



# Updated Biostratigraphy of the Turtle Cove Member (John Day Formation) in the John Day Basin, Oregon

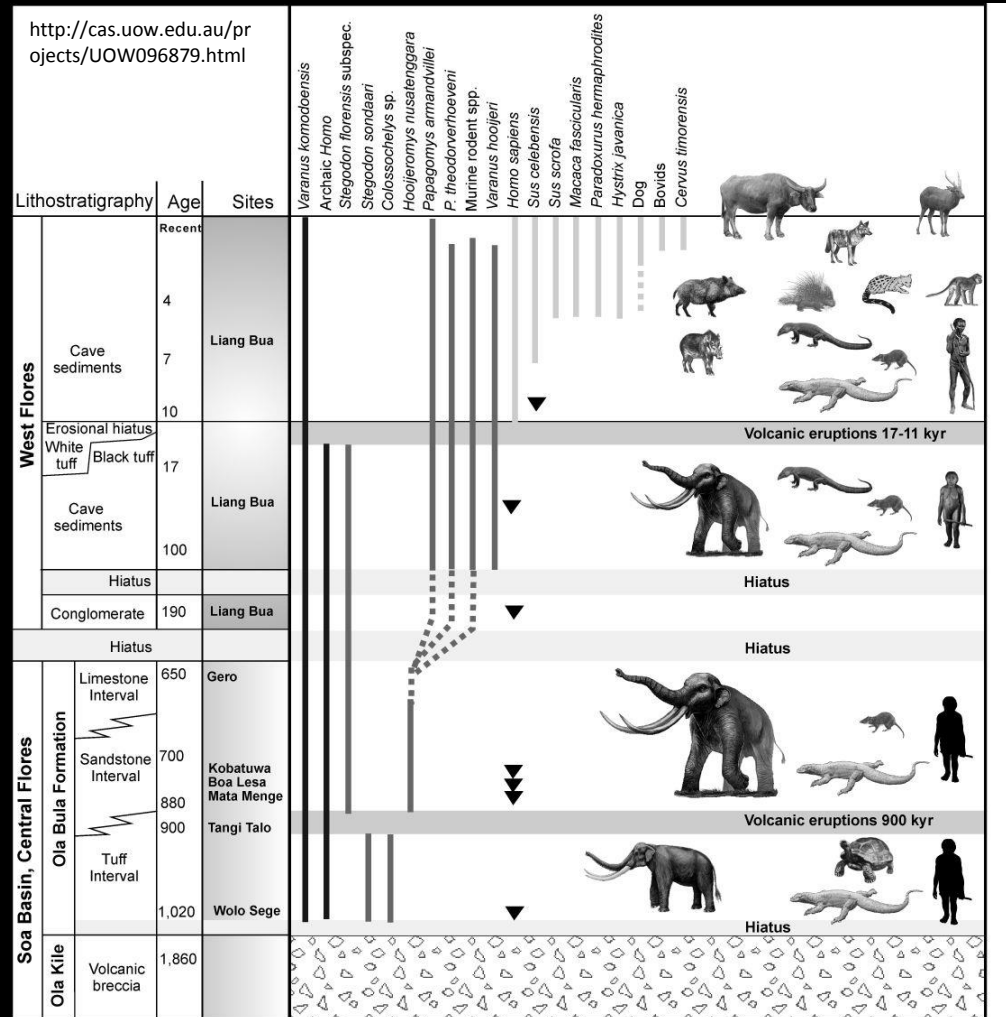
Nicholas A. Famoso, University of Oregon  
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Edward Byrd Davis, University of Oregon

MUSEUM  
OF  
NATURAL  
AND  
CULTURAL  
HISTORY



# Biostratigraphy

- Animals = ages
- Strat with limited absolute dates
- Lithostratigraphy
  - Rocks
- Chronostratigraphy
  - Time



# Gaps in the Great Plains

Pacific Northwest

Great Plains

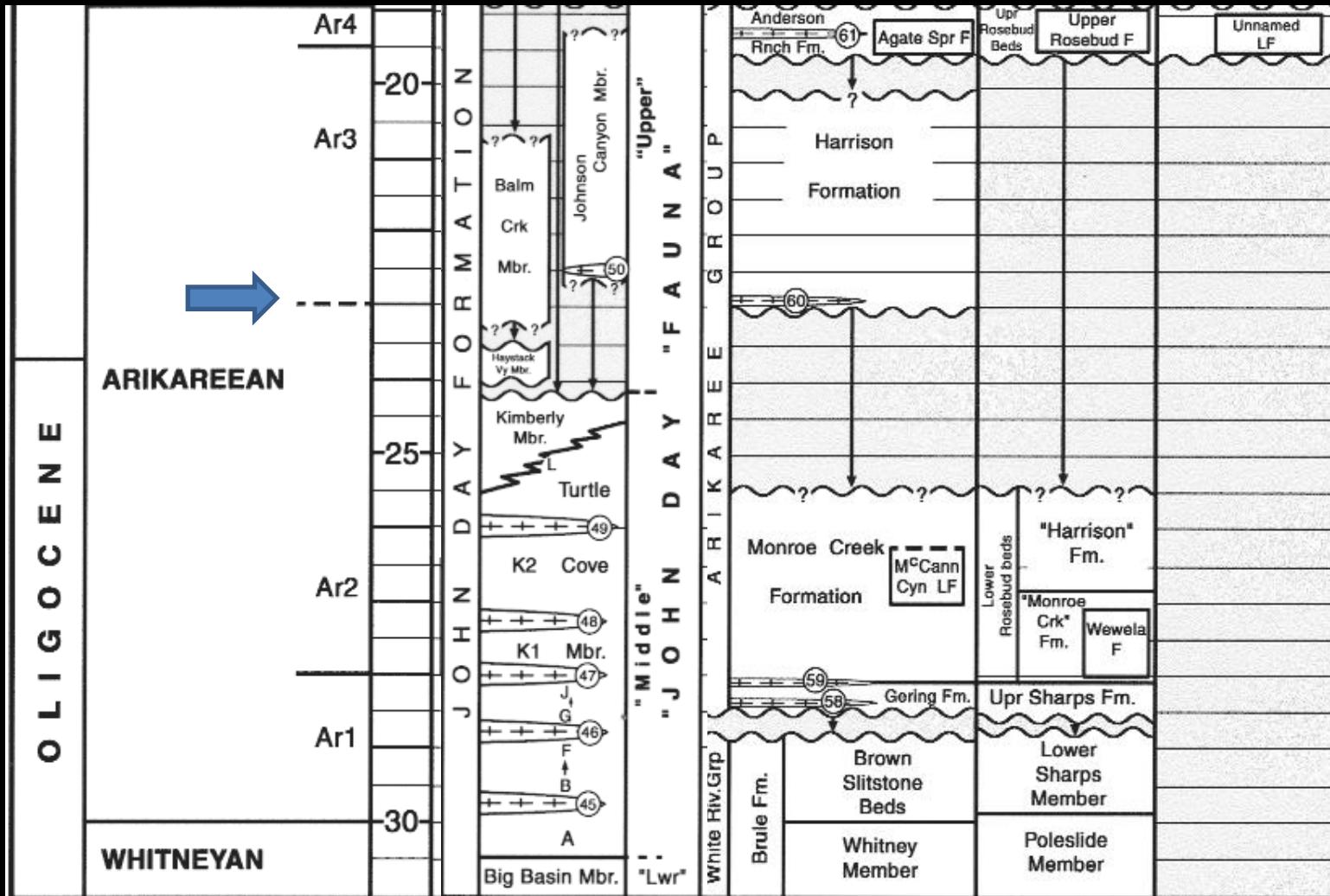
Tedford et al. 2004

Oregon

Nebraska

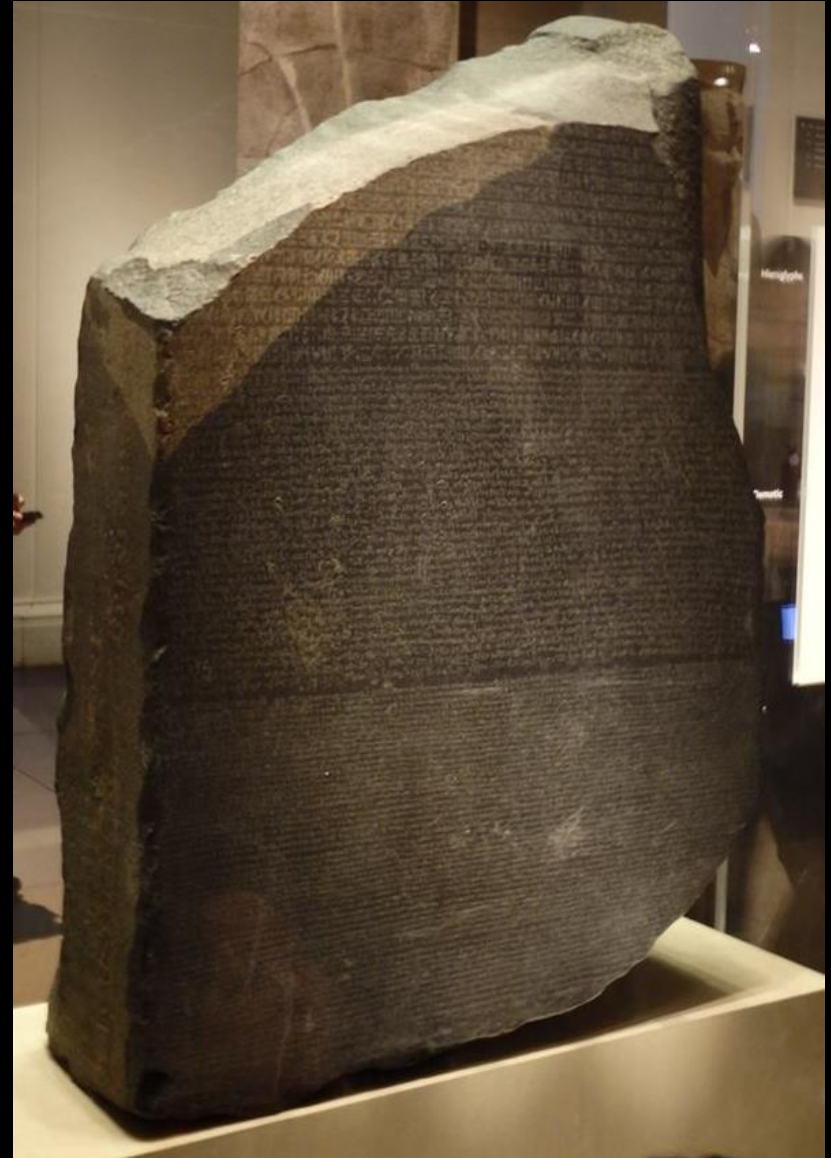
South Dakota

Colorado

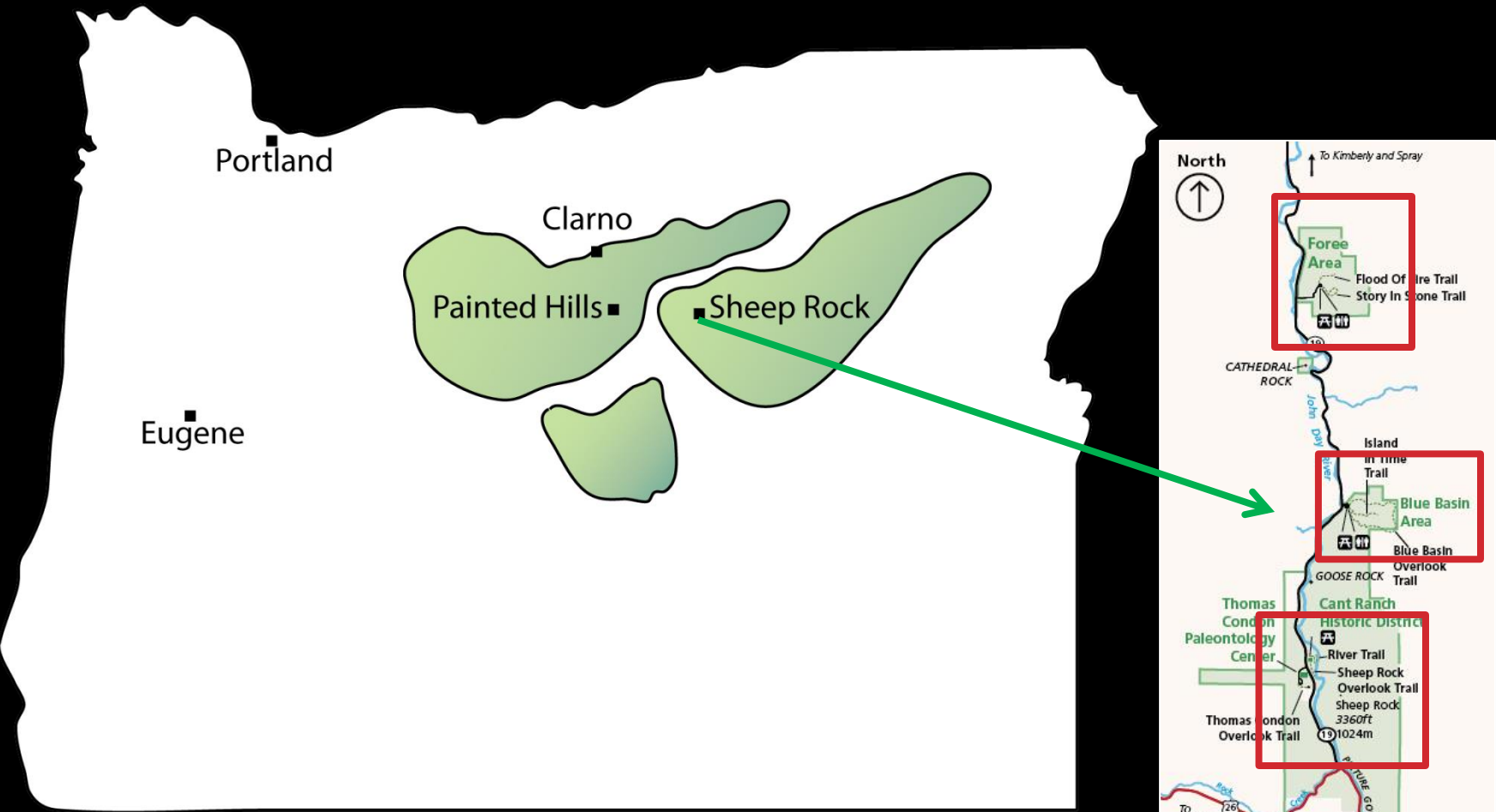


# “Rosetta Stone” of the Arikareean

- Biostratigraphy
  - Chronostratigraphy
  - Lithostratigraphy
- 
- Connects regions and fills gaps



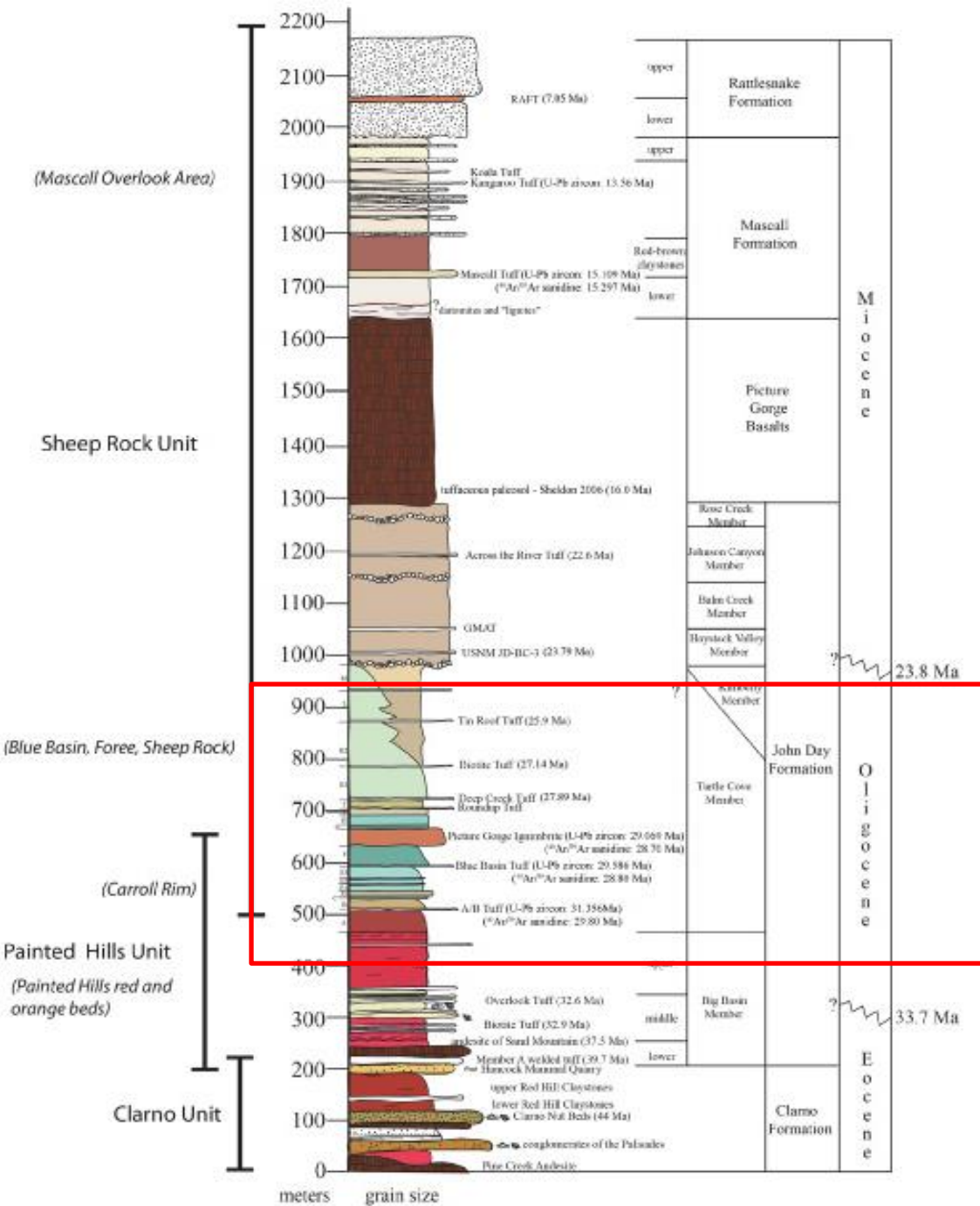
# John Day Formation



Control for ecological and paleo-elevation differences between localities



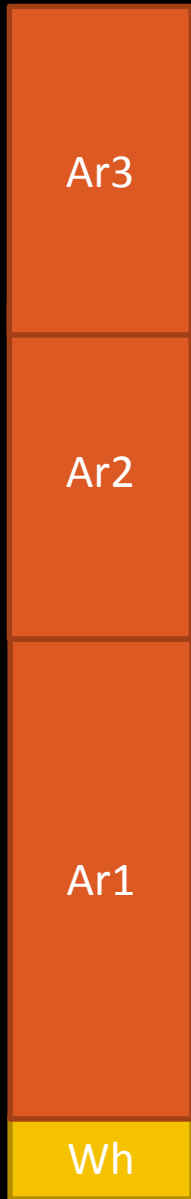
# John Day Fossil Beds Stratigraphy



\*Note: All radiometric dates are <sup>40</sup>Ar/<sup>39</sup>Ar sanidine dates unless indicated otherwise NPS

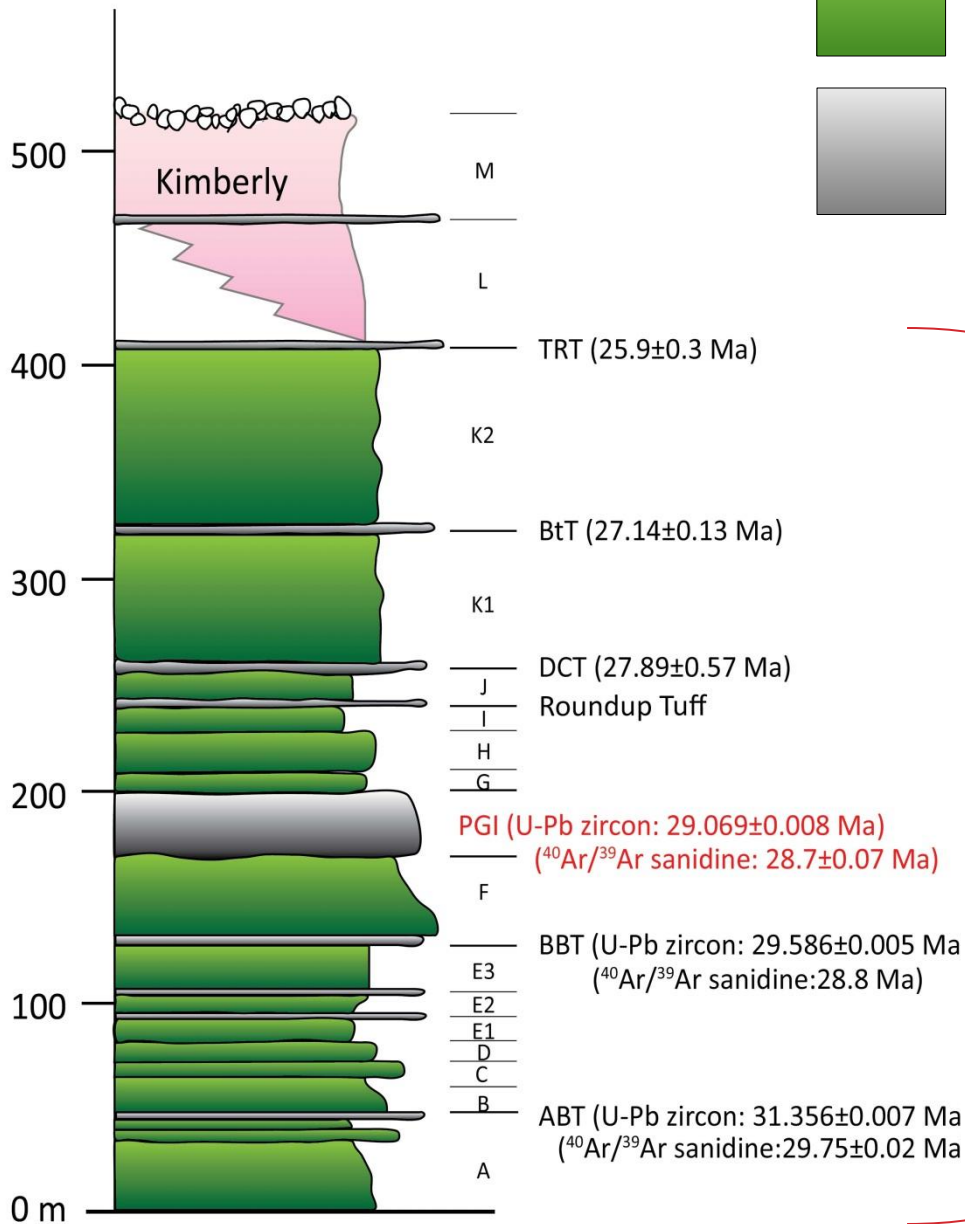
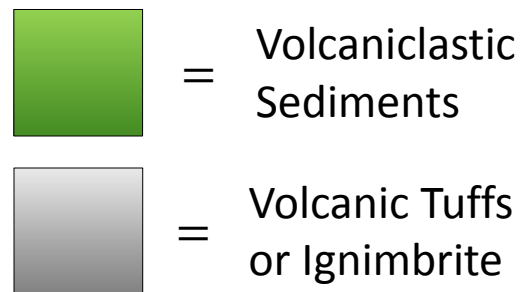


North American Land Mammal Ages



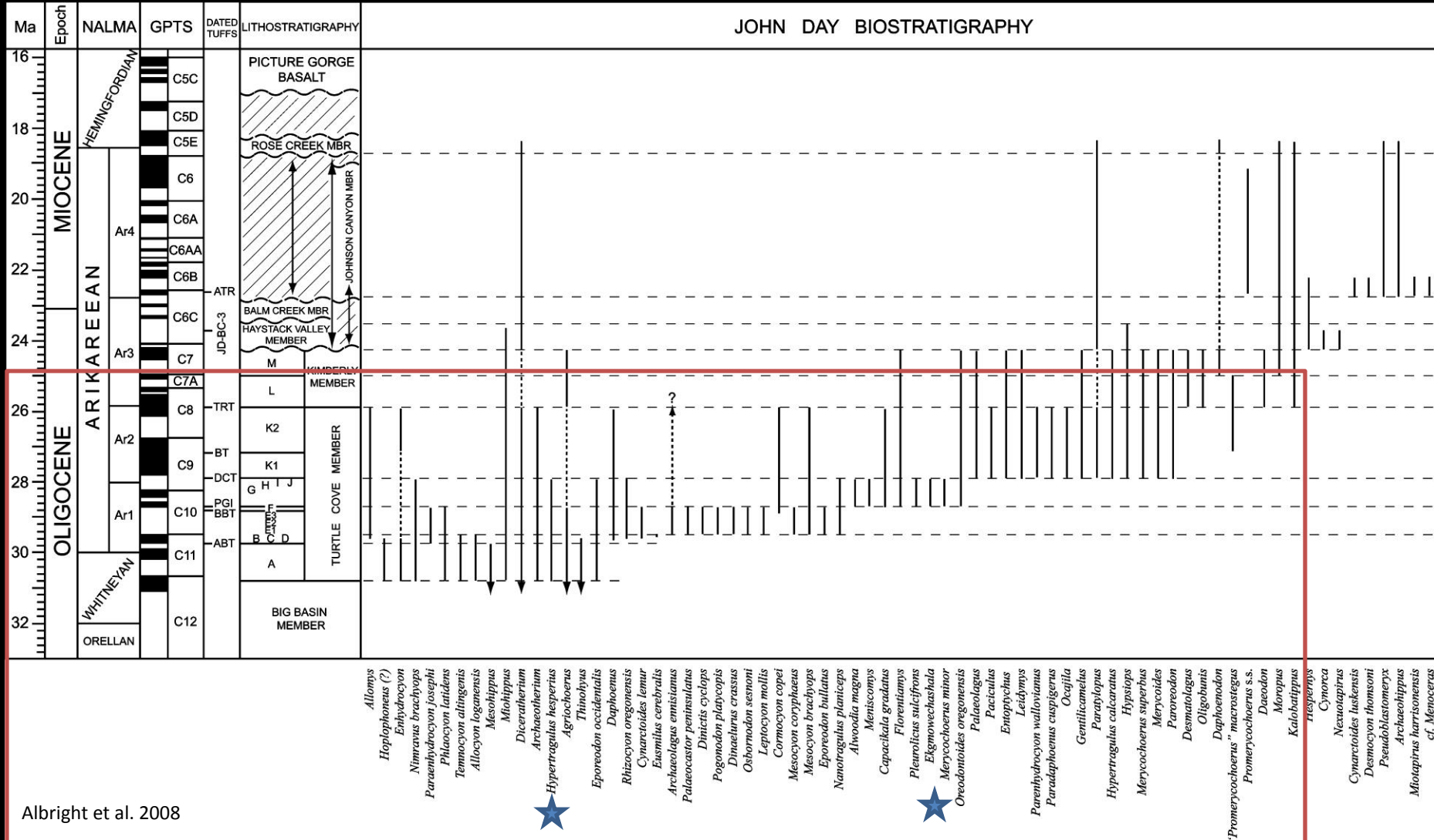
NPS

Turtle Cove Composite Section  
near Sheep Rock Unit



Turtle Cove Member

# Previous Biostratigraphy





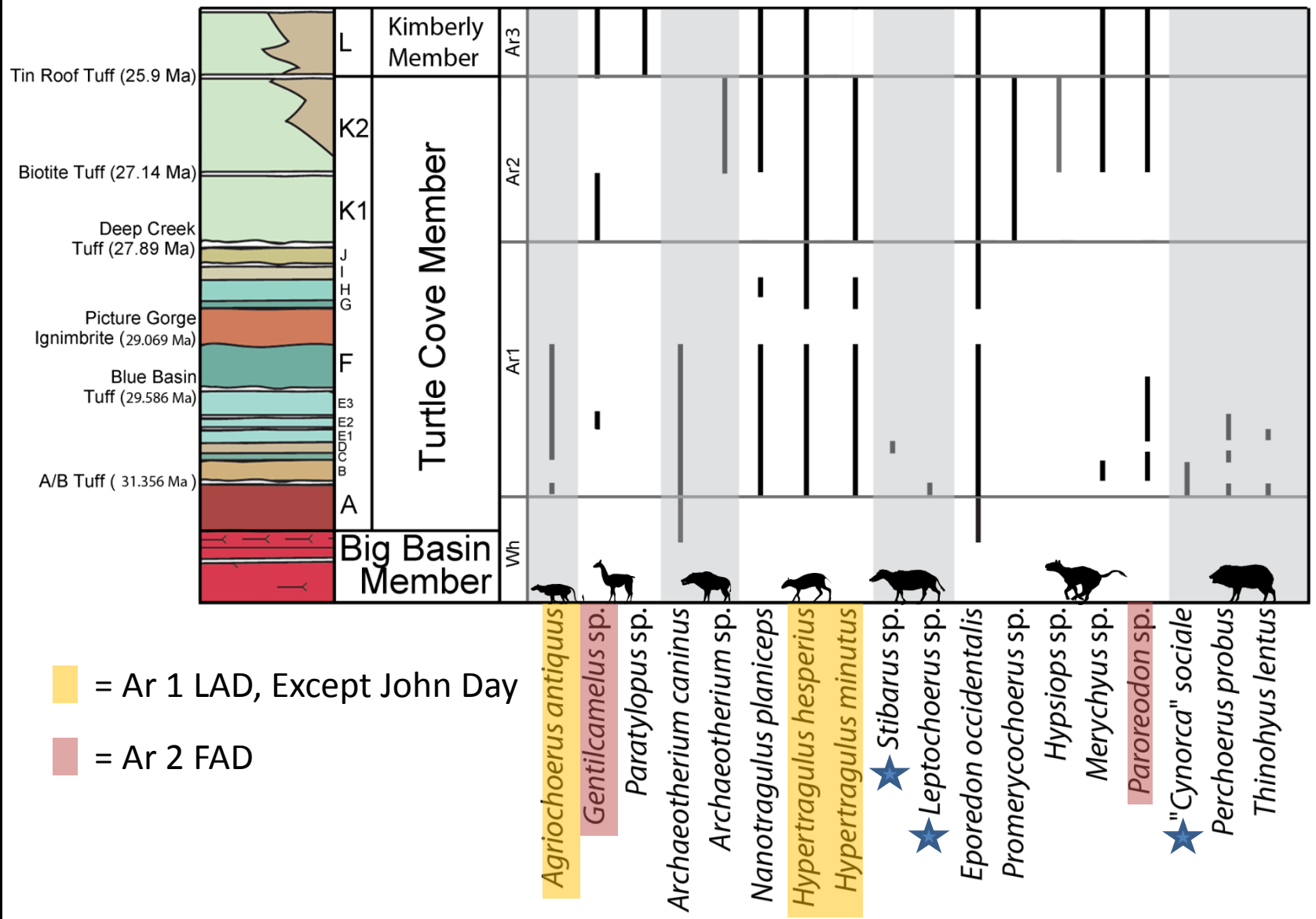
# Re-identified and New Specimens

- Total specimens  $n = 3,310$
- Specimens w/ refined Lithostratigraphy = 2,679

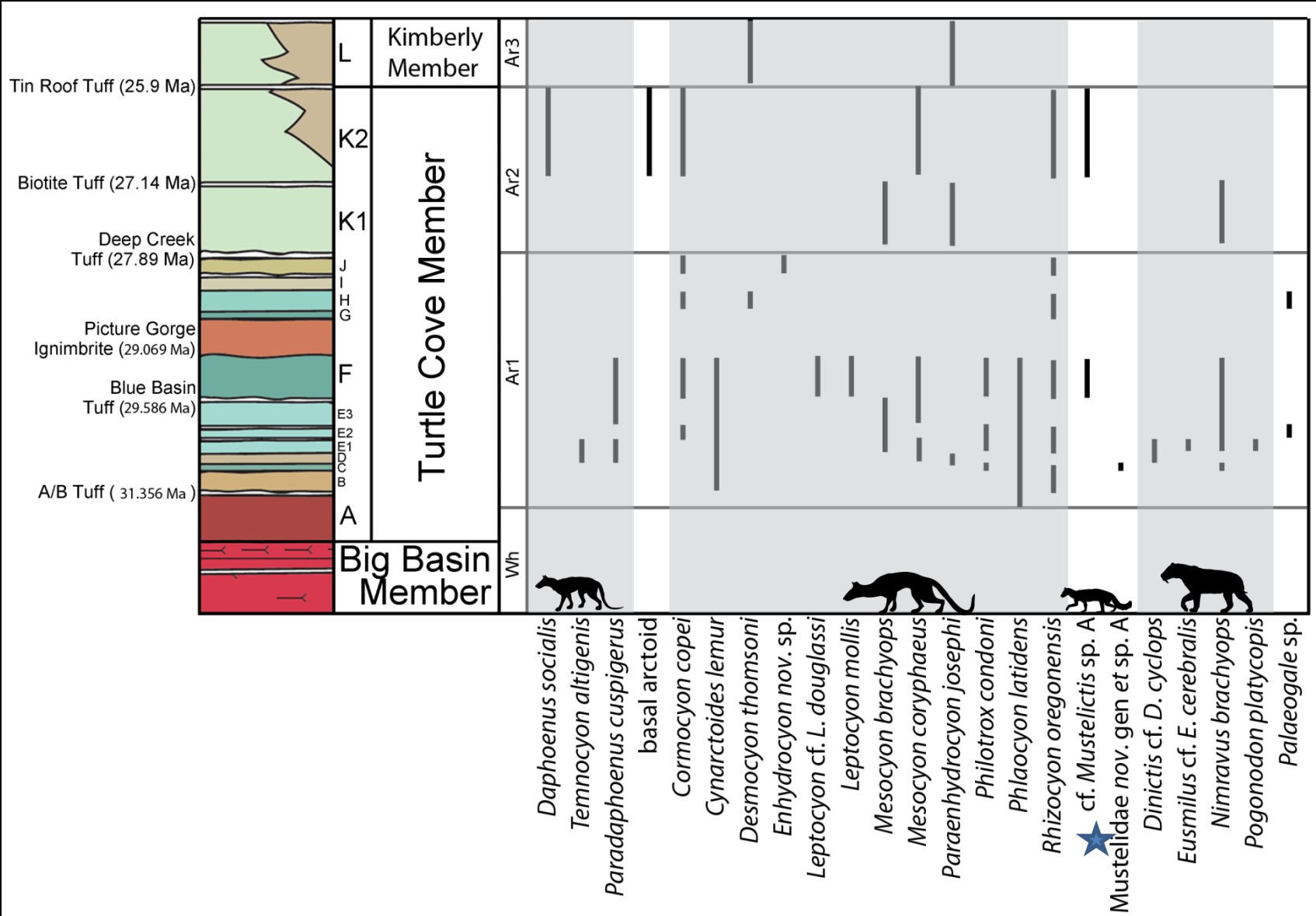


	<u>Big Basin</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E1</u>	<u>E2</u>	<u>E3</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>	<u>K1</u>	<u>K2</u>	<u>L</u>
Totals	10	69	105	244	198	522	545	133	187	35	85	7	21	137	290	31

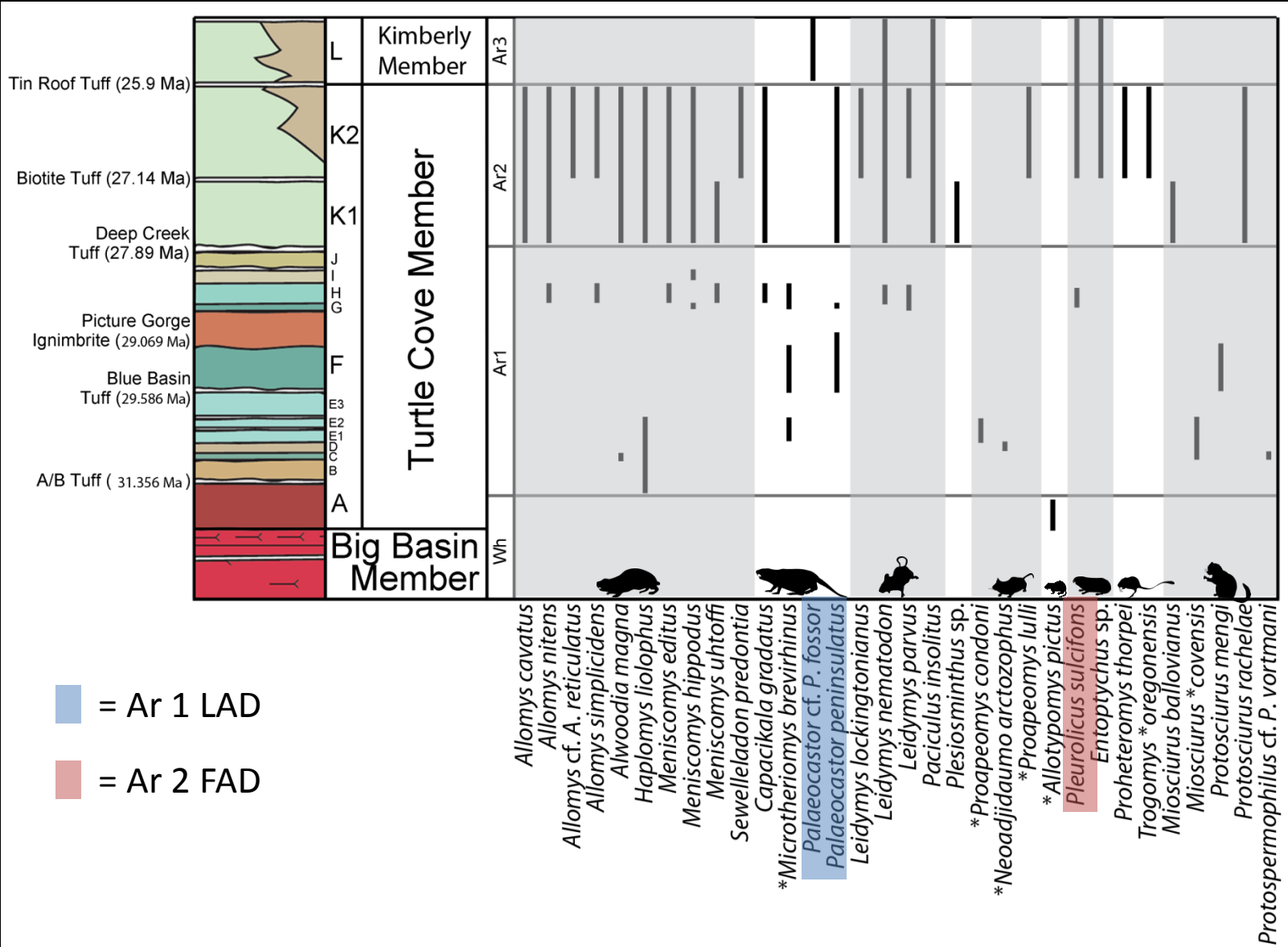
# Results - Artiodactyla



# Results - Carnivora



# Results - Rodentia

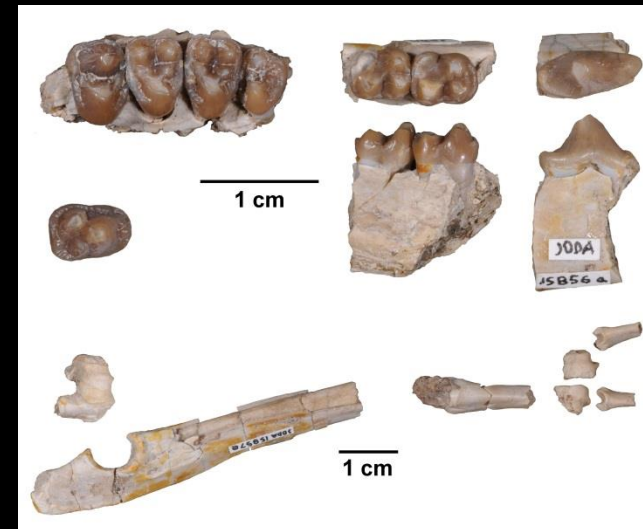




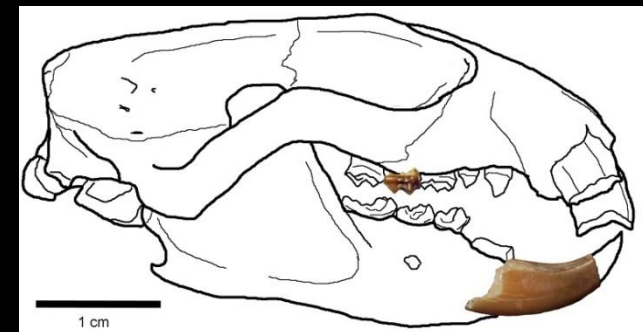


# Conclusion

- Ranges extended or reduced
- Sheep Rock only
- New occurrences
- More precise lithostratigraphy
- Ar2 is earlier than we expect (rodent data) **OR**
- Arikareean is time transgressive



*Leptochoerus* sp.



*Sinclairella dakotensis*

# Conclusions

- Paleoeecological questions
  - Faunal changes
- Biostratigraphy independent of chronostratigraphy and lithostratigraphy
- More data
  - Microfossil screening
  - Collecting poorly sampled units



# Acknowledgements



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- Stephen Frost
- James Watkins
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- 2014 UO Vert Paleo students
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