

# CATALYST

DENVER MUSEUM OF NATURE & SCIENCE MAGAZINE

AUTUMN 2017



INSIDE ///

ULTIMATE DINOSAURS

NATURE'S AMAZING MACHINES

CONQUEST OF THE SKIES 3D

See nature's remarkable  
**FEATS OF ENGINEERING**



*Nature's*  
**AMAZING**  
**MACHINES**

**EXHIBITION NOW OPEN.**  
**FREE FOR MEMBERS!**

Pick up your limited edition trading card

Dear Members:

It's been more than three years since we opened the Avenir Collections Center, and nearly all the artifacts and specimens have been relocated to their new home. We are grateful to the many supporters that have made this possible, including the Avenir Foundation and most recently the National Endowment for the Humanities, which just awarded a generous grant to rehouse the archaeology collections.



Before the preservation center was built, the collections were stored in 49 different locations. Some of these spots were behind dioramas! But many were large areas that have been freed up and are ready to be reinvented for both public and administrative purposes. Most of this work will go on behind the scenes for the next few years, but you may notice some activity while you're visiting the Museum.

The zoology collections were housed in an area on Level 1 between the north and south atriums under the IMAX Theater. The mammals, birds, reptiles, arachnids, insects, and shells, along with the zoology staff, have vacated the area. Construction is now underway to create a special place for our volunteers.

Since the first day I stepped through the doors of the Museum, I have been continually awed by our volunteers. Every year about 1,800 individuals of all ages and backgrounds devote hundreds of thousands of hours to the Museum. I consider them the "secret sauce" behind our success and our commitment to the community.

Because of their dedication, a new Volunteer Engagement Center is being created in the former zoology collections space, where our volunteers can comfortably collaborate, share ideas, and gather with new meeting rooms, offices, and a lounge that is nearly 50 percent larger than the existing one.

Thank you to Ed Warner and John Freyer, each a Museum volunteer and trustee, for establishing a \$500,000 incentive fund to support this project. There is an opportunity for volunteers and others to help unlock the incentive fund and to add a lasting personal touch on a Volunteer Inspiration Art Wall. I invite you to find out more on p. 11 or at [dmns.org/engage](http://dmns.org/engage). I extend my deepest gratitude to our volunteers and look forward to seeing them enjoying their new place in the heart of the Museum.

George Sparks  
President and CEO  
[president@dmns.org](mailto:president@dmns.org)

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Join Our Community:



### ON THE COVER

From the paleontology collections

*Simosuchus clarki* skull  
"Pug-nosed crocodile"

Late Cretaceous Period, Maevarano Formation  
Mahajanga Basin, Madagascar  
UA 8679

See *Simosuchus* in *Ultimate Dinosaurs!*



Photo by Rick Wicker



## CONQUEST OF THE SKIES 3D

The ability to fly has long sparked human curiosity, and envy! In *Conquest of the Skies 3D*, opening Friday, October 6, you will travel through time and around the world to unravel the 300-million-year story of how animal aviators have evolved into the 100 billion creatures flying through the air today. Explore nature's ingenuity as you experience a falcon's point of view,

see hummingbirds flutter in slow motion, accompany bats in the hunt, meet bizarre lizards that glide with the greatest of ease, and find out how clumsy beetles got their wings. This film is the perfect complement to the exhibition *Nature's Amazing Machines*. Get tickets @ [dmns.org/imax](http://dmns.org/imax).



## EDUCATORS NIGHT

It's back to school and time for our free annual Educators Night for teachers and their guests on Monday, September 25. Check out the incredible possibilities for teachers and students, offered by our many SCFD partners, grab a snack, sip a cocktail, and relax. Find out more and reserve your spot @ [dmns.org/teachers](http://dmns.org/teachers).

During this event, the Museum will introduce brand-new experiences teachers can bring directly to their classrooms! These exciting programs, designed for pre-K through middle school students, will transform classrooms into wonderlands of discovery and challenge students to imagine possibilities, take risks together, and fuel their passion and curiosity for nature and science. Booking is a snap on our greatly improved online system. Reservations are open @ [dmns.org/teachers](http://dmns.org/teachers).

## BRAIN SCOOP AT THE MUSEUM

Brain Scoop, a popular YouTube show based out of The Field Museum of Chicago, hit the road and came to Denver to visit our Museum. Hosted by Emily Graslie, chief curiosity correspondent, this lively program takes viewers behind the scenes to dig deeper into the fascinating world of museums and the natural and cultural sciences.

Graslie spent a week exploring the Museum and producing footage with our curators for three new episodes that debuted in August: Nicole Garneau showing highlights from the health sciences collections and what goes on in the Genetics of Taste Lab, Paula Cushing behind the scenes in the new arachnid lab, and Steve Nash discussing examples from the peace medal collection, considered one of the best in the country.

Check out the episodes at [youtube.com/user/thebrainscoop](http://youtube.com/user/thebrainscoop).

## SCAVENGER HUNTS

Add some extra fun to your Museum visit and make some new discoveries with our scavenger hunts. The topics include Museum Treasures, Colorado State Symbols, U.S. National Parks, and the perennial favorite Elf Hunt. Pick them up at the Information Desk across from the Museum Shop, or find them @ [dmns.org/scavengerhunts](http://dmns.org/scavengerhunts).





## ANIMAL INGENUITY

In *Nature's Amazing Machines*—now open on Level 3—you and your family will discover the marvels of natural engineering with dozens of scientific models, engaging interactives, and real objects, including one of our Museum's toucans that is traveling with the exhibition.

You can see other examples from our collections in the zoology exhibit case on Level 1, under the escalator near Coors Gems and Minerals Hall. Carrier shells look like pieces of abstract art, but they are created by carrier snails that attach found objects to their shells, perhaps to provide stability or camouflage. Hornets nests, hut-like structures built by bowerbirds, and pack rat nests, called middens, also show stunning natural solutions to challenges in the biological world. Take a moment to bend down and look into some of the nests!

*Nature's Amazing Machines* is free for members. Don't forget to pick up your monthly limited edition trading card when you visit. Find out more @ [dmns.org/NAM](https://dmns.org/NAM).

## BIENNIAL OF THE AMERICAS

The fourth Biennial of the Americas will be held around Denver on September 12–16, with a lineup of symposiums, cultural events, and exhibits featuring artists, musicians, and civic leaders from across the western hemisphere.

Our Museum will feature the new display, *El Alebrije: Una historia en común*, from the Museo de Arte Popular of Mexico City. The alebrijes are beautiful, brightly colored Mexican folk art sculptures depicting wild and mythical creatures, handcrafted by artisans in Mexico. The Museum collaborated with the Museo de Arte Popular and the Mexican Cultural Center of Denver to present the display, with support from the Consulate General of Mexico. The alebrijes will be on exhibit in the North American Wildlife Hall, Level 2, near the moose-caribou diorama through January. Find out more @ [biennialoftheamericas.org](https://biennialoftheamericas.org).



© Museo de Arte Popular



## HEAVENS ABOVE

Dolphins were a familiar sight to Greek sailors, so it is not surprising that Delphinus, “the dolphin” in Latin, was one of the 48 constellations cataloged by the Greek astronomer Ptolemy in the 2nd century. It remains among the 88 modern constellations recognized by the International Astronomical Union. Delphinus is a lesser known constellation, ranked 69th in size, but home to star systems and deep sky objects, such as NGC 6905, the Blue Flash nebula.

Delphinus can be seen between latitudes +90° and -70°. From mid-northern latitudes in Denver, look for it during the autumn months high in the southern sky around 9 p.m.

Although it is named for the dolphin, its shape also resembles a kite. A good way to find Delphinus is to first locate the Summer Triangle, an astronomical pattern with three bright stars, Altair, Deneb, and Vega. Delphinus is to the east (left) of Altair and to the west of the star Enif, in the constellation of Pegasus. Find out more about the autumn sky @ [dmns.org/heavensabove](https://dmns.org/heavensabove).

## AMERICAS LATINO ECO-FESTIVAL

The Museum is a proud co-sponsor and the host site for the fifth annual Americas Latino Eco-Festival the weekend of September 15–17. This event creates a space to elevate the voices of communities of color and women in conservation and cultural leadership, fostering collaboration to better tackle environmental problems and solutions. The festival features visual art, films, live performances, artist interactions, and activities for families and children. Find out more @ [americaslatinoecofestival.org](https://americaslatinoecofestival.org). Note that Sunday, September 17, is a SCFD Community Free Day.



## TOP STORY:

### ULTIMATE DINOSAURS ROARS INTO THE MUSEUM

Meet *T. rex*'s biggest, baddest, newest members of the family! The temporary exhibition *Ultimate Dinosaurs*—opening for members on Thursday, October 5—goes beyond familiar dinosaurs to showcase some of the most spectacular fossils unearthed in recent years. Evolving in isolation, the discoveries from Africa, South America, and Madagascar are among the strangest creatures you have ever met.

Who were these great beasts? Why are they so unusual? And why is one named after a rock 'n' roll star? The answer to these and other questions await, as guests become immersed in a prehistoric wonderland and let their inner eight-year-olds (or their actual eight-year-olds) come out and play. From

the tiny *Eoraptor* to the massive *Giganotosaurus*, you will see why curiosity about these prehistoric legends will never go extinct.

Groundbreaking research from scientists around the world is revealing this menagerie of new dinosaurs. The exhibition experience is vivid as guests wander among life-size articulated skeletons, and use animation and augmented reality to watch dinosaurs and other prehistoric animals in lifelike settings. Activities for all ages explore how Earth's landmasses changed over millions of years and influenced dinosaur evolution, how fossils form, the scientific processes that lead to new discoveries, and how fossils are prepped for study and display.

The story begins with the supercontinent Pangaea and how it gradually broke apart and eventually formed the continents we know today. This rifting affected the evolution of dinosaurs 250–66 million years ago. As Pangaea divided into Laurasia in the north and Gondwana in the south, dinosaurs were passengers on these drifting continental rafts. As a result of this geographic phenomenon, dinosaurs evolved into an amazing array of unusual forms. The southern hemisphere has become the most exciting locale for dinosaur hunters over the last two decades, including for two of the Museum’s own paleontologists, Joe Sertich and David Krause.

“My passion for dinosaurs began when I was a kid wandering the halls of this Museum,” said Sertich, curator of dinosaurs and curatorial advisor for the exhibition. “So to bring these amazing prehistoric beasts—some of which I discovered myself—to the Museum is a dream come true. I hope the experience will inspire a new generation of dinosaur hunters.”

## SEE IT

*Ultimate Dinosaurs* opens for members on Thursday, October 5, and will be on exhibit until Monday, January 15. Admission is free for members. Find out more about the exhibition @ [dmns.org/ultimatedinos](http://dmns.org/ultimatedinos). See back cover for members events.

*Ultimate Dinosaurs* was created and produced by the Royal Ontario Museum, Toronto. Toured by the Science Museum of Minnesota. Credit: © The Royal Ontario Museum, 2012.

Pictured below, left: *Giganotosaurus* of Argentina weighed nearly 7 tons! This behemoth carnivore lived in Argentina 100 million years ago. Right: *Suchomimus*, “crocodile mimic,” was a 37-foot-long piscivore whose fossilized remains were uncovered in the Sahara in Niger.

## HIGHLIGHTS:

- Seventeen fully articulated skeletons and dozens of fossils and casts, including dinosaurs discovered by scientists from our Museum.
- Stunning video projections and life-size murals that take you back to prehistoric time.
- Video projection of sauropods that gives you an opportunity to walk (and run!) alongside life-size dinosaurs.
- Augmented reality (AR) viewers that guests look through to examine the skeleton of *Carnotaurus*, laying skin over the bones and showing what it looked like in real life.
- Fossil Prep Lab to try out fossil preparation techniques and let kids imagine and explore some tools of the trade at fossil prep tables.
- Stations with interactive projection microscopes, touchable specimens, puzzles, and more.
- Microfossil sifter that demonstrates how paleontologists search for tiny fossils.
- Digital continental drift game to reassemble the continent of Gondwana and gather facts about the southern hemisphere and their prehistoric residents.
- 3D printer creating replicas of real fossils.
- Dinosaur Adventure Guide to use at embossing stations throughout the exhibition.
- DinoDepot with a wide selection of merchandise to remember your day with the ultimate dinosaurs. Members save 10%!



## DINOSAUR HUNTING IN GONDWANA

See amazing scientific discoveries in *Ultimate Dinosaurs*

BY JOE SERTICH, PhD

Our hands still white from plastering a crocodile jaw, we pushed through tall grass illuminated gold by the setting sun, itself tinted a deep red by countless fires on the Malagasy horizon. It had already been a productive field season in the famous dinosaur beds in the northwestern part of Madagascar, the Great Red Island. The project, initiated in the 1990s by David Krause, then a professor at Stony Brook University, continued to make waves with its spectacularly preserved dinosaurs, birds, and bizarre crocodiles from the very end of the Cretaceous, 67 million years ago. I was a wide-eyed graduate

student on my first expedition to this remote island off the east coast of Africa, part of a collaborative crew from U.S. universities and the local University of Antananarivo.

Our small group was heading toward a team working on a newly exposed skull of the largest carnivore in the ecosystem, *Majungasaurus*, when a glint of white caught my eye. A well-preserved fragment revealed another *Majungasaurus*. By the end of a week of digging in the soft green sand, our team had uncovered the skeleton one vertebrae at a time to reach the first-known intact tiny arms of this







Facing page: The excavation of a *Majungasaurus* skull that will be displayed in *Ultimate Dinosaurs*. This page: The 2015 Madagascar crew in front of a collection of dinosaurs and other fossils in protective plaster field jackets. Joe Sertich is standing in the doorway.

strange dinosaur and, eventually, to a nearly complete skull. Skeletons like this, in a perfect death pose, are supposed to exist only in movies, but here it was in real life! I was hooked and continue to work in Madagascar since joining our Museum as curator of dinosaurs in 2010.

Why would scientists from an institution such as ours, ideally located at the epicenter of the best dinosaur beds on Earth, travel to the other side of the globe to hunt for fossils? Western North America is a paleontologist's playground, however, these amazing dinosaurs represent snapshots in time from only one continent and require a global perspective.

By the close of the Triassic Period 200 million years ago, the supercontinent of Pangaea was slowly fragmenting into today's familiar continents. The first split, separating Laurasia in the north from Gondwana in the south, created a parallel rift in the evolution of plants and animals. New creatures, such as the tyrannosaurs and the duckbilled and horned dinosaurs, eventually took over the northern continents. Gondwana's landmasses of South America, Africa, Madagascar, India, and Australia were ruled by massive titanosaur sauropods, tiny-armed carnivorous theropods, and bizarre notosuchian crocodiles. Evolving in isolation in the south led to forms strikingly different from their northern counterparts.

Paleontologists in South America, blessed with rich fossil beds comparable to those in the American West, began uncovering the secrets of Gondwanan dinosaurs 50 years ago. However, fossil records of the other southern continents have not given up their secrets as easily. I have lived a paleontologist's dream, searching for dinosaurs in remote corners of Kenya, Egypt, Tanzania, Madagascar, and Antarctica. I have also battled tropical illnesses, roving bandits, local conflicts, endless bureaucracy, and many days of off-road travel. Getting a super-size dinosaur out from a remote location is another hurdle, sometimes requiring cattle-driven carts or huge groups of enthusiastic local workers.

Despite the challenges, the rewards are immense. After encountering curious children at early digs in Madagascar, Krause realized that government schools and health care

had not yet penetrated many rural areas. He established the Madagascar Ankizy Fund, supporting the construction of five schools, wells for clean water, and dental and health clinics. As scientists, we are also keen to further scientific knowledge, working with local students and universities. I have been fortunate to collaborate with graduate students in Madagascar and elsewhere. Our Museum recently donated 80 collections cabinets to the University of Antananarivo to outfit Madagascar's first paleontological collections facility, now one of the finest in Africa, continuing a legacy of revealing some of most exciting science in the world from the Malagasy wonderland.

When I was asked to be a curatorial advisor for *Ultimate Dinosaurs*, I jumped at the opportunity to help introduce these amazing beasts to North Americans. The science emerging from the south helps us understand the evolution of our whole planet and continues to reveal new dinosaurs that inspire and amaze us.

## SEE IT

The *Majungasaurus* skull that Sertich and the team unearthed will be displayed in *Ultimate Dinosaurs* along with dozens of fully articulated skeletons and other astounding fossils, including the *T.rex*-sized *Giganotosaurus* and the crocodile-faced *Suchomimus*.

## DISCOVER MORE

Dr. Joe Sertich is curator of dinosaurs. Find out more about his research @ [dmns.org/science](https://dmns.org/science).

Dr. David Krause is now distinguished service professor emeritus from Stony Brook and recently joined our Museum as senior curator of vertebrate paleontology.

Sertich and Krause will present "Dinosaurs of the Great Red Island" on Tuesday, December 12. Find out more @ [dmns.org/afterhours](https://dmns.org/afterhours).

## NAVAJO TEXTILES

New book highlights this significant collection

Before the Avenir Collections Center opened three years ago, the Navajo textiles and the rest of the anthropology collections were stored in multiple locations around the Museum. The textiles had been preserved, documented, and loaned out for exhibits, but in their confinement there was little room for broad access by researchers and visitors. The textiles' impending move to their new larger, consolidated home offered the perfect opportunity for them to be newly considered and examined more closely and comprehensively.

The Anthropology Department enlisted the help of Laurie Webster, a leading textiles scholar. She recommended that she and Louise Stiver, also a textile specialist, collaborate with expert Navajo weavers D. Y. Begay and Lynda Teller Pete.

The four specialists began the process at the Museum in 2014. One by one, staff unrolled a select 130 textiles from the 380-piece collection. Many of the textiles were new to the group, making each reveal particularly compelling. Webster confirmed that “this is the best Navajo textile collection you’ve never heard of.” The scholars spent many hours examining and discussing the pieces, weaving together the strands of technique, history, culture, place, and personal experience.

The result of their work is presented in the new book *Navajo Textiles: The Crane Collection at the Denver Museum of Nature & Science*, published by the Museum and University Press of Colorado. The textiles arrived at the Museum in the late 1960s as part of a donation of 12,000 American Indian artifacts from Mary W. A. and Francis V. Crane. The book is a comprehensive study, examining the Cranes as collectors, the historic and modern perspective on Navajo weaving, and narratives by Begay and Pete describing their legacy and evolution as weavers.

Fifty-seven pieces are featured in the book. Pictured are three of note:

- Facing page: This Germantown pictorial rug is unusual because the weaver is documented despite its era. A woman named Miranda from San Juan County, New Mexico, designed and wove this beautiful textile in 1892. It was commissioned by a local women’s group for display at the 1893 Chicago World’s Fair. Germantown is a mill in Pennsylvania that manufactured wool and shipped it by rail to the Southwest for trade. (AC.172A)

- Top: This pictorial rug with an eagle and rabbit was created in the early 1960s by Atsuma Blackhorse. The design is based on a series of paintings by Pablita Velarde, an artist at the Santa Clara Pueblo. Blackhorse’s detailed work suggests that she was a graphic artist as well as a weaver. (AC.7674)

- Bottom: This rare classic-period serape, ca. 1840–60, is considered one of the finest in the collection. The Navajo word for this textile is *biníghádzílt’óní*, which is translated as “woven through.” These large “wearing blankets” were created to be warm and long-lasting. (AC.5504)

The entire collection of Navajo textiles has been relocated and rehoused in the Avenir Collections Center in specially designed wrappers and rollers that will preserve the materials and beauty of the pieces for future generations to discover their stories.

## DISCOVER MORE

Several textiles will be displayed during a special program in October with a book sale and signing featuring author Laurie Webster. Find out more @ [dmns.org/afterhours](https://dmns.org/afterhours). *Navajo Textiles* is also for sale in the Museum Shop or from your favorite bookseller.





## MUSEUM AFTER DARK 2017: THE ROCK COLLECTION

Museum After Dark and the After Dark Soiree celebrated our geology collection with more than 800 guests who rock'd the night away with us at a new time of year. These catalysts helped raise over \$660,000 to ensure that children in our community have access to world-class science opportunities.

The event was co-chaired by (pictured below from left) Museum Trustee Hal Logan and his wife, Ann, and Trustee Matthew Burkett and his wife, Priya. Chuck and Becky Morris served as entertainment chairs. The evening included sounds from five decades of rock 'n' roll music history, including a performance by Flash Cadillac. Guests were also treated to seeing gems and minerals not on public display.

The gala moved from its traditional late fall date to spring, allowing guests to enjoy Boettcher Plaza and the beauty of historic City Park. Revelers also toured Coors Gems and Minerals Hall and *Vikings: Beyond the Legend* as part of their evening. The party went well into the morning as the Young Professionals Committee hosted the After Dark Soiree.

The Museum sincerely thanks Cimarex, the Presenting Sponsor; Hal and Ann Logan, The Sexton Family Foundation, and Jan Mayer for being Major Sponsors; and the evening's committee chairs and the many table sponsors, auction donors, and guests who helped bring science to life for children of all ages. We look forward to hosting you for another spectacular evening at next year's Museum After Dark.



## UPGRADE TODAY AND ENJOY BEHIND-THE-SCENES NIGHT

Enjoy a whole new level of membership that will greatly enrich your Museum experience!

We invite you to upgrade your membership today and join the Giving Club in time for the perennial favorite, Behind-the-Scenes Night. This free evening for Giving Club members only will be held on Thursday, October 12, featuring special access to treasures not on public display and an opportunity to engage with our Museum scientists, as well as hors d'oeuvres and a cash bar.

In addition to the benefits that all members receive, you will be invited to other exclusive events and opportunities throughout the year.

A new benefit has just been added: Customize your

experience with Flex Tickets. The complementary tickets you receive with your membership will no longer be restricted for a specific use. Now you may use your new Flex Tickets to choose from a variety of offerings! Attend popular programs like Science Lounge or some of our evening lectures, or use them for IMAX, Planetarium, surcharged exhibitions, or simply as Museum admission for a friend or family member.

As a Giving Club member your gift supports ongoing scientific research, fuels lifelong discovery, preserves rare artifacts and specimens, and so much more.

It is easier and more affordable than ever to become a Giving Club member with monthly installments! Find out more @ [dmns.org/join/giving-club](https://dmns.org/join/giving-club).

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## VOLUNTEERS ARE CATALYSTS FOR COMMITMENT

The Museum recently honored 155 volunteers with recognition awards for years of service ranging from 10 to 45 years! In 2016, our 1,756 volunteers, ranging from elementary school-aged kids to individuals well into their 90s, contributed 237,641 hours of service, an incredible commitment.

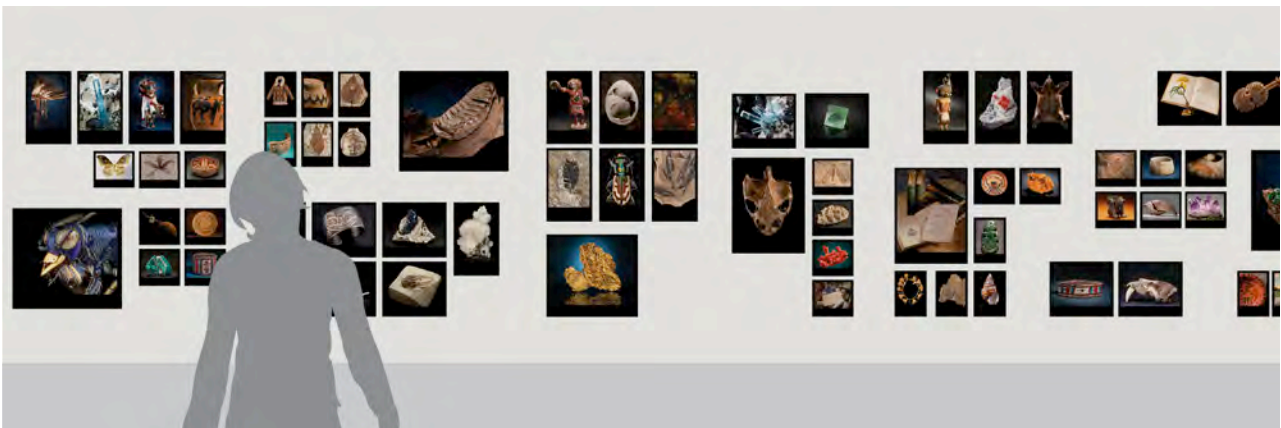
Carol Tucker, our 45-year award recipient, started out with the foregrounds crew, who helped create the plants, trees, and shrubs that make our dioramas so lifelike. She fabricated countless leaves and even baked clay "termites" in her home oven. "Not only God can make a tree," she said. "Foregrounds can too." Carol has also volunteered over the years in Zoology, cataloging seashells. Her favorite shell? "The chambered nautilus, because of its perfection of form and use of material."

Our 40-year recipient, Leigh Brightwell, a former elementary school teacher in Boulder, has contributed in many ways, including as a school tour guide, in the Exhibits Department assisting with putting together the dioramas, with temporary exhibitions, and currently as a

Museum Ambassador assisting guests in the main lobby. Congratulations to all of this year's award recipients.

Our volunteers deserve a great space in which to comfortably collaborate, share ideas, and gather for breaks, meetings, and meals. In late 2017, a new Volunteer Engagement Center will open in the heart of the Museum. This completely renovated space will feature a dedicated volunteer lounge, a meeting room, and offices. The project is made possible in part by a \$500,000 incentive fund established by two Museum Trustees. Each additional dollar raised, up to \$250,000, will be matched. Another \$250,000 will be released when 325 donors give \$10 or more. For a limited time and while supplies last, donors of \$500 or more can select an image and inscription for the Volunteer Inspiration Art Wall (a rendering is pictured below). Find out more @ [dmns.org/engage](https://dmns.org/engage).

Thank you to all of the volunteers for their commitment. There's a place for you too at the Museum. Find out more @ [dmns.org/join/volunteering](https://dmns.org/join/volunteering).





## CITIZEN SCIENTISTS: PLEASE “BUG” THE MUSEUM

The email hit Museum inboxes one afternoon earlier this summer. Subject line: Japanese Beetles. Our entomologist, Frank Krell, was sounding the alarm that these invaders were out in full force, ready to destroy everyone’s roses and a few hundred other plant species. He explained the problem and how to maybe lessen the evil, and he also said, “If you have Japanese beetles in your yard, between now and October, please bring a few in with location/address, collection date, and your name.”

The Museum has more than a million insects and arachnids in its zoology collections, and a vast number of them were collected by everyday people we call citizen scientists. One of our founding collections when the Museum was established in 1900 was the huge butterfly collection of John T. Mason, a department store magnate with a passion for winged creatures. The Colorado Spider Survey, established by arachnologist Paula Cushing in 1999, has contributed to the Museum having the largest spider collection in the state with more than 61,000 vials of specimens.

Longtime zoology volunteer Barbara Bartell has collected moths and beetles on a mercury vapor light at her house in Gilpin County by Golden Gate State Park for years. Her collections continually reveal new species. Bartell recently brought in her 2016 specimens, 5,500 moths perfectly pinned and labeled, filling 23 storage drawers. Her contribution currently totals well over 20,000 specimens. She also collects for the Gillette Museum of Arthropod Diversity at Colorado State University.

Japanese beetles (*Popillia japonica*) are an invasive horticultural pest that arrived in New Jersey in 1911 from east Asia and spread rapidly throughout the East

Coast, where they have been battled unsuccessfully. They arrived in Colorado in the early 1990s and stayed. Colorado’s arid climate isn’t their natural environment; however, they survive because the larva lives underground and feeds on grass roots in well-watered lawns. Lawns are not native to Colorado, but they are now well-established, creating an abundant artificial habitat for Japanese beetles to thrive and gorge on our yards and ornamental plants, nourished and ready to produce a new generation of beetles every year. It is very difficult to get rid of them, although for the time being Krell suggests xeriscaping or hand-collecting and then killing the adult beetles in the freezer or soapy water.

But before you take matters into your own hands, Krell is hoping to have a very comprehensive documentation of Japanese beetles along the Front Range. Please bring a few beetles in with a note with your name, location or address of collection point, and the date. The beetles will be accepted alive in a container or bag, or in a vial or container filled with rubbing alcohol. Bring them to the security desk at the Staff and Volunteer Entrance on the north side of the Museum. The data will be entered into the Museum’s online database and used for a scientific paper Krell plans to submit at the end of 2017.

### DISCOVER MORE

Learn more about the Colorado Beetle Survey @ [dmns.org/beetles](https://dmns.org/beetles).

See Dr. Frank Krell discuss dung beetles in a short video produced by National Geographic @ [dmns.org/natgeobeetles](https://dmns.org/natgeobeetles).

## GET THE MOST FROM MEMBERSHIP

- Visit anytime for free 364 days a year!
- Read the monthly members-only eNews with news, tips, and special offers. Not receiving eNews or advance notifications? Send your email address to [members@dmns.org](mailto:members@dmns.org).
- Share the guest tickets that came with your membership with your friends and family.
- Pack your membership card and get free admission at 360 science centers and museums outside a 90-mile radius of Denver and your residence with the ASTC Travel Passport Program. Find out more @ [astc.org/passport](http://astc.org/passport).
- Upgrade to the Family Plus level and in addition to admission for up to seven in your party, you will enjoy a special reciprocity agreement with Fort Collins Museum of Discovery. (This agreement is separate from ASTC program.)
- If you find yourself frequently bringing the grandkids to the Museum, check out the Grandparent membership level! It covers two adults plus four of their own grandchildren, ages 3–18 years.

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## HOLIDAY MUSEUM SHOP SALE AND MEMBERS APPRECIATION Friday–Sunday, November 3–5

Mark your calendars! With great appreciation for your membership support, we invite you to kick-start your holiday shopping with us and enjoy special rewards all weekend long.

- 20% off select items\* in the Museum Shops (including *Nature's Amazing Machines* and *Ultimate Dinosaurs*)
- 10% off gift memberships
- 20% off in the T-Rex Cafe
- 50% off IMAX and Planetarium tickets

\*Extra 10% discount does not apply to DVDs, CDs, and books.

Special offers are valid in person only and must be used on November 3–5, 2017, and are not redeemable over the phone or online.

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## FREE GIFT WITH AUTO RENEW

Enjoy the convenience of having your membership automatically renewed! With Auto Renew, you receive uninterrupted Museum access and benefits while saving time and resources. Enroll today and get a free gift: a reusable, collapsible water bottle.

It's now easier than ever to enroll in Auto Renew online at [dmns.org/renew](http://dmns.org/renew) or by phone at 303.370.6306 (daily, 9–5). Your expiration date is printed on this magazine's mail label. Easy for you, good for the environment!

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## THANK YOU FOR YOUR SUPPORT!

Your membership helps us provide outstanding science education programs, exhibitions, and research.

## SCIENCE ON TAP

Don't miss Science on Tap on Thursday, October 5, at Mile High Spirits for the 21+ crowd! This year's event, hosted by the Young Professionals group, is themed "Drunk as a Skunk: How Animals Imbibe." Join vertebrate zoologist Dr. John Demboski and ornithologist Dr. Garth Spellman to learn about the fascinating ways animals have evolved to get intoxicated. You will also enjoy specialty cocktails crafted for the event. The Young Professionals are metro-area leaders who support the Museum's mission and receive a full year of benefits designed specifically for them. Find out more @ [dmns.org/YP](http://dmns.org/YP).



## IMPORTANT INFORMATION ABOUT YOUR CARD

We upgraded our technology systems, and as a result all members need an updated card. If you currently have a plastic card that says MEMBER on the front, please choose one of two options per named member:

- If you would like to continue using a plastic card, please see an agent at Ticketing in the main lobby for assistance or scan your existing card at a Self-Serve kiosk to print a new card.
- If you'd prefer to carry one less card in your wallet, download our free eCard app through your app store. You'll enjoy the convenience of sharing your passes and many other benefits through your smartphone. Visit [dmns.org/eCard](http://dmns.org/eCard).

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## WE'RE HERE FOR YOU

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- [www.dmns.org/members](http://www.dmns.org/members)
- Members Lane at Ticketing

# ULTIMATE DINOSAURS

## MEET A NEW BREED OF BEAST

### EXCLUSIVE ACCESS:

BE AMONG THE FIRST TO EXPERIENCE OUR NEWEST EXHIBITION AT ONE OF OUR MEMBERS-ONLY EVENTS!

#### MEMBERS PREVIEW DAY

Thursday, October 5 • 9 a.m.–9 p.m.

See it before it opens to the public! Enjoy an extra 10% off in the T-Rex Cafe and Grab & Go this day only.

**SPECIAL OPPORTUNITY!** Enjoy a members showing of the new IMAX film *Conquest of the Skies 3D* on **October 5 only** at 10:30 a.m., 2, 5, or 7 p.m. Tickets required: \$7 adult member, \$6 senior member, \$6 child/junior member (ages 3–18).

#### MEMBERS-ONLY EVENING

Thursday, October 26 • 6–9 p.m.\*

An optional prepurchased dinner is available for an additional charge: \$13 adult, junior, senior member; \$8 child. See menu at [dmns.org/memberevents](http://dmns.org/memberevents).

#### MEMBERS-ONLY EVENING (21+)

Tuesday, November 14 • 6–9 p.m.\*

\$50 member; \$60 nonmember

In addition to an adults-only evening in *Ultimate Dinosaurs*, enjoy hors d'oeuvres and a cash bar followed by dinner. See menu at [dmns.org/memberevents](http://dmns.org/memberevents).

**RESERVATIONS ARE REQUIRED FOR ALL EVENTS AND SPACE IS LIMITED.** Reservations open August 28. No walk-up tickets will be available. Exhibition entry by timed ticket due to gallery capacity. \*Only *Ultimate Dinosaurs* will be open on Members Evenings.





# DISCOVER

ADULTS | CHILDREN | FAMILIES | TEENS

AUTUMN 2017





EVERY 3RD THURSDAY  
*The* SCIENCE  
Lounge



## SEPTEMBER 21: BEER

Prost! Get into the Oktoberfest frame of mind as we delve into the complex world of beer. Find out how the lineage of yeast affects the flavors of your favorite pint and explore your sense of taste. Celebrate the art of brewing while mixing with local beer experts.

## OCTOBER 19: BLOODCURDLING BEASTS

Get in the Halloween spirit at this eerie evening of ghostly creatures and misunderstood monsters. Discover things that go bump in the night, from blood-sucking mammals to creepy crawlers. Can your constitution withstand the shock of nature's most chilling critters? Costumes encouraged.

## NOVEMBER 16: DINOSAURS

Dinos rule! Meet some of *T. rex*'s newest family members in the temporary exhibition *Ultimate Dinosaurs*. Explore how the changing continents influenced dino evolution, check out the dinosaur on your dinner table, and craft your own cast of dino teeth and claws. Sip a cretaceous cocktail while you embrace your inner paleontologist.

BUY TICKETS AT [DMNS.ORG/SCIENCELOUNGE](http://DMNS.ORG/SCIENCELOUNGE)  
\$13 MUSEUM MEMBER, \$15 NONMEMBER

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# AUTUMN 2017

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## EXHIBITIONS

### Ultimate Dinosaurs

October 6–January 15 • Phipps Gallery • free for members  
Meet *T. rex*'s biggest, baddest, newest members of the family! This experience goes beyond familiar dinosaurs to showcase some of the most spectacular fossils unearthed in recent years.

### Nature's Amazing Machines

Now through January 1 • Anschutz Gallery • free for members  
Discover how a giraffe's heart pumps blood to its brain, how a toucan stays cool, how it might feel to fly, and other marvels of nature's ingenuity.

### Creatures of Light

Opens February 23  
Delve into the world of living things that blink, glow, flash, and flicker, from tiny fireflies in the backyard to strange creatures in the ocean's depths that provide the only light.

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## PHIPPS IMAX 3D THEATER

*Conquest of the Skies 3D* • Opens October 6  
*Dream Big 3D: The Science of Engineering* • Now showing  
*Incredible Predators 3D* • Now showing  
*Mysteries of China 3D* • Closes October 5

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## GATES PLANETARIUM • Now showing

*Black Holes: The Other Side of Infinity*  
*Cosmic Journey*  
*Destination Solar System*  
*One World, One Sky: Big Bird's Adventure*  
*Space Tours Live*


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## ADMISSION


	MUSEUM	IMAX	PLANETARIUM
Adult member	FREE	\$7	\$5
Senior member (65+)	FREE	\$6	\$4
Child/Junior member (3–18)	FREE	\$6	\$4

The Museum is open daily 9 a.m.–5 p.m., with extended hours at various times. Dates, times, prices, and schedules subject to change. Find more ways to discover @ dmns.org.  
On the cover: Reconstruction of *Simosuchus*, whose skull is on the *Catalyst* cover.


# SEPTEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
<i>Discover more @ dmns.org</i>					1	2
			Sea Turtles, p. 5	Conquer the Skies for Families, p. 10	Peer Revue, p. 5	
3	4	5	6	7	8	9
			Indigenous Films, p. 5			
10	11	12	13	14	15	16
SCFD Community Free Day 				Bird Walk, p. 9  Science Lounge, inside cover	Autumnal equinox	
17	18	19	20	21	22	23
Family Chemistry, p. 11	Educators Night		60 Minutes in Space, p. 5	Man vs. Beast, p. 6		
24	25	26	27	28	29	30

# OCTOBER

SUN	MON	TUE	WED	THU	FRI	SAT					
1	Bird Walk, p. 9  Elk Bugling p. 9	Paleontology 101, p. 9	Cassini, p. 6	<i>Ultimate Dinosaurs</i> Members Preview	<i>Ultimate Dinosaurs</i> opens  <i>Conquest of the Skies</i> opens in IMAX	7					
Indigenous Film Festival, p. 5	8	9	Digital Earth, p. 6	10	11	12	13	14	Teen Lounge, p. 11		
15	16	17	18	19	20	21	SCFD Community Free Day  	Science Lounge, inside cover			
Navajo Textiles, p. 7	Urban Ecology, p. 10	Life of Predators, p. 10	60 Minutes in Space, p. 5  Migration and Adaptation, p. 8	22	23	24	25	26	27	28	<i>Ultimate Dinosaurs</i> Members Only  Live Bats for Adults, p. 7  Family Overnight, p. 11  Live Bats for Families, pp. 7 & 11
29	30	31									

# NOVEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
				Genius of Birds, p. 8 Bird Walk, p. 9	Holiday Shop Sale	
			1	2	3	Night at the Museums for Denver Arts Week
Daylight saving time ends		Unwrapping the Mummies, p. 7	Indigenous Films, p. 5			
5	6	7	8	9	10	11
SCFD Community Free Day 	<i>Ultimate Dinosaurs</i> Members Only			Science Lounge, inside cover	Peer Revue, p. 5	
12	13	14	15	16	17	18
				Thanksgiving, Museum open		
19	20	21	22	23	24	25
		Digital Earth, p. 8 Field Sketching, p. 10	60 Minutes in Space, p. 5	Family Dino Fun, p. 11		
26	27	28	29	30		

# AFTER HOURS



AT THE MUSEUM

Encounter new ideas, cutting-edge science, and captivating individuals.



## Sea Turtle Race to Salvation

Despite having been on the planet for more than 100 million years and outliving the dinosaurs, nearly all seven sea turtle species are now on the brink of extinction. During this special screening of the film *Saving Sea Turtles*, you will discover the courageous collaborative efforts of scientists and citizens to save the Kemp's ridley sea turtle. Tyler Lyson, curator of vertebrate paleontology

and turtle evolution expert, will set the stage as you consider the turtle's ancient past, and filmmakers Jenny Ting and Michele Gomes will share behind-the-scenes stories and more insight into the efforts to protect these animals.

Wednesday, September 6 • 7 p.m. • Phipps Theater • \$12 member, \$15 nonmember

## Peer Revue

Cheer on local scientists turned comedians as they attempt standup for the first time and wax hilarious about the unique nuances of their work. This one-of-a-kind comedy night for science fans will get you laughing with (and at!) some of the biggest brains in town. Learn more at [peer-revue.com](http://peer-revue.com). Ages 18+. Cash bar.

Fridays, September 8 or November 17 • 7:30 p.m. • Science Atrium • \$12 member, \$15 nonmember

## Indigenous Films

The Museum is pleased to partner with the International Institute for Indigenous Resource Management and the Denver American Indian Commission to present Indigenous Film, a monthly series. Join us for a wide variety of films, from documentaries to feature films and youth film showcases. Then participate in a discussion with the Denver American Indian Commission and other special guests. Concessions available for purchase. And in October, don't miss opening night of the annual Indigenous Film Festival with a screening and reception to follow. More information at [dmns.org/adults](http://dmns.org/adults).

Wednesdays, September 13 & November 8 • 6:30 p.m. • Phipps Theater • free

Film Festival: Sunday, October 8 • 6 p.m. • Ricketson Auditorium • free

## 60 Minutes in Space

Go "behind the stories" with space scientists who use the best images and animation available to help you understand new developments in space exploration. No reservations required; seating is first come, first served.

Wednesdays, September 27, October 25, November 29 • 7 p.m. • Gates Planetarium • free



## Naked Man vs. Beast

Enjoy a chance to see two rare films from the Museum Archives Department. Osa and Martin Johnson were movie stars of epic proportion. In the 1920s, the paparazzi followed them everywhere, documenting their comings and goings. When they released their African adventure film *Simba* in 1928, it was an instant success and the two became even bigger celebrities. Our exclusive copy of the featurette *Naked Man vs. Beast* was adapted from *Simba* and has not

been screened since the 1930s, until now. For the second feature, *Abyssinia Revisited*, Museum director Alfred M. Bailey traveled to Abyssinia (now Ethiopia) in 1926 with the Field Museum. Our image archivists found four reels of film stashed in Bailey's collection with some extraordinary content. With the help of Cinema Lab, we've reedited the film with an original musical score performed live. The image archivists will kick off the program with a short lecture on the beauty of these rare films, the preservation work, and how we're saving films that would otherwise be lost forever.

Thursday, September 28 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember

## Cassini: The Grand Finale

Celebrate the achievements of the Cassini mission! Cassini will end its 20-plus-years since its launch with what NASA calls the "grand finale," a dive into Saturn's atmosphere ending in self-destruction. Museum scientist Steve Lee and a panel of local experts will discuss the immense contributions Cassini has made to our understanding of Saturn and its moons during the 13 years the spacecraft has orbited this spectacular "ring world."

Wednesday, October 4 • 7 p.m. • Phipps Theater • \$8 member, \$10 nonmember

## Digital Earth: Cities

With the help of immersive satellite images, soar above the skyscrapers of some of the world's most thriving cities, guided by space science curator Ka Chun Yu. Investigate the complex infrastructures of human-made wonders and consider the concrete jungle from the perspective of a bird in this stunning, thought-provoking experience.

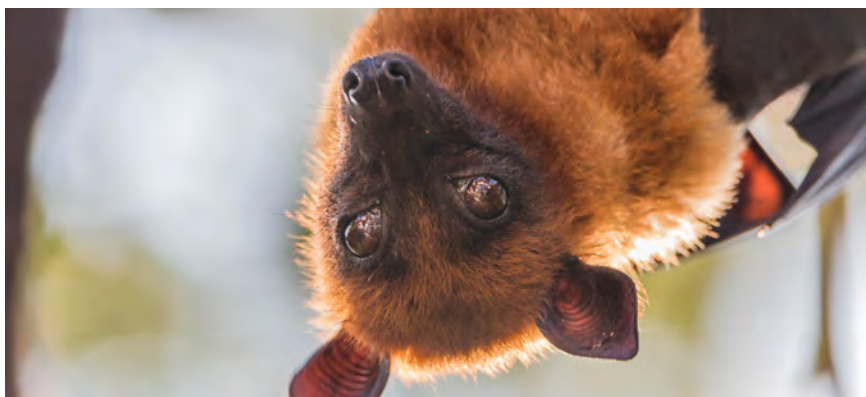
Tuesday, October 10 • 7 p.m. • Gates Planetarium • \$8 member, \$10 nonmember

## What's in Your Gut?

As you're probably well aware, there's a lot going on in your gut, but did you realize our intestines have a place in history? Jessica Metcalf, assistant professor of animal sciences at Colorado State University, uses microbes preserved in coprolites (ancient fecal material) to characterize the gut microbiome of ancient humans, allowing her to map how our intestines have changed over time, particularly in the recent past due to western practices, such as widespread use of antibiotics, high-fat diets, and intense hygiene practices. Get up close and personal with these microscopic organisms, and find out the implications Metcalf's research has for human health.

Wednesday, October 11 • 7 p.m. • Phipps Theater • \$12 member, \$15 nonmember





### **Live Bats for Adults Only!**

During this perennial favorite, Rob Mies, director of the Organization for Bat Conservation, will introduce you to an international delegation of some of the rarest bats in the world, including a gigantic flying fox bat from Malaysia with a nearly six-foot wingspan. Family program on pg. 11.

Friday, October 27, 6 or 8 p.m., or Saturday, October 28, 6 or 8 p.m. • Ricketson Auditorium • \$12 member, \$15 nonmember • ages 21+

### **Navajo Textiles**

Celebrate the publication of *Navajo Textiles*, a beautiful new volume highlighting 57 incredible Navajo weavings in the Crane American Indian Collection. Scholars, curators, and Navajo weavers lent their insights into the rich history and artistry of the artifacts, accompanied by beautiful photographs. Laurie Webster, a preeminent textiles scholar and lead author, will share how this fine collection arrived at the Museum, how the collaboration brought forth new understandings and relationships, and why she describes the weavings as the “best Navajo textile collection you’ve never heard of.” A selection of textiles will be displayed.

Sunday, October 22 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember • book sale & signing

### **Annual Marie Wormington Lecture Unwrapping the Secrets of the Mummies**

For years, the *Egyptian Mummies* gallery has displayed two female mummies, described as the “Rich Mummy” and the “Poor Mummy.” In 2016, a team of Egyptologists from around the country banded together to find out how today’s leading technologies could shed more light on the lives of these two women. Michele Koons, curator of archaeology, led the research, which included radiocarbon dating, isotope analysis, tree ring core sampling, portable x-ray fluorescence, and an ambulance ride for the mummies to be CT scanned at Children’s Hospital Colorado. Join Koons to get all the exciting details on the new science, which will be newly interpreted in *Egyptian Mummies* in October. The Marie Wormington Lecture is named for the renowned anthropologist who had an illustrious career at the Museum.



Tuesday, November 7 • 7 p.m. • Ricketson Auditorium • \$8 member, \$10 nonmember

## Digital Earth: Central America and the Caribbean

Longing for a tropical vacation? With the help of rich images on the Planetarium screen, soar to the Caribbean and find out all about volcanoes, active faults, and the environments and ecosystems of Mesoamerica and the tropical islands of the Antilles and the Caribbean. You'll also fly over the site of the asteroid impact that wiped out the dinosaurs.

Tuesday, November 28 • 7 p.m. • Gates Planetarium • \$8 member, \$10 nonmember

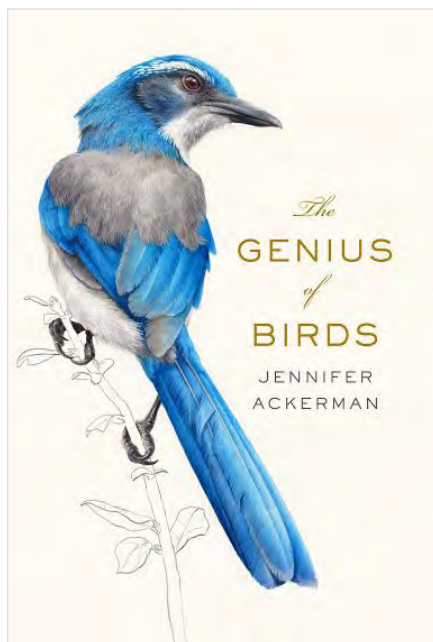
## ANNUAL BIRD LECTURE SERIES

Presented in partnership with the Bird Conservancy of the Rockies.

### Migration and Adaptation in Our Changing World

When animal populations are impacted by human-caused changes, they are forced to move to new places, modify how they behave, or face extinction. Ellen D. Ketterson, professor of biology at Indiana University Bloomington, addresses our need as invested citizens to understand animal migration and seasonality in relation to the loss of biodiversity. Ketterson will examine the very real implications of our changing world through the lens of a model bird species, the dark-eyed junco, commonly known as the snowbird. By focusing on the details and consequences of environmental change and how organisms respond, humans will be equipped to develop ways to predict future responses to ongoing environmental change and champion the biodiversity that makes our planet so amazing.

Wednesday, October 25 • 7 p.m. • Ricketson Auditorium • \$12 member, \$15 nonmember



### The Genius of Birds

Examine the true brilliance of birds and delve into the mysteries of their avian brains with acclaimed science and nature writer Jennifer Ackerman, author of the new book *The Genius of Birds*. From the beaches of Barbados to the rainforests of New Caledonia, experience Ackerman's adventures firsthand as she shares wild stories and stunning photos to better understand these often underestimated creatures. Explore the richness of Ackerman's work as she demonstrates how birds make and use their own tools, teach each other new skills, count, exercise their incredible knack for memory, and even pass along cultural traditions.

Thursday, November 2 • 7 p.m. • Phipps Theater • \$12 member, \$15 nonmember • book sale & signing

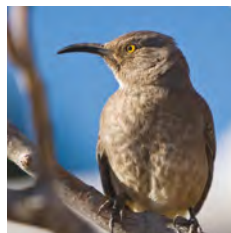
## BIRD WALKS

Explore with expert bird guide Norm Lewis, Zoology Department associate.

### Chico Basin Ranch

This private ranch welcomes birders and hosts a Bird Conservancy of the Rockies banding station. It has become a fall migration hot spot where curve-billed thrashers frequent the cholla flats, and swallows and flycatchers abound around the ponds and lakes. There are usually a few rarities! Admission into Chico Basin Ranch is included.

Thursday, September 21 • 6:30 a.m.–6 p.m. • \$40 member, \$55 nonmember



### Barr Lake

Barr Lake is a popular “migrant trap” in the fall and host to a Bird Conservancy of the Rockies banding station. The riparian woodland often features yellow-rumped and Wilson’s warblers, hermit thrushes, and many sparrows. Loons, grebes, ducks, and geese should still be at the reservoir.

Monday, October 2 • 7:30 a.m.–5 p.m. • \$27 member, \$35 nonmember

### Late Fall on the Eastern Plains

Colorado’s eastern plains are a place of endless fascination. By November, most nesting migrants have departed, but a few remain. Meanwhile, winter visitors from the north have moved in, and the woods and thickets are alive with newly arrived sparrows. The lakes and reservoirs have thousands of ducks, geese, grebes, and loons.

Thursday, November 2 • 7 a.m.–6 p.m. • \$27 member, \$35 nonmember

## FIELD TRIP

### Elk Bugling

Enjoy a brisk autumn evening, brilliant fall colors, and the echo of bull elk bugling in the pines on historic Evans Ranch with research associate Ron Beane. The Museum has received exclusive permission to visit this private ranch and experience the sights and sounds of elk in full rut. Hike the wooded areas to a secluded location near the elk where, at sundown, you will sit back, relax, and listen for the eerie evening sounds of the Colorado wilderness. Ages 12 and up are welcome. Space is limited, and reservations are required.

Monday, October 2 • 3 p.m. • \$75 member, \$100 nonmember

## COURSES

### Paleontology 101

Explore basic concepts of paleontology and geology with paleontologist Lou Taylor. Following an introduction on the history of life on Earth, learn how fossils are formed, their scientific value, and the basics of collection and data recovery, curation, and study.

Tuesdays & Thursdays, October 3–17 • 6:30–8:30 p.m. • field trip: Saturday, October 7 • \$150 member, \$180 nonmember

## Urban Ecology

Explore the dramatically changing landscapes of Denver and the Front Range. Join geologist Bob Reynolds to investigate some of the ongoing megaprojects associated with transportation enhancement, water recycling, and park land and open space planning. Classroom time, complemented by guest lecturers, will cover this new era of enhanced urban living, and the field trips will take you to some of the sites.

**Mondays, October 23 & 30 • 6:30–8:30 p.m. • field trips: Saturdays, October 28 & November 4 • \$150 member, \$180 nonmember**

## Catch Me If You Can: The Splendid Lives of Predators

Predators are among the most complex characters in the story of life. They regulate every ecosystem and maintain the natural balance. Join Museum instructor Sue Ware to explore the fossil record, modern fauna, early human interactions, and the anatomy of predators big and small to see how these creatures are spectacularly engineered to do what they do. Find out how they regulate other animals in the habitat and how disease, trauma, and the health of prey animals is enhanced by the efficiency of predators. Experience a combination of lecture, virtual lab, and tactile lab.

**Tuesdays & Thursdays, October 24, 26, November 2, 7 • 6:30–9:30 p.m. • \$110 member, \$140 nonmember**



## Field Sketching the Dioramas

Get out in the field and do some sketching no matter the weather with Marjorie Leggitt, an award-winning illustrator whose work you enjoy in Prehistoric Journey and many other halls. Because the Museum's dioramas are beautiful bio-systems frozen in time, they also make excellent subject matter for indoor field sketching. In this course for all levels, start with the basics, learning to draw individual

subjects and work with simple tools to get accurate proportions. Move on to more complete scenes that capture the big picture. Working in graphite, you will be able to take your new skills on the road for your next adventure. Materials included.

**Tuesdays & Thursdays, November 28, 30, December 5, 7 • 6–9 p.m. • \$225 member, \$255 nonmember**

## FAMILIES, TEENS, AND CHILDREN

### Conquer the Skies for Families • All ages

Soar through the air with your whole family during this evening all about flight! Start with a pizza dinner and a chance to build, experiment, and explore, learning how flight works. Then head over to the Phipps IMAX Theater for a sneak peek screening of *Conquest of the Skies 3D*, which uses the very latest science and stunning special effects to tell the 300-million-year story of flight.

**Thursday, September 7 • 6–8 p.m. • member: \$20 adult, \$15 child/junior • nonmember: \$25 adult, \$20 child/junior**



### **Family “Chemical” Bonds • All ages**

Does your family have chemistry? It’s time to prove it in this wacky workshop! Your family will really “bond” over some colorful chemistry demonstrations and a chance to work together to build density towers and polymers.

Sunday, September 24 • 10 a.m.–noon • member: \$12 adult, \$8 child/junior • nonmember: \$15 adult, \$10 child/junior

### **Teen Lounge • Ages 13–18**

Teens take over the Museum at this totally free, uniquely teen night. Venture through Museum exhibits, get hands-on with entertaining activities, jam to live music, and win awesome giveaways. Chill with friends and eat free snacks after hours! Check out [dmns.org](http://dmns.org) for details. Made possible in part by Lincoln Hills Cares.

Friday, October 13 • 7–10 p.m. • free

### **Family Overnight: Halloween at the Museum • Grades K–8**

It’s all treats during this night of ooey-goey activities, spooky fun, and trick-or-treat trivia! Enjoy action-packed fun in the Museum as you and your family explore the temporary exhibition *Ultimate Dinosaurs*, see an IMAX film, and sleep in the diorama halls. Includes pizza dinner, evening snack, hot breakfast, and of course ... candy!

Friday–Saturday, October 27–28 • 6 p.m.–10 a.m. • member: \$65 adult, \$55 child/junior • nonmember: \$80 adult, \$70 child/junior

### **Live Bats! • All ages**

Meet Rob Mies, director of the Organization for Bat Conservation, as you step into the mysterious world of bats and explore their lives, habitats, and nocturnal strategies. Meet fruit bats from Asia and Africa, and the largest bat species in the world.

Saturday, October 28 • noon or 2 p.m. • member: \$12 adult, \$8 child/junior • nonmember: \$15 adult, \$10 child/junior

### **Ultimate Family Dino Fun • All ages**

There’s a different dino to delight everyone in the family at this prehistoric party celebrating our latest temporary exhibition *Ultimate Dinosaurs*. Check out some of the most spectacular fossils unearthed in recent years as you venture through the exhibition, find out how fossils form, and make your own family fossil to take home.

Thursday, November 30 • 6–8 p.m. • member: \$20 adult, \$15 child/junior • nonmember: \$25 adult, \$20 child/junior

## **RESERVATIONS AND GENERAL INFORMATION**

303.370.6000, daily, 9 a.m.–5 p.m., or [dmns.org](http://dmns.org)

## **MEMBERSHIP OFFICE**

303.370.6306 or [members@dmns.org](mailto:members@dmns.org)

## **RENEW YOUR MEMBERSHIP ONLINE**

[dmns.org/members](http://dmns.org/members)

## **PRINT-AT-HOME TICKETS**

Print-at-home tickets are available for exhibitions, IMAX and Planetarium shows, and lectures and programs, and there's no handling fee! When you arrive at the Museum, proceed directly to the ticket takers or to your program. Please always bring your membership card and photo ID when you visit the Museum. There is a \$2 handling fee per ticket for surcharged exhibitions reserved by phone.

## **E-CARD: BENEFITS AT YOUR FINGERTIPS**

The free eCard app is so much more than just a convenient way to store your member number! You'll receive instant access to your members perks and benefits. Find out more @ [dmns.org/ecard](http://dmns.org/ecard).

## **E-COMMUNICATIONS**

Receive a monthly newsletter with updates and special offers as well as advance notices and other insider information when you share your e-mail address with us at [members@dmns.org](mailto:members@dmns.org).

## **CONFIRMATION**

For After Hours programs, classes, field trips, and programs for families and teens, you will receive a reminder e-mail with directions for entering the Museum.

## **REFUND POLICY**

Sales are final on all tickets unless the Museum cancels the event.

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