THE PALEOCENE DINOSAURS
OF THE OJO ALAMO
SANDSTONE, SAN JUAN BASIN,
NEW MEXICO AND COLORADO

James E. Fassett¹, Larry M. Heaman²,
and Antonio Simonetti³

¹Independent Research Geologist, ²U of Alberta,
³Notre Dame U.
SAN JUAN BASIN INDEX MAP

PALEOCENE
OJO ALAMO SS
AND ANIMAS FM
DINOSAUR-BONE
LOCALITIES IN RED
OJO ALAMO SANDSTONE/KIRTLAND FORMATION CONTACT AT OUTCROP SOUTH OF SAN JUAN RIVER NEAR FARMINGTON, NEW MEXICO
GEOPHYSICAL-LOG SECTION SHOWING OJO ALAMO SANDSTONE ACROSS SJ BASIN
EVOLUTION OF AGE OF OJO ALAMO SS

- Barnum Brown, 1910 - OA is Cretaceous because of dino bones
- Bauer, 1916 - OA is Cretaceous because of dino bones
- Reeside, 1924 - OA is “Tertiary (?)” based on fossil leaves (First tacit suggestion that OA dinos are Paleocene)
- Anderson, 1960 - OA is Paleocene based on palynomorphs
- Baltz, Ash, & Anderson - 1966, OA is Cretaceous and Paleocene; dinosaur-bearing lower part is Cretaceous, upper part is Paleocene
- Fassett, 1982 - OA is probably Paleocene based on palynology
- Fassett, Lucas, & O’Neil, 1987 - OA is Paleocene based on palynology
- Fassett and Lucas, 2000 - OA is Paleocene based on palynology
- Fassett, Zielinski, & Budahn, 2002 - OA is Paleocene based on palynology and paleomagnetism; trace-element abundances in Cretaceous and Paleocene dino bones prove that Paleocene bones were not reworked from underlying Cretaceous rocks
- Fassett, 2009 - OA is Paleocene based on palynology and paleomagnetism; geochemical data base for dino bones expanded
Direct U-Pb dating of Cretaceous and Paleocene dinosaur bones, San Juan Basin, New Mexico

James E. Fassett, Larry M. Heaman, and Antonio Simonetti

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LASER ABLATION U-PB METHODS WERE USED BY LARRY HEAMAN AND TONY SIMONETTI AT THE UNIVERSITY OF ALBERTA TO DATE DINOSAUR BONES BB-1 AND 22799-D

BB-1 = 64.8 ± 0.9 MA
22799-D = 73.6 ± 0.9 MA

NOTE: K-Pg boundary is 66.0 Ma
Important Note: $^{40}\text{Ar}/^{39}\text{Ar}$ ages shown are recalibrated per Kuiper et al. (2009): revised K-Pg boundary is 66 Ma
PALEOCENE DINOSAUR BONES, SAN JUAN BASIN

Sauropod femur (BB-1) - OASS Type Area (Photo by Jim Fassett)

Hadrosaur femur - SJ River Locality (Photo by Spencer Lucas)

34 Skeletal Elements - OASS Type Area (Photo from Spencer Lucas)

Sauropod femur - OASS Type Area (Photo from Robert Sullivan)
TEN FOOT BONES OF ALAMOSAURUS SANJUANENSIS
FROM PALEOCENE OJO ALAMO SS, SAN JUAN BASIN

Figure 1 of D’emic, Wilson, Williamson, Sept. 2011
IN CONCLUSION

Three independent lines of evidence support the Paleocene age of the Ojo Alamo Ss and its contained dinosaur fossils:

1. Palynologic data from five principle areas - 54 species of palynomorphs including two Paleocene index palynomorphs
2. Paleomagnetic data from six localities
3. A U-Pb age of 64.8 Ma for a dino bone from the Ojo Alamo Sandstone.

Evidence for a Cretaceous age for the Ojo Alamo Sandstone dinosaurs = NONE
“Good news, I hear the paradigm is shifting.”
IN SITU GEOCHEMICAL SR ISOTOPIC AND U-PB DATING OF DINOSAUR BONE: A RECORD OF FOSSILIZATION AND FLUID-FLOW HISTORY IN THE SAN JUAN BASIN, NEW MEXICO

Larry M. Heaman, Antonio Simonetti, and James E. Fassett

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