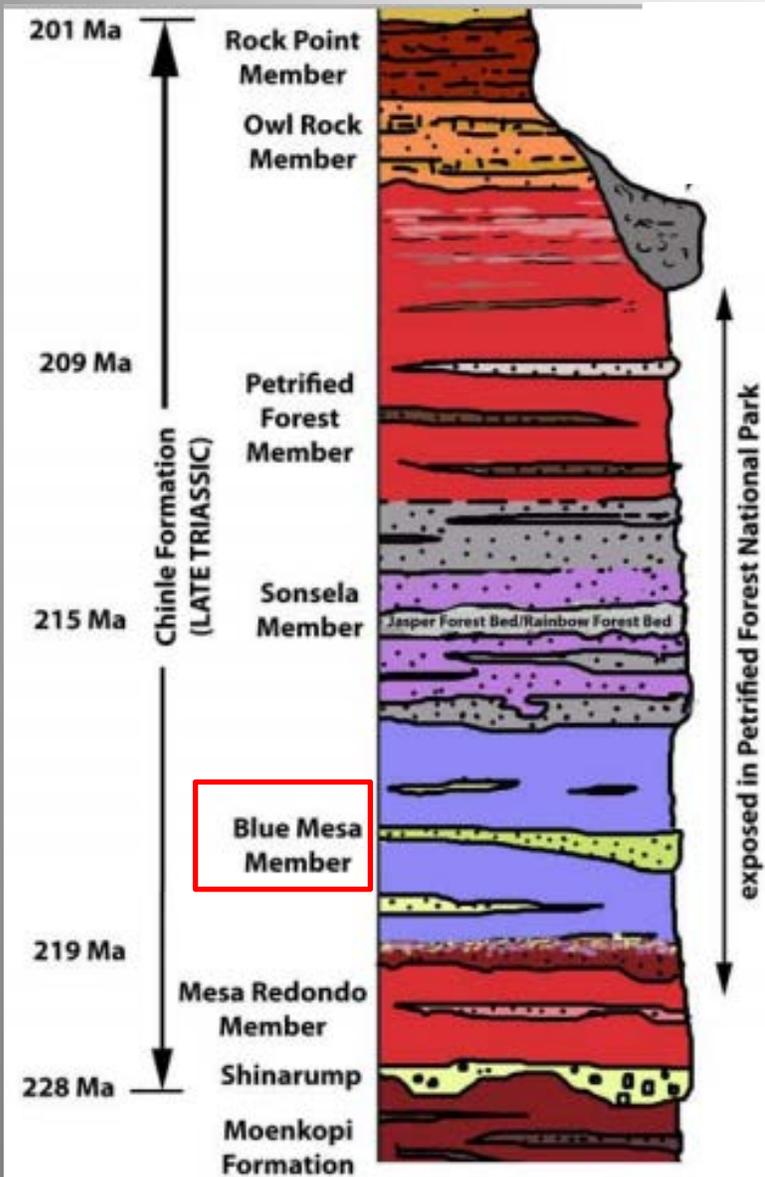
- Introduction to Petrified Forest National Park
- Local Geology: The Chinle Formation
- Local Fauna
- Day-to-Day: The Quarry
- My Project: *Desmatosuchus*
- Importance
- Acknowledgements

The Chinle Formation



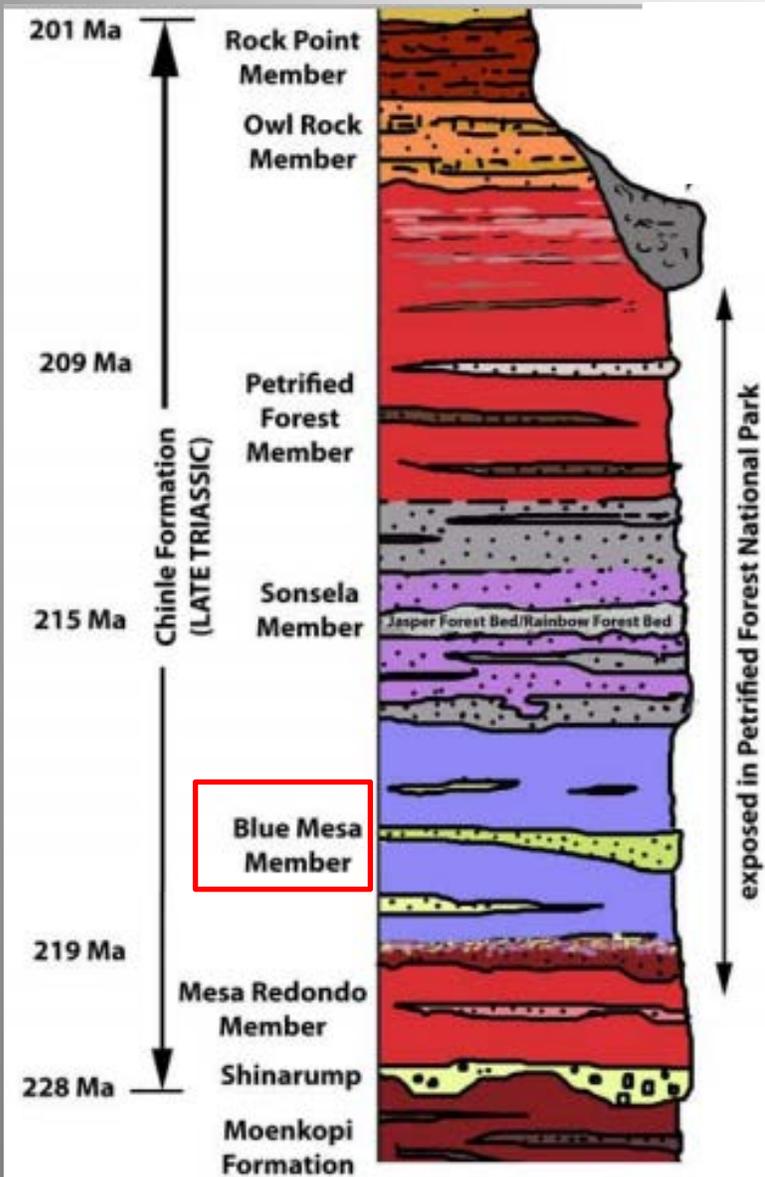
- Late Triassic in age
 - ~228-207 Ma in PEFO
- Meandering and braided streams
- Seasonal rainfall
- Two fauna: Adamanian and Revueltian

The Chinle Formation



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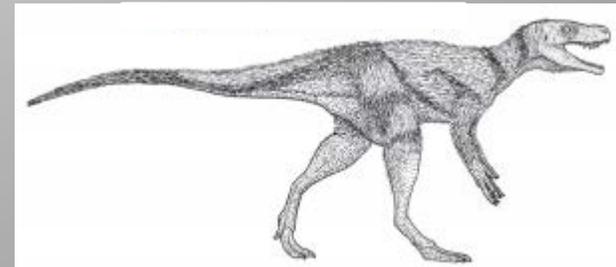
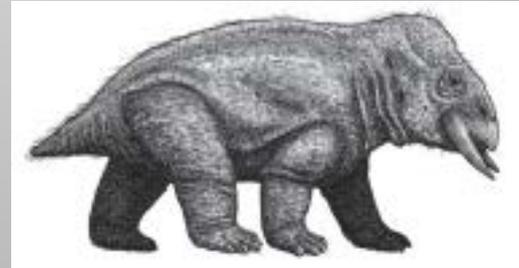
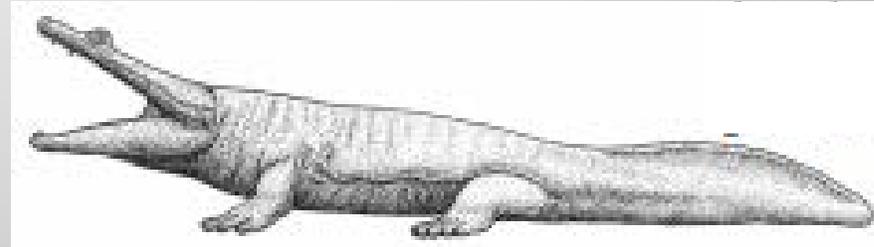
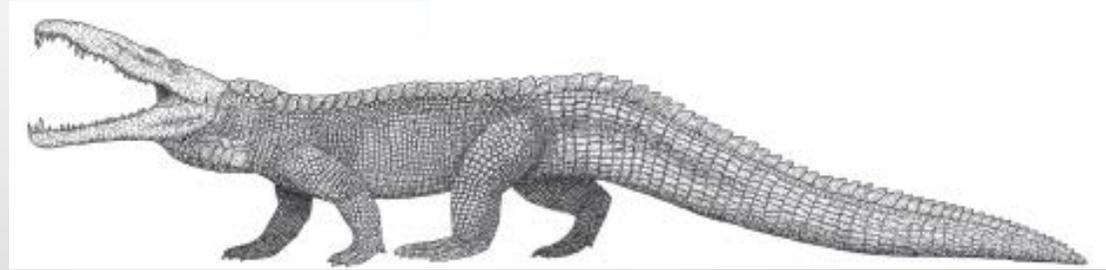
The Chinle Formation



- Late Triassic in age
 - ~228-207 Ma in PEFO
- Meandering and braided streams
- Seasonal rainfall
- Two fauna: Adamanian and Revueltian
- Blue Mesa Member ~220 Ma

The Adamanian Fauna

- Pseudosuchian archosaurs
 - Phytosaurs, aetosaurs
- Giant amphibians
 - Metoposaurs
- Mammal-like Reptiles
 - *Placerias*
- Introduction of small dinosaurs
 - *Chindesaurus*, *Coelophysis*



Day-to-Day: The Quarry

- Prospecting the park for new fossil localities
- Excavating fossils found within the park, from both this year and previously discovered sites
- Preparing fossils brought back from the field
- On average 32 hours in the field, 8 hours in the lab per week

Day-to-Day: The Quarry

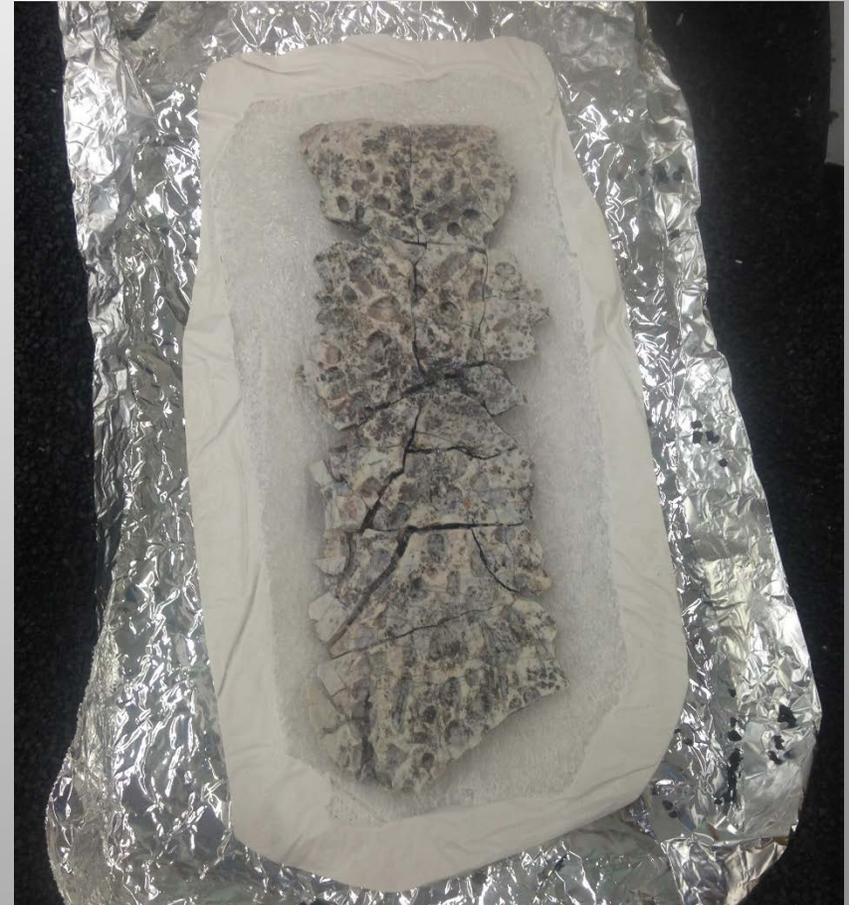
- New quarry found in the Blue Mesa Member's Dying Grounds site
- Spent 5 weeks excavating
- Estimated 500 bones pulled out so far
- Found what may be a new species for PEFO (and for science!)
 - Archosauriform, as yet not officially identified
 - Growth series

My Project

From Grave...



... To Cradle



My Project

Went to previously located site, WGP 14-06



My Project

Excavated *Desmotosuchus* osteoderm



My Project

Paperwork

Field # WGP 14-06
Taxon: Desmotosuchus
Description: plate
Collector: Smith et al
Date: 5/28/14
UTM: 12S 0612585, 3866476
Geology: Blue Mesa ^{ms} unit 27
Notes: • Chalk Fm

National Park Service
Paleontological Specimens
Preparation/Conservation Record

Catalog Number ~~JDA-PEFO~~ Accession Number Field Number WGP 14-06

Taxon: Desmotosuchus, some MitoSaur fragments
Description: plate

1. Permanent Location:
2. Field Observations: Partly collected in field jacket, float collected in ziploc bag and padded with toilet paper, Blue Mesa Member
3. Condition on Receipt:
4. Development Notes: plate fractured within jacket, separating left and right sides ^{about} equally

Date: 5/28/14 -
Preparation notes: used pinvice, brushes, dental picks, tweezers, cotton swabs, wet jacket edges with water and cut away with an X-acto and utility knife

Materials used: Acryloid B-72 in field (thin)
Thick acryloid B-72 in lab to adhere plate frags together once they've been cleaned
Thin acryloid B-72 to hold plate together in jacket

My Project

Prepared the specimen in the lab



My Project

Prepared the specimen in the lab



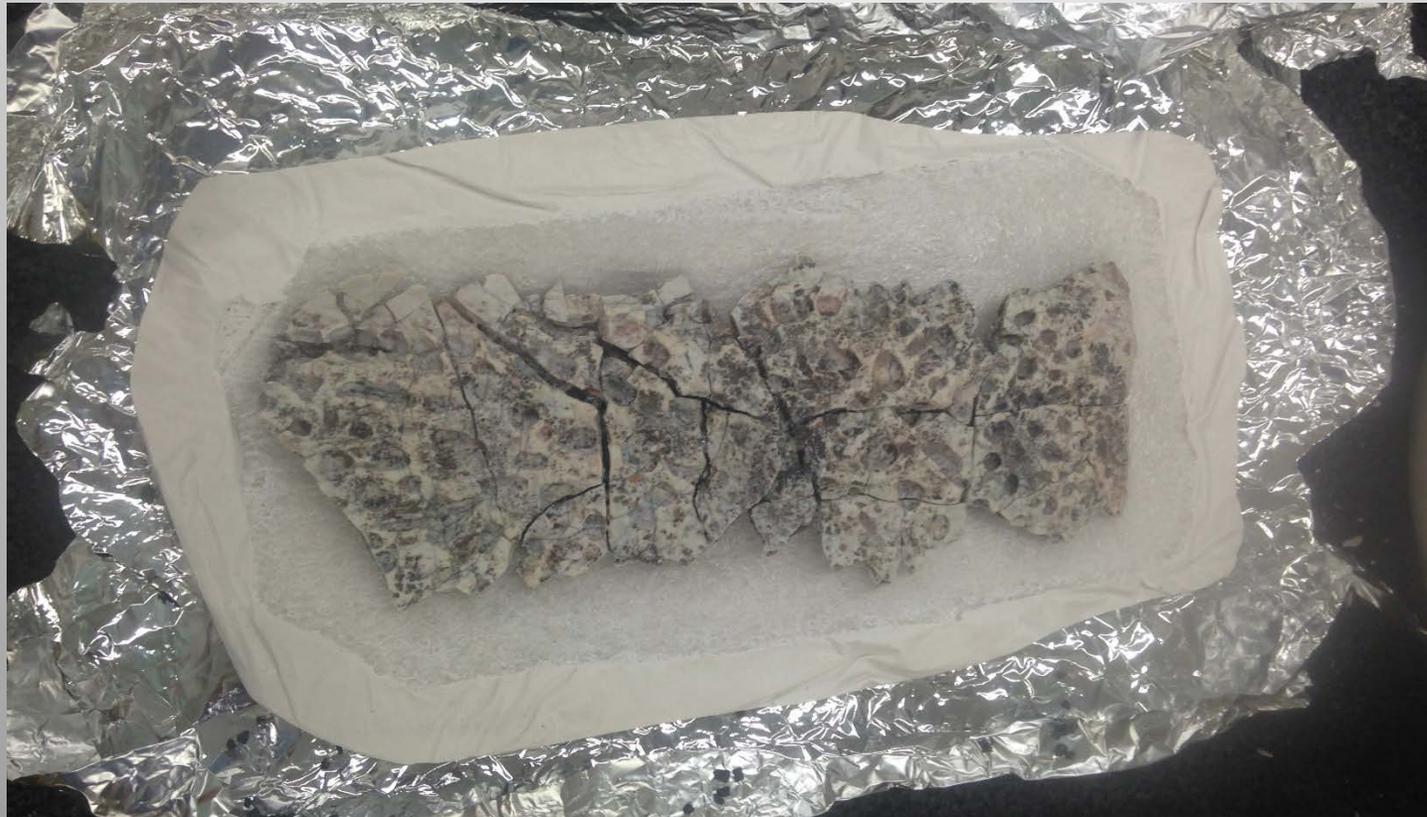
My Project

Prepared the specimen in the lab

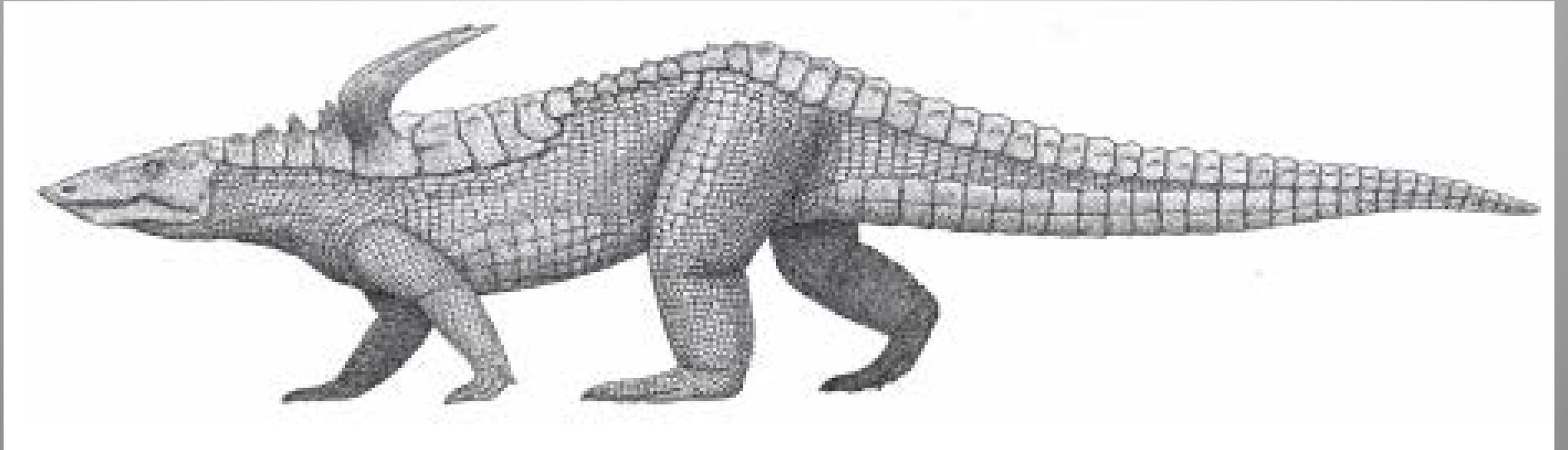


My Project

Prepared the specimen in the lab



Importance



Importance



Importance



Importance

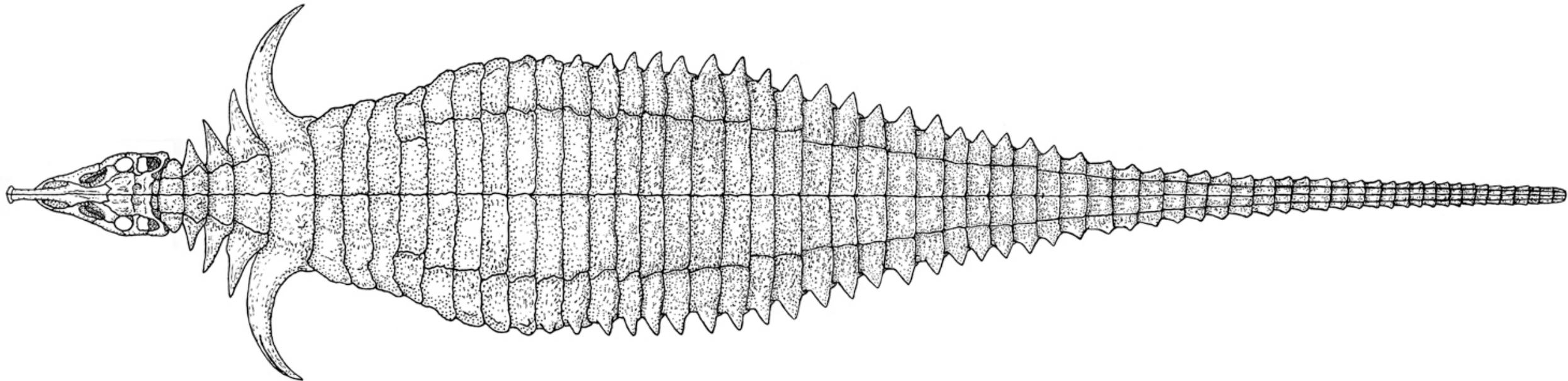


Importance



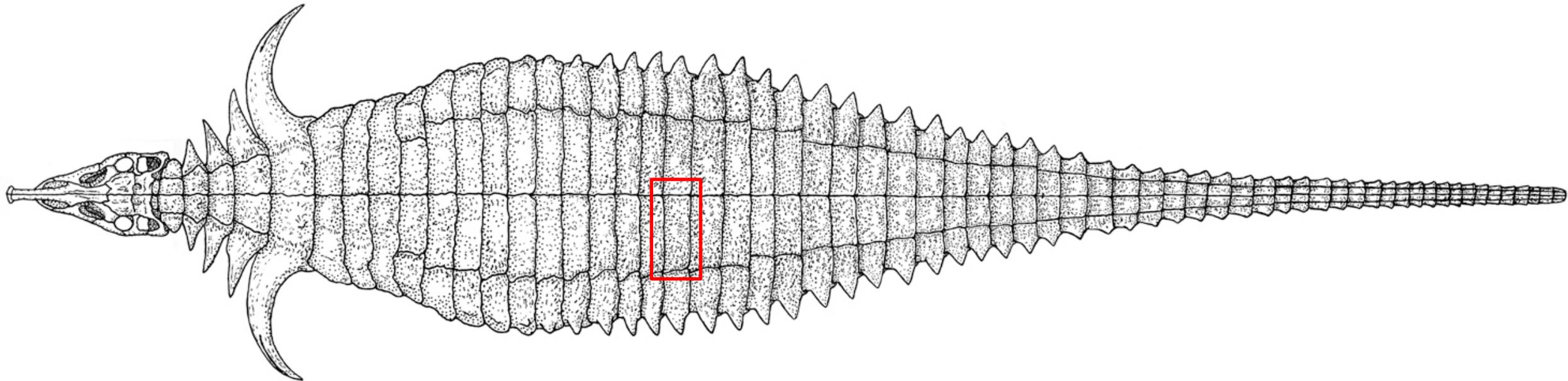
Importance

- Aetosaur armor is diagnostic



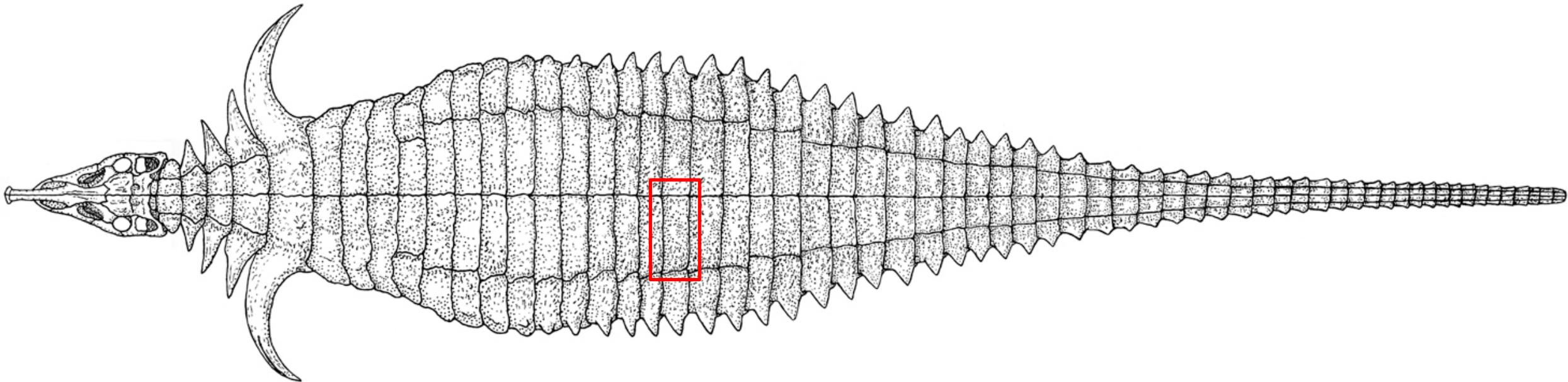
Importance

- Aetosaur armor is diagnostic
- Left dorsal paramedian plate



Importance

- Aetosaur armor is diagnostic
- Left dorsal paramedian plate
- Most complete *Desmotosuchus* plate recovered from PEFO



Acknowledgments

- PEFO supervisor and mentor, Dr. Bill Parker
- PEFO Museum Curator, Matt Smith
- PEFO Building Warden and preparator, Cathy Lash
- Fellow PEFO interns Adam Marsh and Ben Kligman
- Mosaics in Sciences sponsored by GSA and the NPS

References

- Photographs courtesy of fellow intern, Ben Kligman
- Illustrations and maps courtesy of <http://www.nps.gov/pefo/index.htm>
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