



2007-08 AAPG Distinguished Lecture

Abstract

KIRK JOHNSON

Denver Museum of Nature and Science

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Crocodiles in Greenland and Hippos in London: A Fossil-Fueled Tour of Past and Future Climates

Earth's climate is driven by the interaction of solar energy with land, sky, and oceans. While this has always been the case, shifting positions of continents and the ever-changing chemistry and currents of oceans and air have created a world with a complex history. Most of Earth history has occurred during greenhouse conditions when there were no polar ice caps. Less common were icehouse conditions when there were polar ice caps that waxed and waned between glacial and interglacial periods. This history is written in stone and told by fossils. Fossil plants from 50 million years ago show that the polar regions were

ice free and densely forested and that tropical rainforests reached middle latitudes. The talk will take you from the Amazon Basin to the High Arctic and into Deep Time as he explains our planet's history by visiting fossil sites on different continents and using them to reconstruct lost worlds, extinct biomes, and ancient climates. Recent advances in geochronology allow the fossil record to be dated with increasing precision, thus providing some context for understanding climate change and global warming in the present and future.

Kirk Johnson

Education:

1989 PhD, Yale University
1985 MS, University of Pennsylvania
1982 BA, Amherst College

Experience:

2006-Present Vice President of Research & Collections, Denver Museum of Nature & Science
2004-Present Chief Curator, Denver Museum of Nature & Science
2001-06 Chairman, Department of Earth Science, Denver Museum of Nature & Science
1991-Present Curator of Paleontology, Denver Museum of Nature & Science
1989-90 Postdoctoral Researcher, University of South Australia, Adelaide.

Publications and Awards:

Johnson, K. R. and Troll, R., Oct. 2007, *Cruisin' the Fossil Freeway: An epoch tale of a scientist and an artist on the ultimate 8,000 mile paleo road trip*, Fulcrum Press, Golden. CO.
Johnson, K. R. and Bonnell, M. A., July 2007, *Gas Trees and Car Turds, A Kids' Guide to the Roots of Global Warming*. Fulcrum Press, Golden. CO.

Johnson, K. R. and Stucky, R.K., 2006, *Prehistoric Journey: A History of Life on Earth*: Golden, Fulcrum Press, 144p., second edition.
Johnson, K. R. and Reynolds, R., 2006, *Ancient Denvers: Scenes from the past 300 million years of the Colorado Front Range*: Golden, Fulcrum Press, 32 p., second edition.
Wilf, P., C.C. Labandeira, K.R. Johnson, B. Ellis, 2006, Decoupled plant and insect diversity after the End-Cretaceous extinction. *Science*, vol. 313, p. 1112-1115.
Wilf, P., Labandeira, C.C., Johnson, K.R., and Cuneo, N.R., 2005, Richness of plant-insect associations in Eocene Patagonia: a legacy for South American biodiversity: *Proceedings of the National Academy of Science*, v. 102, no. 25, p. 8944-8948.
Wilf, P., and Johnson, K.R., 2004, Land plant extinction at the end of the Cretaceous: a quantitative analysis of the North Dakota megafossil record: *Paleobiology*, v. 30, no. 3, p. 347-368.
Johnson, K. R. and Ellis, B., 2002, A tropical rainforest in Colorado 1.4 million years after the Cretaceous-Tertiary boundary, *Science*, vol. 296, pp. 2379-2383.
Hartman, J., Johnson, K. R., Nichols, D. J., eds., 2002, The Hell Creek Formation and the Cretaceous-Tertiary Boundary in the northern Great Plains: An integrated Continental record of the End of the Cretaceous: *Geological Society of America Special Paper* vol. 361, 520 p.

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- 2002 Rocky Mountain Association of Geologists Distinguished Public Service to Earth Sciences Award.
- 2002 Geological Society of America Fellow
- 1999-2000 Paleontological Society Distinguished Lecturer
- 1996 American Association of Museums Curator's Choice Award : Best museum exhibit in 1995 for the *Prehistoric Journey* exhibit,.

Professional Memberships

- American Association of Museums
- Geological Society of America
- Botanical Society of America
- International Organization of Paleobotany

Professional Interests:

Kirk Johnson studies fossil plants, terrestrial stratigraphy, geochronology and dinosaur extinction and works in a museum environment where good science and public communication of science are equally valued. He has published many popular and scientific articles on topics ranging from fossil plants and modern rainforests to the ecology of whales and walruses. He is best known for his research on fossil plants that is widely accepted as some of the most convincing support for the theory that an asteroid impact caused the extinction of the dinosaurs. Since 1997, he has supervised the *Denver Basin Project*, a multidisciplinary NSF-funded effort to understand and interpret the paleontology, geology, and hydrology of

the rocks beneath Denver. This work has led to the discovery and analysis of a 64 million-year-old tropical rainforest in Colorado. His research has also taken him to Alaska's Bering Sea, the Brazilian Amazon, the Canadian High Arctic, the rainforests of New Zealand, the Gobi desert, India, China, Patagonia, and the American West.

He is presently working on research projects in Patagonia, Manchuria, Wyoming, and Denver. Between 1990 and 1995, he led a team that planned, and built the Museum's award-winning exhibition *Prehistoric Journey* and he continues to design museum exhibits and other media to popularize Earth Sciences. Kirk loves to work closely with artists to create accurate paintings, murals, and dioramas of prehistoric landscapes. The *Ancient Denvers* series of 14 images can be seen at the Denver Museum of Nature & Science and the *Ancient Colorado* series of ten paintings can be seen in the Colorado Convention Center. He is now involved in the initial stages of designing a new Hall of the Earth at the Denver Museum of Nature & Science.

Links:

[Ancient Denvers](http://www.dmns.org/main/minisites/ancientDenvers/index.html)

<http://www.dmns.org/main/minisites/ancientDenvers/index.html>

[Ancient Colorado](http://www.dmns.org/main/en/General/Exhibitions/content/ancientColorado.htm)

<http://www.dmns.org/main/en/General/Exhibitions/content/ancientColorado.htm>