



**NEW MEXICO MUSEUM OF
NATURAL HISTORY & SCIENCE**
2010 ANNUAL REPORT

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Bill Richardson, Governor
Stuart Ashman, Cabinet Secretary



NEW MEXICO DEPARTMENT OF
CULTURAL AFFAIRS

1801 Mountain Road NW Albuquerque, New Mexico 87104
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Exhibits & Events

Nikon Small World

May 30- August 16, 2009

Naturescapes Photo Salon

May 23-August 30, 2009

Free Flow: The Gila River

June 13- September 13, 2009

All That Glitters

August 29, 2009

Smithsonian Museum Day

September 26, 2009

Teacher Open House

September 30, 2009

Celebra la Ciencia

October 17, 2009

Walking With Dinosaurs Museum Event

December 10, 2009

PNM Exhibit

December 18, 2009

Driven to Explore

January 26-27, 2010

Great Balls of Fire!

January 30-31, 2010

Earth Hour Family Extravaganza

March 27, 2010

Nikon Small World

May 28- August 15, 2010

Drawing On Nature

June 11- September 12, 2010

Museum Mission

The mission of the New Mexico Museum of Natural History and Science is to foster an understanding and appreciation of the diverse natural history and physical sciences of New Mexico and the Southwest for the benefit of residents of, and visitors to, New Mexico. The Museum provides educational experiences and promotes scientific inquiry through focused collections, research, public programs, and exhibitions.

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On the Cover:

The Ambush: Saurophaganax and Seisimosaurus, *painting by Mary Sundstrom and Matt Celeskey.*

From the Office of the Executive Director



This year was marked by partnerships in both exhibits and programming. The Museum continued to move forward in developing, *Degrees of Change: New Mexico's Climate Forecast*, an exhibit funded by the National Science Foundation, in coordination with New Mexico's Experimental Program to Stimulate Competitive Research. The exhibit is scheduled to open May 20, 2011, and is being co-curated by Museum Chief Scientist, Dr. Spencer Lucas, and UNM Professor, Dr. David Gutzler. In addition to the exhibit, the project includes lectures, science cafes, public field trips, and other related programs.

Significantly, the Education Division received funding this fiscal year from the Public Service Company of New Mexico to expand the popular Junior Docent Program from an exclusively summer offering to a year-round school program. This teen mentorship program provides youth with the opportunity to increase their scientific knowledge, as well as gain experience in a professional work environment.

The Museum also received funding from the Sierra Club to support the Sandia Mountain Natural History Center's Field Ecology Program. The SMNHC is a featured partner in the Sierra Club's nation-wide initiative, "Building Bridges to the Outdoors." The Sierra Club began awarding its "Building Bridges to the Outdoors" grants in 2007 in response to recent studies suggesting that outdoor programs can reduce the incidence of childhood obesity and the effects of attention deficit disorder.

Research and Collections Department staff were heavily involved in collecting a world-famous Triassic amphibian bone-bed near Lamy, NM, during this fiscal year. The Department's paleontology curators also received extensive grant funding from the United States Bureau of Land Management, totaling approximately \$200,000, to undertake paleontological resource assessments in parts of Doña Ana, San Juan and Rio Arriba Counties.

The Museum's capital improvement projects this year included the building, remodel and repair of several infrastructures. Such projects included the Museum's new "Exhibit Studio," a 16,000-square-foot facility located at 1000 18th Street. What was once an old warehouse was remodeled to meet green building standards and is now occupied by Museum fabricators, artists, and designers.

Another capital improvement project included the construction of a new bioscience collection facility located in the Museum's Research Annex. Construction was completed in June 2010. The new space unites all the Museum's Science Staff and Collections into a single building, now known as the Research and Collections Annex. This new collections area is designed to exceed accreditation standards, improve operational efficiency, and free up prime public area in the main Museum complex.

The Museum ended its year with revenue reaching \$736,126 and remains a world-known and respected institution that has drawn thousands of visitors year-round for over the past 24 years. We are excited for the future as we bring forth new and exciting exhibits and fascinating educational and scientific programs.

Desert Reef

The museum's third collaboration with KNME TV, *Desert Reef*, premiered at the museum on July 30, 2009, in the Lockheed Martin DynaTheater, and aired on August 23, at 6:00 p.m. on KNME.

Desert Reef investigates how reef systems have adapted and evolved over time, how the establishment of geologic time-scale by paleontologists and geologists has woven together the narrative of a changing planet, and reveals how the quest for petroleum has contributed to our scientific knowledge of these phenomena.

New Mexico's beautiful Guadalupe Mountains, a 280-million-year-old fossil reef, and South Florida's Windley Key Fossil Reef Geological Park bear the signature of shifting sea levels and glacial activity, but each location tells a different part of the story.

Desert Reef is a partnership between KNME and the New Mexico Museum of Natural History and Science, sponsored by the Bureau of Land Management, Carlsbad Caverns National Park, the Albert I. Pierce Foundation, and the New Mexico Geological Society. Produced and Directed by Tim Aydelott.

Sun Dagger Explorer

The New Mexico Museum of Natural History and Science won a 2009 Mountain-Plains Museums Association Technology award in the multi-media category, as well as garnered honor from the American Association of Museums, for the Sun Dagger Explorer, an interactive model of the ancient calendar site in Chaco Canyon.

The Sun Dagger Explorer is an accurate, interactive digital recreation of a 1000-year-old celestial calendar

Overview of Sun Dagger Explorer Equinox Screen.



Walking With Dinosaurs

The Museum engaged in a promotional partnership with the live production of *Walking With Dinosaurs*, on tour in Rio Rancho, NM, March 17-20, 2009.

In addition to joint radio and other media promotion, the Museum hosted a kick-off event on December 10th, featuring an appearance by Baby *T. Rex*, one of the 17 life-sized, “live” dinosaurs from the acclaimed theatrical arena show, and Albuquerque Mayor, Richard Berry.

Students from the “Albuquerque Community Learning Center Project,” an afterschool program at neighboring Reginald Chavez Elementary, participated in this special program that also included a Q & A session led by Matthew Rimmer of *Walking With Dinosaurs*, and Dr. Tom Williamson, NMMNHS Curator of Paleontology. Public Information Officer, Roxanne Witt Celeskey, handled the Museum promotion and logistics of the event.

Sandia Mountain Natural History Center Receives Sierra Club Grant

The Sandia Mountain Natural History Center (SMNHC) was awarded a \$37,000 grant by the Sierra Club to support the SMNHC’s Traveling Ecology Field Program.

The Traveling Ecology Field Program is an innovative, four-hour program that introduces students across the state to their local ecosystem. Trained naturalists from the Sandia Mountain Natural History Center meet students in a local “wild area” such as a state park or national forest and lead them on a hands-on, discovery-based journey into the natural world around them. The goal of this free, standards-based program is to introduce over 3,000 students to the beauty and wonder of New Mexico while instilling an appreciation for the intricacies and interconnectedness of our ecosystems.

The SMNHC is a featured partner in the Sierra Club’s nation-wide initiative, “Building Bridges to the Outdoors.” The Sierra Club began awarding its



Mayor Richard Berry, with Baby T. and children from Reginald Chavez Elementary.

found in Chaco Canyon in northwest New Mexico. Using a set of intuitive controls, visitors can explore a high-resolution 3D model (made from a laser scan of the original Sun Dagger site) effortlessly moving through space and speeding through time to see how light passing through carefully-aligned rock slabs and onto spiral petroglyphs mark solstices, equinoxes, and other solar and lunar events. This interactive kiosk sits just outside the Museum’s planetarium, emphasizing the long history of astronomy in the southwestern U.S.

The Age of Dinosaurs in New Mexico

In December 2009, the Museum published *The Age of Dinosaurs in New Mexico*. This 84-page book serves both as a popular introduction to the Mesozoic Era in our state and as a guide to the Museum’s recently renovated Triassic, Jurassic, and Cretaceous exhibits. Chief Scientist Spencer Lucas compiled and wrote the text, Exhibit Design & Media Arts Manager David Baccadutre was the lead photographer, and illustrations came from Exhibit Designer Matt Celeskey and volunteer artist Mary Sundstrom. Publication of the book was funded through a gift from the Janet Upjohn Stearns Charitable Trust. *The Age of Dinosaurs in New Mexico* is available for purchase in the NatureWorks Discovery Store at the Museum.



Daniel Bush instructs a group from Eubank Elementary at “Best View Baldy.”

“Building Bridges to the Outdoors” grants to New Mexico organizations in 2007 in response to recent studies suggesting that outdoor programs can reduce the incidence of childhood obesity and the effects of attention deficit disorder.

By the end of the 2009-2010 school year, SMNHC staff traveled thousands of miles delivering the Ecology Field Program to elementary-aged students in New Mexico.

Exhibit Studio

After years of planning, lobbying, and hard work, the building remodel at 1000 18th Street, known as the Exhibits Studio, was completed in March 2010. Thanks to Foundation Executive Director, Jotina Trussell, the Museum was able to purchase the building in 2005. This design and fabrication facility has a total area of 16,000 square feet, and was remodeled to meet LEED Silver energy efficiency and green building standards.

Biological Collection Facility

Construction of a new biological collection facility located in the Museum’s Research Annex was completed in June 2010. The new space unites all the Museum’s Science Staff and Collections into a single building, now known as the Research and Collections Annex.

The Bio-Collection contains a diversity of plant and animal specimens, ethically collected for study and education from both southwestern and world wide habitats. The facility was designed to meet rigid museum standards for Bio-Collection conservation and also contains office and library space, a preparation lab, and a bug room to hold our carrion eating Dermestid Beetle colony.

Exhibitions

PNM Exhibit

As part of a PNM “Reduce Your Use” grant, the Museum was able to produce a small exhibit educating visitors about the importance of conserving resources. It also provided visitors with energy-savings tips and demonstrated the difference in energy consumption between an incandescent and CFL bulb. The grant also provided funds for the installation of motion sensors on lights in various public spaces, reducing the use of electricity by almost a third.

Driven to Explore

NASA’s newest traveling exhibit, Driven to Explore, embarked on a state-wide tour of New Mexico in January-February 2010 and made a stop at NMMNHS. The mobile, multimedia experience showcased the Constellation Program. The exhibit started with the Shuttle Program, continued with the progress of the International Space Station, and then showed how past achievements provide a rich foundation for future exploration. The walking tour included imagery and state-of-the-art models of the new Constellation Program’s next-generation launch vehicles and human spacecraft destined for use to explore the moon and beyond.

All That Glitters

The Museum sparkled with the amazing designs of New Mexico artists in the “All That Glitters” 2009 Jewelry Design Competition. Sponsored by the New Mexico Jewelers Association (NMJA), a non-profit organization, this year’s competition drew entries from over ___ jewelers. The competition was open to all NMJA members, as well as currently enrolled students of a jewelry-related class. Each piece of jewelry was judged on four criteria: originality of design, marketability, wearability and quality of craftsmanship.

Embellishing the jewelry were minerals from the Museum’s gem and mineral collection obtained with donations from NMJA.

Las Cruces and Artesia Road Show Exhibits

To assist with the Foundation’s fundraising efforts, the Exhibits Department produced two “friendraising” exhibits, which highlighted the natural history of Las Cruces and Artesia. They included fossil specimens from those areas and information about the Museum’s planned Paleozoic Hall.

2009 Nikon Small World Photomicrography Competition

20 winning photographs of the Annual Nikon Small World Photomicrography Competition were exhibited at the Museum. The Nikon International Small World Competition first began in 1974 as a means to recognize and applaud the efforts of those involved with photography through the light microscope.





Pages from the nature journal of Albuquerque artist Margy O'Brien, one of thirty-three artists featured in the Drawing on Nature exhibit.

Since then, Small World has become a leading showcase for photomicrographers from a wide array of scientific disciplines.

Drawing on Nature

Museum visitors had an opportunity to venture into the woods and wilds with the exhibition, Drawing On Nature. The exhibit featured the work of 30 female artists, including scientists, writers, photographers, designers, teachers, and wilderness guides. Drawing on Nature showcased a stunning collection of nature journals that were as unique and varied as the women themselves.

This exhibition was a rare opportunity to view the sketches, paintings, and written observations of such renowned artists as Ann Zwinger, Clare Walker Leslie, and Albuquerque resident Margy O'Brien, and learn about a rich tradition shared by such famed naturalists as Aldo Leopold, John Muir, Beatrix Potter, and John James Audubon.

Website

In July 2010, the Museum launched a new website at www.nmnaturalhistory.org. The first complete redesign in over six years, the new website features improved navigation, flexible event listings that can be organized by date, audience, or subject, and automated daily listings for special events and Dyna-Theater/Planetarium shows. In addition, the website runs on a powerful content management system, allowing designated staff throughout the museum to easily add or update information where appropriate. Christie Gross and Matt Celeskey in the Museum's Exhibit Design and New Media Department spearheaded the new site, in conjunction with Doug Patinka, Web Manager for the New Mexico Department of Cultural Affairs. A broad range of Museum and Foundation staff as part of the NMMNHS Web Committee provided content, organization, and design input.

Making Craters

The Museum invited visitors to an unusual event in January, as the Museum was host to a special weekend of prototype exhibits about comets, asteroids and meteors. The testing was part of a future national traveling exhibit called “Asteroids: Great Balls of Fire” developed by the Space Science Institute.

Awarding Winning Exhibit

The Sun Dagger Explorer, an interactive exhibit, which is part of the Museum’s “Space Frontiers” exhibit, won awards from both the Mountain-Plains Museum Association and the American Museum Association.

The Sun Dagger Explorer is an accurate, interactive digital recreation of a 1000-year-old celestial calendar found in Chaco Canyon in northwest New Mexico. Using a set of intuitive controls, visitors can explore a high-resolution 3D model (made from a laser scan of the original Sun Dagger site) effortlessly moving through space and speeding through time to see how light passing through carefully-aligned rock slabs and onto spiral petroglyphs mark solstices, equinoxes, and other solar and lunar events. This interactive kiosk sits just outside the Museum’s planetarium, emphasizing the long history of astronomy in the southwestern U.S.

The Sun Dagger Explorer software was designed and programmed by Alan Price at the Ohio State University’s Advanced Computing Center for the Arts and Design, based on research by Anna Sofaer of the Solstice Project and utilizing laser scans of the Sun Dagger site made by Western Mapping, Inc. The kiosk implementation was created by a partnership between the Solstice Project, Alan Price, and the New Mexico Museum of Natural History and Science.

Age of Dinosaurs in New Mexico

In December 2009, the Museum published *The Age of Dinosaurs in New Mexico*. This 84-page book serves both as a popular introduction to the Mesozoic Era

in our state and as a guide to the Museum’s recently renovated Triassic, Jurassic, and Cretaceous exhibits. Chief Scientist, Spencer Lucas, compiled and wrote the text, Exhibit Design & Media Arts Manager David Baccadutre was the lead photographer, and illustrations came from Exhibit Designer Matt Celeskey and volunteer artist Mary Sundstrom. Publication of the book was funded through a gift from the Janet Upjohn Stearns Charitable Trust. *The Age of Dinosaurs in New Mexico* is available for purchase in the NatureWorks Discovery Store at the Museum.

Climate Change

Exhibit staff continued development of the Climate Change exhibit. The exhibit will focus on how climate change will impact New Mexico and will feature a 30” Magic Planet illuminated sphere. This exhibit is made possible by an NSF grant in conjunction with EPSCOR.

2009 Naturescapes Photo Salon

The theme for the 2009 Naturescapes Photo Salon was “Being There: Photographers In Their Natural Habitat.” Photographers were asked to enter photographs taken in the place they like most to photograph New Mexico’s wildlife and natural wonders. To make the competition a bit more challenging and true to the theme, it was required that photographers include themselves in the photograph, whole or in part, as evidence that their being was there. The annual competition attracted photographers from around the State.

Gem and Mineral Shows

The Exhibit Fabrication Department represents the Museum by traveling a geology-themed exhibit at regional Gem and Mineral shows held throughout the year. Our exhibits are displayed along side other premier institutions such as the American Museum of Natural History, California Academy of Sciences and the Smithsonian Institute. This year’s exhibit highlighted several unique Triassic era fossil plants from Santa Fe County. The fossils were collected and prepared in 2008 by museum staff and trav-

eled to three major Gem & Mineral shows in FY 2009/2010.

The first stop was Denver, Co. in September 2009. The Denver Gem and Mineral show is the 2nd largest gem show in North America with an average attendance of 10,500 visitors. The 2nd stop for this exhibit was the Tucson Gem & Mineral show in February 2010. The Tucson show is the largest gem show in the world with an average attendance of 25,000 visitors. The Tucson show draws world-class exhibitions from mineral dealers, museum exhibitors and private collectors and represents an incredible opportunity for our museum to reach a very large audience in just one weekend. The 3rd stop for this exhibit was the Albuquerque Gem & Mineral show held at Expo New Mexico in March 2010. The Albuquerque Gem & Mineral club puts on a great show and reaches over 1,500 visitors in a single weekend. This show is an excellent opportunity for our museum to interact with local collectors and dealers and create strong relationships with local businesses.

New Exhibit Facility Opens

Thanks to strategic investment by the Department of Cultural Affairs, the warehouse building at 1000 18th Street has become the Museum's new "Exhibit Studio." Remodeled to meet green building standards known as LEED Silver, the facility is now occupied by museum fabricators, artists, and designers.

The Exhibit Studio serves as a centrally located resource for all of the State's museums. It contains two 4,000 square foot shops; one for metal welding, bending, and machining; the other for carpentry, plastics, and painting. The Studio also includes associated offices and storage, plus a bright graphic clean room to support the Museum's uniquely talented artists. After struggling with cramped and isolated conditions for over two decades, our exhibit professionals finally have ample space to develop unique permanent and traveling exhibits, and to assemble native New Mexican dinosaurs.

The new Exhibit Studio was remodeled to meet green building standards known as LEED Silver.



Education

- 148,477 people served on-site through direct educational programs
- 18,730 people served off-site with outreach programming
- Total served- 167,207

Education Facilities

Museum Naturalist Center

A visit to this hands-on living exhibit hall allows visitors to experience New Mexico's rich natural history in an interactive discovery room where people of all ages enjoy handling real fossils, examining a variety of specimens through a microscope, observing animals up close and personal, and discussing natural history with expert naturalists. The hands-on exhibits and live animals are maintained by an education department staff member

and a large group of trained and dedicated volunteers. The Naturalist Center serves an average of 8,000 visitors each month.

Sandia Mountain Natural History Center

This beautiful facility is an outdoor education site on the east side of the Sandia Mountains. Located on 128-acres of forest bordering the Cibola National Forest and containing over seven miles of trails, three classrooms, and one exhibit space, the SMNHC was recognized by the U.S. Department of the Interior as a National Environmental Education Landmark. The Albuquerque Public School District owns the facility and the Museum operates programs through a Joint Powers Agreement. The research and education programs are developed and implemented by three Museum educators and one APS teacher along with a small group of trained and passionate volunteers. The SMNHC served 14,491 visitors with direct educational programs in FY10.

Naturalist Center, Making Tracks



School Programs

APS Field Ecology Program

The Ecology Field Program serves all Albuquerque Public School District's fifth-grade students. The day-long curriculum enhances student understanding and achievement of the State's fifth-grade science standard on ecosystem content through field explorations that include discovery, observation, and hands-on learning in the outdoors. During the 2009-2010 schoolyear, the SMNHC served approximately 9,358 APS students, teachers, and parents.

Non-APS Field Ecology Program

Sandia Mountain Natural History Center education staff travel around New Mexico bringing the Museum's community-based version of the Field Ecology Program to elementary schools state-wide. Funded by The Sierra Club's Building Bridges to the Outdoors grant program, the Museum served 3,307 community members.

Museum and Community-Based Programs

The Sandia Mountain Natural History Center education staff, Museum education staff, and Museum volunteers provide a variety of natural history outreach presentations to local elementary and middle school classes. Topics included Ecology Field Program Pre-Visit, Rocks and Minerals, Dinosaurs, Arthropods, and Prehistoric New Mexico.

Science Crawl

The Museum and KNME partner to provide an interdisciplinary full-day visit to the Museum. Museum-educator-led and teacher-directed activities, tours of the exhibit halls, and a planetarium show outline the day. The FY10 event served Jefferson Middle School's sixth-grade classes.

Children's Water Festivals

The Museum participated in both the two-day Albuquerque Children's Water Festival and the two-day Rio Rancho Children's Water Festival teaching students about wildlife dependant on New Mexico riparian habi-

tats. Third-grade students investigated aquatic insects up-close and answered a series of inquiry-based questions.

Regional and State Science Fairs

Funded by the Albuquerque Rotary Charitable Foundation, a Museum education staff member and two trained volunteers are able to travel around the state as judges at the six regional science fairs, the CENAC (Coalition of Educators for Native American Children) science fair, and the State science fair. In addition to judging, the Museum sponsors award certificates and prizes.

Materials and Kits Program

The Museum offers a variety of educational curriculum, teaching specimens, hands-on activity kits, and supplies for the classroom audience. Teacher Resource Kits are available for loan through the Sandia Mountain Natural History Center, the Naturalist Center, and Albuquerque Public Schools' Unified Resources Library. Kits include real natural history specimens, science-quality models, and lesson plans. Topics include: ecosystems, fossils, rocks and minerals, skulls, and marine organisms. Kits are loaned to several classes each month.

Teacher Professional Development Program

Each fall and spring semester, the Museum provides teacher professional development opportunities through curriculum training workshops. Workshop topics range from dinosaurs to ecology to local geology and are designed for teachers from pre-K through high school. FY10 workshops included, Ecosystems Explorations (compliments the kit-based APS elementary science curriculum), Bosque Education Guide, Great Explorations in Math and Science, New Energy Futures, Project WILD, Aquatic WILD, and Project Learning Tree. One thousand three hundred and nineteen teachers gained valuable resources and science education content.

Museum Teaching Fellows

Through a partnership with the Science Education Institute of the Southwest, this program is co-sponsored by the Museum and the Albuquerque BioPark. After an application process, six elementary teachers were chosen

to participate in this 80-hour summer program that offers valuable learning and resource opportunities for teachers that benefit their classroom science curriculum.

Teachers Open House

A partnership with KNME and a collaboration between the Museum, Explora, and the Albuquerque Museum opened their doors for free admission to teachers from 5pm-8pm on September 30, 2009. Teachers Open House for FY10 welcomed 530 teachers through its doors. In addition to showcasing the educational programs and exhibits of each participating museum, 58 other local educational organizations set-up as exhibitors to provide their program information and materials to teachers.

Spiketacular Adventures Program

Youth Programs

Young Explorers

This summer science field-based and museum-based program explores New Mexico's natural history past and present. Each weeklong curriculum ties together the natural resources discovered in the field with the Museum's exhibits, classroom, and collection resources. During the summer of 2009, the program offered three weeks of summer programming with ten week-long camps. One-hundred-forty-two children attended.

Asteroids! Teen Program

The Asteroids! Teen Program is a three-year project funded by a grant from the Space Science Institute in 2009, and chosen as only one of three participating museums across the Nation, the Museum has assembled a small but diverse group of teens as part of its Student Asteroids Team. The team met regularly on Sunday afternoons to explore asteroid science content, contribute feedback on the asteroids exhibit, Great Balls of Fire, and contributed to an exhibit prototyping event at the Museum on January 30-31, 2010.



Prehistoric Preschool, Astronaut Role Play

Family Programs

The Museum offers this program to enhance the family museum experience by highlighting different natural history topics through hands-on, festival-style events held in the Museum's atrium.

Prehistoric Preschool

The Prehistoric Preschool program is designed for three-to-five-year-old children and their adult partners, providing a supportive environment for guided exploration of natural history topics. Sessions of classes were offered on Thursday morning, Saturday morning, and Saturday afternoon. Each session consisted of four, two-hour classes and four sessions were offered this year. FY10 sessions were: Paleontology 101, Astronomy 101, Prehistoric Creatures, and New Mexico Habitats.

Community Science Connections & Celebra la Ciencia

The Community Science Connections and Celebra la Ciencia coalitions are funded by a grant from the Institute of Museum and Library Services and is administered by the Museum. It is a coalition of Albuquerque organizations dedicated to engaging families in hands-on science by hosting a series of bilingual family fun day events at each of the Coalition's partner institutions. The Museum hosted the Celebra la Ciencia's project final event during Hispanic Heritage Month. Over 1,300 people visited the Museum to participate in activities from eight Museums and six community partner organizations. The Washington Middle School Mariachi band entertained as visitors explored the Museum.

First Saturdays

The First Saturdays at the Sandia Mountain Natural History Center are the day when the trails, exhibit room, and bird observation deck are open and free to the public during the first Saturday of March through September. Educators are on hand during this time to lead guided hikes, answer questions, and offer a special class each month. These public days brought over 560 community members to the Center.

Voices in Science Program

This program connects local, regional, and national research scientists and their work to the public through a lecture-style format. Lectures are offered on week-day evenings or Saturday mornings. A selection of lectures for FY10 included: Barry Kues, Ph.D.--Paleontology of New Mexico, Rob Dunn Ph.D.--Every Living Thing, Kirt Kempter on the Geology of Kasha-Katuwe Tent Rocks National Monument, David Herring of NOAA—Climate Change, Rob Yaksich-- The Seven Shades of Bosque del Apache, and Ron Sutcliff—Chaco Astronomy.

Classes

The Museum continued its adult education natural history classes that include lecture, hands-on specimen investigation, and staff-led museum and collections tours. Classes were offered on week-day mornings and

class topics for FY10 included geology of Tent Rocks, Albuquerque geology, New Mexico geology, rocks and minerals, and naturalist illustration.

Field Trips

Natural history-themed field trips bridge the Museum's thematic science concepts to contemporary New Mexico landscapes. These field trips are limited to 24 people and offer participants an intimate opportunity to discover unique aspects of southwest natural history. Tours are led by museum staff and research scientists. Field trips for FY10 included a visit to Kasha-Katuwe Tent Rocks National Monument, Bosque del Apache for migratory bird observations, and the Ladder Ranch for mountain lion research.

Volunteer Programs

Adult Docent Program

A corps of over 350 active volunteers supports the Museum's science, exhibits, education, and customer service departments. Some of this work includes, interpreting exhibits to visitors, preparing fossils, animal exhibit care, educational outreach, leading tours for school groups, trail maintenance, landscaping, and administrative support. Volunteer contributions each year are equivalent to the time of 18 full-time employees. In FY10, volunteers aged 7-90 contributed 40,245.5 hours. Volunteers are supported in their efforts through training sessions, continuing education opportunities, field trips, and appreciation events.

Junior Docent Program

Funded by a grant from Lockheed Martin, the 2009 summer volunteer program is for students who have completed seventh through eleventh grade. After participating in an intensive, weeklong training session, Junior Docents work as educational assistants in the Museum's exhibit halls at hands-on science carts interpreting hall content to museum visitors of all ages. The 2009 summer program served 45 docents.

Collections & Research

New Dinosaur Discovered

A new horned dinosaur, one of the largest known, was discovered in northwestern New Mexico. Named *Ojoceratops fowleri*, it was a precursor to both *Triceratops* and *Torosaurus*, two well-known ceratopsid dinosaurs from the end of the Cretaceous Period, 65-70 million years ago. The genus name is derived from the Ojo Alamo Formation, the rock unit in which it was found, and the species is named in honor of the discoverer, Mr. Denver Fowler, now a Ph.D. student at Montana State University.

Dr. Robert Sullivan, Senior Curator of Paleontology and Geology at the State Museum of Pennsylvania, Harrisburg, and New Mexico Museum of Natural History and Science Curator of Paleontology, Dr. Spencer Lucas, co-authored the study describing the new ceratopsid dinosaur, which appears in the peer-reviewed book *The Horned Dinosaurs*, an edited volume, published by Indiana University Press. (The book was released June 3, 2010.)

According to Lucas, “Based on other bones, such as the lower jaw and prementary, found in the same rock formation, *Ojoceratops* rivaled the size of *Torosaurus* and some of the larger specimens of *Triceratops*.”

New Species of Tyrannosaur Discovered in Southwestern U.S.

In the featured article of the January 2010 issue of the *Journal of Vertebrate Paleontology*, NMMNHS paleontologist, Thomas Williamson, and Thomas Carr of Carthage College, brought a new species of tyrannosaur to the state. The new tyrannosaur, named *Bistahieversor sealeyi* (pronounced: bistah-he-ee-versor see-lee-eye), was similar to many of its

The skull of the holotype specimen (NMMNH P-27469) of Bistahieversor sealeyi on display in the Cretaceous Seacoast exhibit at the New Mexico Museum of Natural History and Science. Photo by David Baccadutre.

more northern tyrannosaur contemporaries, including *Albertosaurus* and *Daspletosaurus*, but retained many more primitive features of the skull, including distinctive features of the snout, forehead, and horny projections over each eye. It lived about 74 million years ago. An analysis that examines the placement of *Bistahieversor* within a family tree reveals that it is more primitive than many of its contemporaries, but has the deep snouted skull of advanced tyrannosaurs lacking in more tyrannosaurs described from Asia and the east coast of North America. *Bistahieversor* is the most primitive of the large tyrannosaurs that has the distinctive deep-snouted skull found in the advanced tyrannosaurs and brought to extreme by *Tyrannosaurus rex*. Williamson and Carr speculated that after tyrannosaurs first dispersed into North America, the rise in global sea level cut off the tyrannosaurs of the East Coast from those of Western North America and Asia. Tyrannosaurs subsequently evolved deep snouts in western North America and these became dominant there and dispersed back into Asia.

Bistahieversor sealeyi is the first valid new genus and species of tyrannosaur to be named from western North America in over 30 years.



Ancient Biodiversity and Global Change in the New World Tropics

Curator of Paleontology, Gary S. Morgan, is Co-Principal Investigator on a \$3.8 million Partnerships in International Research and Education (PIRE) grant, funded by the National Science Foundation, for the project entitled, "Ancient biodiversity and global change in the New World Tropics: A once-in-a-century opportunity along the Panama Canal."

The project will study the history of climate change and diversity in Panama. Students and researchers participating in the five-year grant will collect fossils from deposits excavated from the Panama Canal during construction to widen and straighten the channel and build new locks. The project will expand researchers' understanding of global changes that occurred when the Isthmus of Panama formed, creating a land bridge between North America and South America.

Partners in the grant include: The Florida Museum of Natural History; Smithsonian Tropical Research Institute, Panama; the New Mexico Museum of Natural History and Science; Florida State University, Panama Canal Campus; Biomuseo, Panama; Universidad de Panama; Sociedad Mastozoológica de Panama; and Autoridad del Canal de Panama.

The grant involves field and research projects, educational programs, and a traveling museum exhibit highlighting the PIRE grant discoveries in Panama.

Curators

Spencer G. Lucas, Chief Scientist

The primary achievement of the Geoscience Collection in the past fiscal year (2009-2010) is retaining and enforcing previously established standards for specimen cataloging and integration into the existing collection. The collection inventory that was completed in the winter of 2008 serves as a major tool that allows easier access and organization of the collection for both NMMNHS science staff and visiting researchers. This past year we have maintained the standard set by the inventory, rigorously documenting the location of specimens within the collection so they can be easily accessed for research or display.

Proper collection and integration techniques are taught to collection volunteers who assist the collections manager with cataloging and filing. Maintaining this level of collection organization will be key over the next fiscal year as the new Track Collection space becomes available, which will necessitate moving a large portion of the collection into the new space, and AAM reaccreditation, which will include an onsite visit and inspection of the Geoscience Collection in early 2011.

During the 2010 fiscal year, Dr. Lucas received approximately \$200,000 in BLM funding to support the Geoscience Collection and to undertake an evaluation of the paleontology of the Prehistoric Trackways National Monument near Las Cruces.

Dr. Lucas conducted field research throughout New Mexico, especially in the Robledo Mountains, Mud Springs Mountains, and the San Juan Basin. Dr. Lucas also conducted museum research at the Smithsonian and the State Museum of Pennsylvania.

Dr. Lucas published 18 articles in scientific journals, 49 articles in edited books, four monographs, 34 abstracts and co-edited four books. The Museum published six NMMNH Bulletins under Dr. Lucas' direction.

Dr. Lucas serves as co-curator of the *Degrees of Change: New Mexico's Climate Forecast* exhibit, an exploration of climate change, currently in development with New Mexico's Experimental Program to Stimulate Competitive Research (NM EPSCoR).

Thomas E. Williamson, Curator of Paleontology

During the FY, Dr. Williamson was awarded \$25,000 for "Vertebrate Fossils from BLM Lands of New Mexico, Project #3805," and \$24,051.00 from the BLM National Landscape Conservation System.

Dr. Williamson published (or In Press) in major peer-reviewed journals (*Journal of Vertebrate Paleontology*, *Historical Biology*, *Acta Palaeontologica Polonica*), six papers, six abstracts, and submitted two papers (in review; Cretaceous Research, *Naturewissenschaften*).

Dr. Williamson conducted research on Paleogene geology, stratigraphy, and vertebrate faunas in the field (northwestern New Mexico) and at the Ameri-

can Museum of Natural History, the Field Museum of Natural History, and the United States National Museum.

During the FY, Dr. Williamson was interviewed by several news agencies, including interviews for a live radio program in Ontario Canada, the *Albuquerque Journal*, *Illustreret Videnskab* (Science Illustrated), Robin/Tani Media Factory, Inc., and for online news postings for *Discovery News* and *National Geographic News*.

Dr. Williamson gave presentations at the University of New Mexico-Gallup, a local APS elementary school, and local community groups (New Mexico Friends of Paleontology, Friends of the Sandias). In addition, Dr. Williamson participated in the *Walking With Dinosaurs* event at the museum, by doing a presentation for children from Reginald Chavez Elementary, and was a guest panelist at the National Landscape Conservation System, Bureau of Land Management conference in Albuquerque.

Dr. Williamson also served as a presenter for a *Curator's Coffee*, participated in Docent and Junior Docent Training, and supervised five museum volunteers and two research assistants.

Gary S. Morgan, Curator of Paleontology

During the 2010 fiscal year, Gary S. Morgan published four papers including: Description of an oreodont skeleton from the Bosque del Apache National Wildlife Refuge in *New Mexico Geology*; Neogene vertebrates from Socorro County in the *New Mexico Geological Society Guidebook*; Plio-Pleistocene vertebrates from Florida in *Quaternary International*; and a new peccary from Florida in the *Museum of Northern Arizona Bulletin* (See complete citations under Publications). Finished two papers (with Nick Czaplewski from the University of Oklahoma as coauthor) on fossil bats for a book on bat evolution by *Cambridge University Press* (see Publications below). Worked on two long papers that will be finished in 2010: 1) Description of six Pliocene vertebrate faunas from the Elephant Butte area near Truth or Consequences that will be submitted to the *New Mexico Museum of Natural History Bulletin*. 2) A review of the

Quaternary fossil record of crocodiles in the West Indies that will be submitted to the *Bulletin of the Florida Museum of Natural History*. And, reviewed eight papers for scientific journals/books, including reviews for: *Caribbean Journal of Science*, *Journal of Archaeological Science*, *Journal of Vertebrate Paleontology*, *Neues Jahrbuch für Geologie und Paläontologie*, *PaleoBios*, and *Southeastern Naturalist*, and book chapters on the Great American Faunal Interchange for a volume on the evolution of South American fossil mammals and fossil turtles from Florida for a volume on the evolution of turtles.

Field work and research trips included:

- A field trip to Panama to collect Miocene vertebrates along the Panama Canal as part of a long-term research project funded by the National Science Foundation.
- A six-day field trip to the III Ranch area near Safford, Arizona to collect Pliocene vertebrate fossils under a contract through the BLM.
- Three field trips to the BLM Sombrillo Area of Critical Environmental Concern (ACEC) near Chimayo, NM. Miocene mammals, including horses, camels, and mastodons were collected.
- Two field trips to the BLM El Palacio Offroad Vehicle Area in First Wash near Chimayo, NM. A large Miocene tortoise shell and a pair of lower jaws of a mastodon were collected.
- Three field trips to collect fossils on BLM land in the Truth or Consequences and La Union areas in southern New Mexico. Shells of Pliocene land tortoises and sediment collected for screenwashing.
- Two field trips to collect Pliocene fossils in the Arroyo de la Parida area north of Socorro, NM.
- A week long trip to Abaco in the northern Bahamas, studying a large sample of skulls and skeletons of fossil crocodiles from an underwater blue hole site on Abaco.
- Three days at the Florida Museum of Natural History at the University of Florida to work on a research paper on fossil crocodiles from the Bahamas and Cayman Islands.

Morgan helped pack and relocate the Bioscience Collection from the main museum building to the newly renovated collection facility in the Collections and Research Annex, collected about 150 new localities of Miocene and Pliocene vertebrates from New Mexico, and cataloged about 250 specimens of Miocene, Pliocene, and Pleistocene vertebrates from New Mexico.

Meetings attended included, the New Mexico Geological Society annual meeting in Socorro, and a two-day meeting at Sevilleta National Wildlife Refuge on the History of the Horse in the American Southwest. Morgan presented a paper on the fossil history of horses in New Mexico.

Morgan is Co-Principal Investigator on a grant recently funded by the National Science Foundation (NSF) Partnerships in International Research and Education (PIRE) program entitled *Ancient biodiversity and global change in the New World Tropics: A once-in-a-century opportunity along the Panama Canal*, and collaborator on a grant funded by the NSF Informal Science Education program, entitled *Natural History of the Horses of the American West: Around the world and through the ages*.

Other grants and contracts include:

- National Geographic Society grant for the Bahamas Paleontology Project (\$75,000)
- U. S. Bureau of Reclamation contract to maintain curation of fossil vertebrates in the NMMNH collection from USBOR land in New Mexico (\$5,000).
- U. S. Bureau of Land Management contract to survey Miocene fossil vertebrates in the El Palacio area near Chimayo in Rio Arriba County, New Mexico (\$10,000).
- U. S. Bureau of Land Management contract to survey Pliocene fossil vertebrates in the III Ranch area near Safford in Graham County, Arizona (\$7,000).

Morgan presented five public lectures, includ-

ing the Friends of the Sandia Mountains, New Mexico Friends of Paleontology, NMMNH volunteers, Festival of the Cranes, and the UNM Gallup Science Colloquium. Topics of the lectures were Ice Age animals from New Mexico (three talks), fossils from Panama (one talk), and fossils from the Bahamas (one talk).

In addition, Morgan provided tours of the Vertebrate Paleontology Collection and Preparation Lab to a total of about 90 people, including students in NMMNH summer classes, senior citizens from OASIS, and students from Central New Mexico Community College and the University of New Mexico.

Morgan also participated in Docent training on the Tertiary and Ice Age halls, identified fossils for members of the public, and supervised six volunteers.

Geoscience Collections Growth & Statistics for Fiscal Year 09-10

*Submitted by Justin A. Spielmann,
Collections Manager*

- 2857 specimens cataloged in fiscal year 09-10 (NMMNH P-58750-P-61607)
- 359 localities cataloged in fiscal year 09-10 (NMMNH L-7773-L-8132)
- 549 visitors served by Geoscience Collection tours

Brian Grace, Registrar

The Museum Registrar continues to maintain records for the Museum's collections as well as process incoming/outgoing loans. In addition, the Registrar spent much of the 2009-2010 fiscal year working on AAM reaccreditation and preparing for the upcoming site visit along with dedicated staff.

Larry Rinehart, *PaleoPreparator*

Field work included a one-week trip to the Snyder quarry; nine field jackets were obtained, bringing the total from that quarry to 107. Work at the Lamy amphibian quarry continued, where the total number of jackets collected has reached 42, including one jacket that measures seven by twelve feet. And, twelve jackets have been collected at the Anton Chico bonebed; three more are in progress. Rinehart assisted in survey and collection of Robledo Mountains trackway fossils.

A few hundred specimens have been prepared this past year. The most significant include several metoposaur skulls and a gigantic phytosaur jaw from Lamy, a metoposaur skull and shoulder girdle from St. Johns, AZ, and pelycosaur material from several northern NM sites.

A large class (16 individuals) of preparators was trained for Fossilworks. The training concentrated more on small, delicate work than on large dinosaur bones.

Rinehart made several conference presentations, including Society of Vertebrate Paleontology, Geological Society of America, and the New Mexico Geological Society, and coauthored journal articles, notably the *Journal of Vertebrate Paleontology* on *Typhothorax* and NMMNHS Bulletin 45, The Paleobiology of *Coelophysys bauri*, which was the culmination of several years of work on the growth, allometry, life history, and general biology of these dinosaurs.

Patricia Gegick, *Bioscience Collections Manager*

The first six months of the fiscal year were spent cataloging and re-housing the Gordon dry and fluid preserved mollusk specimens in preparation for the AAM site visit. Specimens were also cataloged and installed in the four other collections. Gegick finished processing and installing the small mammals from Accession No. 2008.009, and, successfully de-accessioned the

Lowrie reprints to the Division of Arthropods at the Museum of Southwestern Biology at the University of New Mexico.

Bioscience Collections provided displays and tours to nine specially scheduled adult and children's programs and eight public tours, hosted artists from the *En Plein Air* workshop and the Enchanted Lens camera club.

Dr. Robert Tague, a physical anthropologist from Louisiana State University who is studying *Ochotona* vertebrae worked in Collections for three weeks and Connor O'Laughlin, Assistant Director of the City of Albuquerque Museum used our collection for archaeological reference. Gegick participated as the database person at the 2nd annual Bioblitz! Event, sponsored by the Museum and the Rio Grande Nature Center State Park.

Loans were processed and shipped to the Broad Institute in Cambridge, MA, and to Universidad Nacional Autónoma de México. Beginning in January of 2010, significant time was spent in preparation for the move of Bioscience Collections to the new facility across 18th Street in the Museum Annex, including meetings with architects, logistics planning, and packing of supplies and fluid specimens. Shelves of mollusks, birds and mammals were shrink-wrapped to protect them during relocation. The cabinets and cases of dry specimens and frozen tissues were moved June 23-June 26 with help from four volunteers from Kirtland Air Force Base.

During the fiscal year, 2009-2010, there were at least six publications in national journals by researchers using loans of specimens and/or tissue from the Bioscience Collections.

Larry S. Crumpler, *Research Curator*
Volcanology & Space Sciences

Dr. Crumpler's current research is divided between two topics: 1) young volcanic terrains in both New Mexico and Arizona, specializing

in the physical processes of volcanism, particularly the relatively unstudied volcanology of late Cenozoic basaltic volcanism in New Mexico; and 2) geology of the terrestrial planets with emphasis on planetary volcanism. His field work has focused on geologic mapping of youthful volcanic terrains and the physical volcanology of lava flows. He has spear-headed several public education efforts in regional volcanism and local geology.

Currently Crumpler is a mission Science Team member on the Mars Exploration Rover (“MER”) mission where he continues to play a leadership role in daily planning of Spirit’s “natural history” exploration of the surface of Mars. Recently he was also selected as a Science Team Member on the Mars Reconnaissance Orbiter high-resolution camera (“HiRISE”). HiRISE is imaging the surface of Mars with resolutions of centimeters. He is also a collaborator on the Mars Odyssey orbiter Gamma Ray Spectrometer (“GRS”) instrument.

Dr. Crumpler also supports the museum as an instructor in various education programs, including field trips, lectures, and Curator’s Coffees.

Publications

Spencer G. Lucas

NMMNH Bulletin 45: The Paleobiology of *Coelophysis bauri* (Cope) from the Upper Triassic (Apachean) Whitaker quarry, New Mexico, with detailed analysis of a single block by Larry F. Rinehart, Spencer G. Lucas, Andrew B. Heckert, Justin A. Spielmann and Matthew D. Celleskey

NMMNH Bulletin 46: The taxonomy and paleobiology of the Late Triassic (Carnian-Norian: Adamanian-Apachean) drepanosaurs (Diapsida: Archosauromorpha: Drepanosauromorpha) by Silvio Renesto, Justin A. Spielmann, Spencer G. Lucas and Giorgio Tarditi Spagnoli

NMMNH Bulletin 47: Ichnology of the Upper Triassic (Apachean) Redonda Formation, east-

central New Mexico by Spencer G. Lucas, Justin A. Spielmann, Hendrik Klein and Allan J Lerner. NMMNH Bulletin 48: New Smithian (Early Triassic) ammonoids from Crittenden Springs, Elko County, Nevada: Implications for taxonomy, biostratigraphy and biogeography by James F. Jenks, Arnaud Brayard, Thomas Brühwiler and Hugo Bucher.

NMMNH Bulletin 49: Carboniferous-Permian transition in Cañon del Cobre, northern New Mexico edited by Spencer G. Lucas, Jörg Schneider and Justin A. Spielmann.

Thomas E. Williamson

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Gary S. Morgan

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Justin Spielmann

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Larry S. Crumpler

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Financial Statements

*Statement of Revenues and Expenditures
General Fund
Fiscal Year Ending June 30, 2010*

REVENUES

Admissions	679,339
Other Sales & Services	499
Building – rental or lease	25,051
Other gift & grants	0
General fund appropriation	2,817,400
Miscellaneous revenue	0
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Total Revenues	3,522,289
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EXPENDITURES

Administrative	
Salaries and wages	2,086,700
Employee benefits	769,600
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	2,856,300
Operating	
Contractual services	90,700
Other operating costs	469,900
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	560,600
Total Expenditures	3,416,900
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Excess (Deficiency) of Revenues over Expenditures	105,389