

NATIONAL
MUSEUM *of*
**NATURAL
HISTORY**

☀ Smithsonian

Connecting People With Their Planet

2023 ANNUAL REPORT



Our Mission:

Understanding The Natural World and Our Place In It.



Dear Friends,

“It is advisable to look from the tide pool to the stars and then back to the tide pool again.”

This quote, from John Steinbeck’s *The Log from the Sea of Cortez*, speaks to the interconnectedness of all things in nature. It is a concept that underpins everything we do here at the Smithsonian [National Museum of Natural History](#).

It is at the very heart of why we collect. It is central to our scientific endeavors. And it undergirds all of our public engagement efforts — be they our exhibits, our educational programming, or our online offerings.

It is our hope, indeed our mission, to stir the wonder of this interconnectedness within our visitors so that they may fully understand how connected they are both to the larger story of our planet and within their own communities and backyards.

In 2023, we worked to bring these connections to the forefront in ways large and small, figurative and literal.

As part of NASA’s OSIRIS-REx team, we cast our sights toward the stars and brought back a sample of the asteroid Bennu to the museum. This specimen will help us answer questions about our unique planet, including the very origins of life itself. We looked to the depths of the ocean and made new discoveries, offered solutions for global challenges, and took steps to begin building a genomic library of the life within it.

We highlighted connections — seen and unseen — in our new exhibition about cellphones and in another reminded visitors about their relationships with the fading night sky.

We continued to focus upon our role in nurturing the next generation of scientists who will help discover, analyze, and understand the innumerable threads that stretch across nature, connecting the sea stars in a tidepool to the celestial curiosities in the night sky.

This work could not have been made possible without a network of supporters and partners like you.

We thank you for your continued contributions to the museum and are honored to share a connection with you.

Sincerely,



John Foster,
Board Chair



Kirk Johnson,
Sant Director

Our Unique Planet

Bennu Samples Touch Down

This year, historic samples of Bennu—a carbon-rich, near-Earth asteroid—arrived at the National Museum of Natural History.

The rocky fragments were collected from the asteroid by NASA's OSIRIS-REx mission, the first U.S. space mission to sample the surface of a planetary body since Apollo 17 in 1972. Samples from Bennu may provide insights into how water and organic molecules first reached an embryonic Earth, a core research focus of the museum's new Our Unique Planet initiative.

Bennu is slightly wider than the Empire State Building is tall, shaped like a spinning top and orbits the sun at a distance between the orbits of Earth and Mars. Bennu was an intriguing target for NASA's OSIRIS-REx ([Origins, Spectral Interpretation, Resource Identification and Security-Regolith Explorer](#)) mission due in part to its proximity to Earth's orbit and its chemical composition. Bennu's rocks are thought to date back to the formation of the solar system more than 4.5 billion years ago. Early telescope observations of Bennu suggested that it is carbon-rich and likely contains organic molecules similar to those that sparked life on an embryonic Earth.

In 2020, the OSIRIS-REx spacecraft collected rock and dust specimens from Bennu's rugged exterior before beginning its long journey to another asteroid. On the way, it passed by Earth to drop off a capsule containing the samples it collected. The capsule entered Earth's atmosphere off the coast of California before landing in Utah. When it reached the desert floor, scientists promptly collected it to prevent as much contamination as possible.

This sample of Bennu was the first piece of the asteroid to be displayed to the public. →



"Having returned to Earth without being exposed to our water-rich atmosphere or the life that fills every corner of our planet, the samples of Bennu hold the promise to tell us about the water and organics before life came to form our unique planet," said Tim McCoy, the museum's curator of meteorites who has worked on the OSIRIS-REx mission for nearly two decades as part of an international team of scientists.

NASA scientists have already found evidence of essential elements like carbon in the tiny rocks exposed outside the main sample container. These early samples, which are smaller than a grain of rice, also contain water-rich minerals. Researchers speculate that similar water-containing asteroids bombarded Earth billions of years ago, providing the water that eventually formed the planet's first oceans.

The [arrival of the Bennu asteroid samples](#) marks a major milestone in the museum's new initiative, Our Unique Planet. As a public-private research partnership, Our Unique Planet investigates what sets Earth apart from its cosmic neighbors by exploring the origins of the planet's oceans and continents as well as how minerals may have served as templates for life.



Bennu Display

In addition to its Bennu research sample, the Smithsonian is the first institution to display a piece of the asteroid to the public. The sample is exhibited in the museum's [Janet Annenberg, Hooker Hall of Geology, Gems, and Minerals](#) meteorite gallery alongside scale models of the OSIRIS-REx spacecraft and the Atlas V 411 rocket that carried the spacecraft. "This exhibit is our first chance to share this incredible journey with the public," McCoy said.

Exhibit models provided by Lockheed Martin Space Systems and United Launch Alliance



A VIEW OF THE BEGINNING

Could this fragment of an asteroid hold information about the beginnings of our Solar System and the formation of life on Earth?

Discovered in 1999, the asteroid Bennu formed soon after the birth of the Solar System 4.6 billion years ago. It orbits the Sun at about the same distance as Earth does. With these new samples, scientists can now study the water-rich minerals and carbon-rich molecules formed before life contained within to better understand the origins of the Solar System, Earth's oceans, and life itself.



New Clues about the Rise of Earth's Continents

Continents are an essential part of why Earth is uniquely habitable for life. Yet surprisingly little is understood about their origin. One key factor that sets continental crust apart is its lack of iron. This helps Earth's continental crust stand above denser, iron-rich oceanic crust, making terrestrial life possible.

Research geologist Elizabeth Cottrell, the museum's curator of rocks, and Megan Holycross, a former Peter Buck postdoctoral fellow at the museum, recently tested a popular theory that the crystallization of the mineral garnet, a process that incorporates iron, depleted iron content in continental crusts.

In a paper published in the journal [Science](#), Cottrell and Holycross, who is currently at Cornell University, utilized laboratory experiments to grow garnet crystals from molten rocks under the crushing conditions found beneath continental arc volcanoes, where continental crust is formed. As the team conducted the experiment in temperatures ranging from 950 to 1,230 degrees Celsius, they discovered that the garnet crystals did not incorporate enough iron from the molten rock to explain the iron-depletion in continental plate forming magma, disproving the popular hypothesis.

Like so many results in science, the findings lead to more questions that Cottrell and other researchers in the museum's Mineral Sciences department are still trying to answer as part of the Our Unique Planet initiative.

Ocean Science Center



Catalyzing change and action by advancing and sharing knowledge of the ocean

Smithsonian Scientists Pinpoint Probiotic that Protects Coral from Deadly Disease

Since 2014, a mysterious ailment called stony coral tissue loss disease (SCTLD) has devastated reefs across Florida and the Caribbean. According to Valerie Paul, the head scientist at the museum's Smithsonian Marine Station at Fort Pierce, Florida, the deadly disease "eats the coral tissue away," leaving behind white coral skeletons.

But help may be on the way for these ailing reefs. While studying how SCTLD spread among great star coral, Paul and her team noticed certain patches of coral never exhibited signs of disease like lesions. The team suspected that microorganisms like bacteria may be protecting the healthy coral fragments from the pathogen.

The team tested more than 200 bacterial strains from the disease-resistant coral. They found that 83 strains displayed some antimicrobial activity against SCTLD. But one strain — Mch1-7 — showed the most promise. When they tested Mch1-7 on live pieces of great star coral, they discovered that the strain stopped or slowed the progression of the disease in nearly 70% of the infected coral fragments. More importantly, Mch1-7 also prevented the disease from spreading to other corals.

Their findings, published in the journal *Communications Biology*, are the first effective bacterial probiotic for treating and preventing SCTLD. The potential of this newly identified probiotic to help Florida's embattled corals represents some urgently needed good news, Paul said.

"Between ocean acidification, coral bleaching, pollution and disease there are a lot of ways to kill coral," Paul said. "We need to do everything we can to help them so they don't disappear." This interdisciplinary research is part of the museum's new Ocean Science Center, which aims to consolidate museum's marine research expertise and vast collections into a collaborative center to expand understanding of the world's oceans and enhance their conservation.

Deep-Sea Expedition Yields New Species of Black Coral

Research zoologists Jeremy Horowitz and Andrea Quattrini, the museum's curator of corals, recently described a [new species of deep-sea black coral](#). Researchers collected the scraggly cold-water coral and a trove of other creatures during a joint Smithsonian and National Oceanographic and Atmospheric Administration (NOAA) expedition plumbing the Caribbean Sea just south of Puerto Rico in 2022.

Unlike colorful reef-building corals that live in the shallows, black corals (named for the inky color of their skeletons) reside in perpetually dark waters hundreds to thousands of feet below the surface. Black corals are staples of deep-sea ecosystems around the world. But these denizens of the deep may be at risk from threats like ocean acidification, climate change and poaching (their skeletons are prized components of jewelry).

"Describing these species is fundamental information to make conservation decisions," said Horowitz, a postdoctoral researcher at the museum. "You have to know it before you protect it."



The skull of the Rice's whale skeleton that scientists studied and described to officially designate it as a new species. It now represents the holotype specimen for the species. ↑

Museum Spotlights Endangered Rice's Whale

Measuring 40 feet long and weighing an estimated 30 tons, the Rice's whale seems like it would be tough to miss. But scientists did not formally describe the whale, which inhabits the northern Gulf of Mexico year-round, as a unique species until 2021. By that time, Rice's whales were already considered critically endangered.

The museum has been among the leading figures in Rice's whale conservation since 2019, when one of the whales washed ashore in Everglades National Park in Florida. Following a massive effort to transport the decomposing whale, museum specialist John Ososky delivered the complete skeleton to the Smithsonian's Museum Support Center in Maryland.

As researchers carefully examined the stranded whale's skeleton and compared it with past genetic work, they determined that the whale was distinct enough to merit the designation of a new species. They named the new species after whale researcher Dale Rice and designated the museum's skeleton as the species' holotype, or the single specimen that serves as the official representative of a new species for the entire scientific community.

As the steward of the Rice's whale holotype, the museum ensures that the specimen is accessible for research in perpetuity. Scientists at the Smithsonian and elsewhere are already working to learn more about these little-known giants, who are threatened by human activities like offshore energy exploration, oil spills, vessel strikes, ocean noise and entanglement in fishing gear. Some estimate fewer than 100 Rice's whales remain in the Gulf.

This past November, scientists gathered to discuss what they have learned about Rice's whales at a [symposium](#) hosted by the museum, NOAA and the Marine Mammal Commission.

Cellphone

Last Summer, the National Museum of Natural History opened "Cellphone: Unseen Connections," a new exhibition exploring the intersection of technology, nature and culture in every cellphone.

The first-of-its-kind exhibition features interactive displays that explore the many ways that cellular phones bring people closer to one another. The exhibition also includes hundreds of objects from the museum's collection, including minerals and an array of artifacts from around the world.

As the fastest spreading technology in human history, cellphones became universally indispensable in an instant. With the power of constant connectivity, these devices have reshaped entire industries and revolutionized how people document and express their lives. But behind their screens, cellphones hold a deeper story about the ways people are connected to the Earth and to each other through the technology they create.

"Cellphone" displays more than 750 objects ranging from intricate microchips to undersea cables that once crisscrossed the Atlantic Ocean. Minerals, including quartz, silicon and silver from the museum's collection, represent the roughly 65 elements that comprise the standard cellphone (by contrast, the human body is primarily composed of just six elements). On view alongside modern objects like gold-plated SIM cards, lithium-powered batteries and sleek smartphones are historic artifacts like gold pendants from ancient Egypt and copper axe money from Mexico.

The exhibition also features custom-built cellphone tower antennas, fiber-optic cables and servers. The Motorola DynaTAC 8000x, the first handheld mobile cellular phone, is one of the many historic cellphones displayed. Released to the public in 1983, the DynaTAC weighs nearly 2 pounds and took 10 hours to charge.

The museum's new exhibition "Cellphone" features several giant smartphone screens that visitors can interact with and even pose with different emojis.



"Cellphone" contains a large-scale comic mural highlighting the social effects of cellphones on four fictional characters living in Washington, D.C. The commissioned artwork joins an array of cellphone-inspired art that express the evolving role of phones in identity and culture around the world. These include colorful cellphone cases adorned with everything from dinosaur fossils to Indigenous artwork. Another featured object is a nearly 6-foot-tall fantasy coffin crafted by artists in Ghana to resemble a vibrant cellphone. The exhibition also features a wall of technology that has been subsumed by the cellphone, including payphones, boomboxes and VHS tapes.

But the new exhibition is far more than simply show and tell. Museum visitors can participate in a cellphone repair game, consider how global networks keep their phones connected and even interact with oversized selfie screens.

The exhibition and its educational programming were made possible through the charitable generosity of lead sponsor Qualcomm with major support by T-Mobile.

Why Cellphones?

Compared with dinosaur skeletons and gemstones, an exhibition on cellphones may seem out of place in a natural history museum. But these devices are key clues to piecing together the ongoing human story according to Joshua Bell, the museum's curator of globalization. "Cellphones have become a defining feature of human interaction globally," Bell said. "This technology is an intimate part of what being human is."

As a cultural anthropologist, Bell has spent more than a decade studying how people around the world use these "endlessly fascinating" devices. He has used this research experience to develop and curate "Cellphone: Unseen Connections," the museum's new multi-faceted exhibition. "We are telling a big natural history story through a device that nearly everyone on the planet has," he said. "The exhibition is something that NMNH is uniquely positioned to do because it illustrates what NMNH can do with the breadth and depth of our collections."



The Woolly Dog

Museum Scientists Partner with Coast Salish Communities to Analyze 160-Year-Old Indigenous Dog Pelt Unique to Smithsonian Collection



For thousands of years, Coast Salish Tribes and First Nations in Washington State and British Columbia bred and cared for an Indigenous breed of woolly dogs. They sheared these dogs like sheep and wove their thick hair into blankets and other ceremonial items. The dogs themselves also possessed spiritual significance and became emblems for many Coast Salish communities.

In the mid-nineteenth century, this once thriving tradition was in decline when explorer George Gibbs adopted a woolly dog he called Mutton. When Mutton died in 1859, Gibbs sent the dog's pelt to the nascent Smithsonian Institution, where it remains the only known woolly dog fleece in the world.

Evolutionary molecular biologist Audrey Lin first came across Mutton's pelt as a Peter Buck postdoctoral fellow in 2021. "I was just overcome with excitement—I had heard from some other people that Mutton was a bit scraggly, but I thought he was gorgeous."

Lin teamed up with NMNH anthropologist and curator Logan Kistler and an international team of researchers to analyze genetic clues preserved in Mutton's pelt. They were able to trace the woolly dog breed back some 5,000 years and estimated that nearly 85% of Mutton's ancestry can be linked to pre-colonial dogs. This serves as a testament to how well Coast Salish communities maintained woolly dogs' unique genetic makeup.

The researchers also pinpointed nearly 30 genes that contributed to the dogs' highly sought-after woolly fur. Similar genes were activated in the genomes of woolly mammoths. To determine what these shaggy canines looked like, the researchers partnered with noted natural history illustrator Karen Carr to create a life-like reconstruction.

But their findings, published in the journal *Science*, could only tell the researchers part of the woolly dog's story. According to Kistler, the "Coast Salish traditional perspective was the entire context for understanding the study's findings." The team worked closely with several Coast Salish co-authors including Elders, Knowledge Keepers, and Master Weavers to learn more about the role woolly dogs played in society and the historical factors surrounding their decline.

The woolly dog's disappearance remains enigmatic. But the team was able to dismiss one possible theory—that the dogs were replaced by machine-made blankets. Instead, maintaining woolly dogs likely became increasingly difficult or forbidden as disease and colonial policies of displacement and forced assimilation devastated Coast Salish Tribes and First Nations.

But despite their disappearance, the memory of woolly dogs remains embedded in Coast Salish society. Michael Pavel, an Elder from the Skokomish/Twana Coast Salish community in Washington and one of the coauthors of the new paper, believes their understanding of woolly dogs is only getting clearer thanks to the new research effort.

"All of our communities held a certain aspect of knowledge about the woolly dog," Pavel said. "But when woven together... we now have a much more complete understanding."



The pelt of Mutton, a woolly dog cared for by naturalist and ethnographer George Gibbs, has been in the Smithsonian's collection since the 1850s. It remains the only known woolly dog fleece in the world. †

Human Dignity, Shared Stewardship, and Ethical Returns



Dorothy Lippert Named Leader of Repatriation Program Office

In August, **Dr. Dorothy Lippert** was named the program manager of the National Museum of Natural History's [Repatriation Office](#) and will lead our efforts to collaborate with Native American, Alaska Native and Native Hawaiian communities to return remains and sacred objects deposited decades, or even centuries ago, in the Smithsonian's collection. Lippert is the first woman and first Native American to hold this position.

What inspired you to work in repatriation?

I began working on repatriation when I was in graduate school. Archaeologists had been arguing with tribal members and with museum organizations about the need for repatriation. The tribes were saying that repatriation is a human rights issue. There was a lot of talking, but people weren't really hearing each other.

And I was right in the middle of that. I would go to an intertribal organization meeting and I'd hear all of these opinions. And then I'd go back to my classes in grad school with archaeologists and hear different opinions. I felt like one of the few people hearing both sides. I realized that if I could talk about repatriation from this perspective, maybe people will begin to understand it a bit more.

What are some of the challenges of overseeing repatriation efforts at the museum?

It's challenging because of the extent of the museum's collections. We're working with Native American individuals and their belongings that need to go back to the tribes. But there are 574 federally recognized tribes that are involved that we need to be accountable to.

But there's also benefits to working with so many tribes on repatriation. When tribal representatives come to the museum and talk to us, we always learn more. And so we get so many new perspectives from all these tribes that hadn't really been in place at the museum before.

Do any particular repatriation experiences from your time at the museum stick with you?

The one repatriation that really sticks with me, and I think always will, is a repatriation we did for my own tribe, the Choctaw Nation of Oklahoma. When I learned that a Choctaw woman's remains were at the museum, I made a promise that I wouldn't leave the museum until I had seen her return home safely. It was so rewarding to me to be able to keep that promise to her.

How has the field of repatriation changed since you began working at the Smithsonian? How do you hope to help influence the future direction of repatriation through your new position?

Over the last 20 years, tribes and museums have gotten more experience working with each other. We've learned that things work better when we work together. We have also learned that repatriation work can be incredibly rewarding and beneficial to the museum. When we work with communities on repatriation, this can lead to other projects that enhance our knowledge. We've learned how to think about our collections as not just objects, but items that come from a living community.

When I think about the future of repatriation at the Smithsonian, I want to move more quickly. It can be traumatic having to wait to take care of your ancestors. We can then begin to address other interests that tribes have with the museum beyond repatriation.

This can improve the whole institution. The Smithsonian was founded 'for the increase and diffusion of knowledge.' But for a long time, we were not including tribal perspectives and Indigenous knowledge and science. So, it wasn't true knowledge. With a greater inclusion of Indigenous voices, I think the Smithsonian is positioned to truly increase the knowledge that it provides.

The Journey Home to Australia

In November, the museum held a ceremony to send home 14 ancestors to Australia in the care of their descendants from the Ngarrindjeri (South Australia), Eastern Maar (Victoria) and Yawuru (Western Australia) communities. Mark Tayac, Chief of the Piscataway Indian Nation, upon whose homeland the museum now sits, participated in the moving event.

Collaborating with Tribal Communities

3D technology is becoming a powerful tool for the preservation and perpetuation of Native American Cultural Heritage.

In November, the Tribal Council of the Tlingit Wrangell Cooperative Association launched a 3D collaboration with our Repatriation Office and the Smithsonian's Digitization Program Office. Community representatives traveled from Wrangell Island, in Southeast Alaska, to 3D scan important objects from Wrangell.

With the assistance of 3D specialists from the Digitization Program Office, the representatives, led by Stax'héen Tláa (Stikine Mother) Luella Knapp, of the Naanyaa.ayi Clan, used a structured light 3D scanner to begin digitizing the 45-foot-long Brown Bear Canoe that belonged to Naanyaa.ayi Clan whose spokesman was Chief Shakes. The canoe, collected around 1891, is badly weathered and damaged.

The tribe hopes to work with the Smithsonian to digitally repair and restore it as a 3D digital model that can be shown in a digital exhibit, incorporating the Lingít language, on the Smithsonian's 3D viewer for educational purposes.

Human Remains Task Force

Since its founding in 1846, the Smithsonian has built scientific collections of the remains of some 30,000 people. Most of them were acquired during the 19th and early 20th centuries and come from many sources.

The majority of the human remains in Smithsonian collections were acquired in ways that are not consistent with modern standards, usually without informed consent by these individuals or their families. These practices of the past are no longer acceptable today and we are committed to making meaningful changes that reflect our current values and priorities as an institution.

In early 2023, the Smithsonian established a [Human Remains Task Force](#) to offer recommendations for an institutional policy that addresses the future of all human remains still held in our collections. The museum's Celia Emmelhainz, Rick Potts, and Sabrina Sholts served on the task force which completed its work at the end of the year. The formal policy is expected to be unveiled in 2024.



Representatives from the Tribal Council of the Tlingit Wrangell Cooperative Association worked with museum researchers to digitize a 45-foot-long Brown Bear Canoe that was collected in 1891 from Southeast Alaska. ↓



By the Numbers 2023

14,016,117
Website Visitors

4,374,053
Onsite Visitors

837,497
Social Media Followers

148,109,762
Objects in the National Collection

2
New Exhibitions

91,116
New Acquisitions

179
Fellows

481
Volunteers

575
Research Associates

\$8,676,735
Grant Funding

571
Research Publications

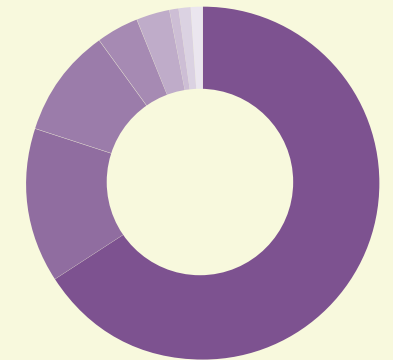
29
New Species Discovered

352
Staff

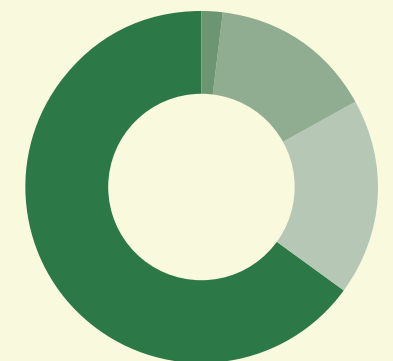
108
Interns

Financials

FY 23 Revenue
\$85.3 Million



FY 23 Expenses
\$78.9 Million



New Exhibits

Lights Out: Recovering Our Night Sky

For billions of years, life on Earth has danced to a cycle of sun and stars, day and night, light and dark. But light pollution from artificial lights has disrupted this pattern around the world, making nights brighter in ways that affect nature and people.

Opened in March, "[Lights Out: Recovering Our Night Sky](#)" examines how the night sky—and its disappearance due to light pollution—affects all life on Earth, from natural ecosystems to human cultures.

Through extraordinary photographs, objects from the museum's collections and interactive displays, "Lights Out" offers ways to discover and regain people's connection with the night sky. In addition to the exhibition's visual components, it also offers opportunities for blind and low vision visitors, as well as visitors who prioritize experiential and multi-sensory learning.

Visitors to "Lights Out" learn about the history of lighting and the unintended consequences of pervasive lighting. They explore the effects of artificial lighting on the natural world and cultural connections between humanity and the night sky. They also discover lighting principles that can be used to reduce light pollution and ways they can experience starry nights in their own region.

"Lights Out: Recovering Our Night Sky" was made possible by the support of the Windland Smith Rice Endowment.

"Our exhibition asks visitors to stop and consider what a disappearing night sky means to them and what they can do to help restore it for themselves and others."

— Stephen Loring, co-curator of the exhibition and archaeologist with the museum's Arctic Studies Center



Do-It-Yourself Exhibits

This year we added a new offering to our free [Do-it-Yourself \(DIY\) Exhibits program](#) - *Human Origins*. This print-on-demand exhibition builds off of the museum's permanent hall examining evolution and "What it means to be human?" Since its launch in Spring 2023, *Human Origins* DIY has received over 140 applications from organizations eager to display it.

Over 250 venues applied to host the museum's four different DIY exhibits in 2023, including a school teacher in Ukraine to whom we sent pull-up banners of our *Genome* DIY for her STEM program at a local museum.



Lion of Merelani

The Lion of Merelani, one of the most exquisite colored gemstones in the world is now on view in the museum's [Janet Annenberg Hooker Hall of Geology, Gems, and Minerals](#).

The glowing green gem is a tsavorite – an exceptionally rare garnet predominantly found in a region straddling the border of Kenya and Tanzania. At 116.76 carats, it is the largest precision-cut tsavorite in the world.

The Lion of Merelani joined the National Gem Collection thanks to a gift from Somewhere In The Rainbow and Bruce Bridges, the CEO of the Bridges Tsavorite mining company. The Lion of Merelani honors Bruce's father Campbell Bridges, the famed geologist who discovered tsavorite in Tanzania in 1967.

Rice's Whale

The museum's newest display in the [Sant Ocean Hall](#) features a plate of Baleen and a piece of plastic sitting side by side. While the two objects may look unassuming, they are key pieces that have helped researchers understand both the life and death of the Rice's whale, a newly described species that is endemic to the waters of the Gulf of Mexico. Our museum stewards the only adult Rice's whale specimen held in a museum collection.



Education, Outreach, & Visitor Experience



Exhibit halls come to life

In 2023, the museum expanded educational offerings in its exhibition halls and [Q?rius, The Coralyn W. Whitney Science Education Center](#) with programs that featured exciting science, engaging experts, and opportunities to explore some of the Smithsonian’s amazing collections. Thousands of visitors attended these programs to explore objects and have conversations with people doing science and thousands more accessed learning through our digital resources.

The museum’s exhibits are places of exploration for our youngest audiences and their caregivers. [“Play Dates”](#) were held in Q?rius and in several exhibition halls - using the power of “play” by offering stations with objects, storybooks, and crafts aligned with the main themes of the halls.

Activities in [“Cellphone: Unseen Connections”](#) encouraged new and different types of conversations around the important ways that cellphones and the natural world are connected. [“Phone of the Future”](#) is a multi-player game that puts museum visitors in a decision-making role to build a new phone where “success” is impacted by ethical and environmental decisions.

Evening events become big hit

This year, the museum’s [“Sip & Create”](#) events became one of the hottest tickets in the D.C. area for young adults. These after-hours events, which routinely sold out within days, combined educational, natural-history crafting projects, with socializing and refreshments. Each event explored a different theme, such as whale conservation or local wildlife, and featured a new artist and science expert. As visitors sipped their beverages and learned about natural history, they also tried their hands at a variety of on-theme crafts. These projects included everything from bee houses and whale puppets to gyotaku, the traditional art of Japanese fish-printing.



Summer Solstice Celebration

With hours extended late into the evening, the museum rocked with more than 23,000 families and adults during this year’s Smithsonian Solstice event that featured a live set by DJ Heat DC in the Rotunda. The solstice festivities also included experts, scientists, and artists representing the range of topics and people featured in the museum’s newest exhibition on cellphones. And all guests could visit their favorite museum exhibits after-hours during this night at the museum celebration.



Museum engages educators and students from near and wide

On October 3, 2022, in-person school programs officially returned to Q?rius for the first time since 2020. For the 2022–23 school year, the museum delivered 600 programs to more than 17,000 K-12 students. All programs were led by the museum’s educators and tied to our content, school curriculum, and national science standards.

The museum also offered a two-day workshop in Q?rius to engage local teachers in a hands-on, inquiry-based exploration of biodiversity using environmental DNA (eDNA) and other techniques. Teachers worked alongside scientists and educators from the museum and the Smithsonian Environmental Research Center to discover how biodiversity data is used to track changes in aquatic biodiversity and how they can incorporate this information into their classrooms.

Since 2013, we have developed unique and effective digital resources, programs, and activities for the millions of learners who cannot visit the museum in person. [A Community-Based Approach to Culturally Responsive Science Education](#) is a two-year project supported by the Smithsonian’s [“Together We Thrive”](#) grant program and coordinated by project partners from NMNH, the Arctic Studies Center, the National Zoo and the Conservation Biology Institute. The effort is convening community stakeholders and educators in two locations, Alaska and Washington, DC, to co-create projects, experiences, and resources that engage students with science in culturally responsive and sustaining ways. This grant continues the innovative digital work of our museum educators to more equitably engage all students in science and science learning.

600 programs
17,000
K-12 students



COMMUNITY OUTREACH

People in Nature

[Engaging Youth in Environmental Science](#) is a place-based outdoor education and research program designed for elementary to high-school youth. This urban ecosystem restoration and monitoring project is funded through a Smithsonian [“Together We Thrive”](#) grant and is a collaboration between EOVE, Botany and the Smithsonian Environmental Research Center.

[Black Birders Week 2023](#) was a collaboration between the museum, the National Museum of African American History and Culture (NMAAHC), and the National Park Service’s Kenilworth Park and Aquatic Gardens. The celebration attracted more than 2,000 participants who enjoyed local performers, joined a bird walk on the National Mall, and engaged in multigenerational activities.

[City Nature Challenge 2023](#) was a global four-day bioblitz to engage communities in documenting biodiversity. Among all cities, DC ranked 5th for number of participants and 9th for number of species observed. NMNH educators and staff have been involved in the project since 2017.

66,394 people
46 countries
482 cities
2 million observations
57,200 species

Pollinators Take Center Stage

[PolliNation DC](#) is a community science project recruiting community gardeners in the D.C. area to make observations of pollinators feeding on flowers. The project, which is a collaboration between Education, Outreach, and Visitor Experience (EOVE) and the Department of Botany, utilizes the data to determine pollinator preferences to help gardeners establish healthier habitats for them.

[Science for Bumble Bees](#) uses cell phone cameras set on time-lapse to take photos of flowers and capture visits by pollinators. The public can score the images on Zooniverse, a crowdsourcing platform for citizen science, and identify which flowers are visited by bumble bees, and importantly, which are not.





Collections Spotlight

A small fraction of the more than 50 million specimens housed in the museum's invertebrate zoology collection. †

Sant Director Leads Effort to Inventory Natural History Collections Around the Globe

Beyond the National Museum of Natural History's exhibition halls and public displays are more than 148 million specimens and objects including meteorites, minerals, moths and mammoths.

But even a collection this large reveals only snapshots of the natural world's vast story, making it difficult to gain a comprehensive understanding of the Earth's past and forecast the planet's future. Natural history museums around the world have similar gaps in their collections.

Comparing the collections of the world's natural history museums could help fill these knowledge gaps. The museum's Sant Director Kirk Johnson spearheaded an effort to inventory the scientific holdings of the world's largest natural history museums.

In a paper published in *Science*, Johnson and more than 150 museum directors and scientists crafted a methodology that could rapidly survey collection holdings across museums by creating a common vocabulary of 19 collection types. These terms span the entire biological, geological, paleontological

and anthropological collections and 16 terrestrial and marine regions that cover the Earth. They then applied this method to survey the holdings in 73 large natural history museums across 28 different countries.

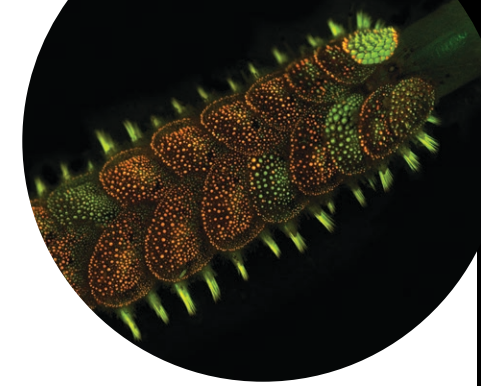
Collectively, these museums safeguard more than 1.1 billion objects for scientific research. While the scope seems staggering, the survey showed that there are conspicuous gaps across museum collections in areas including tropic and polar regions, marine systems and undiscovered arthropod and microbial diversity. These gaps could provide a roadmap for coordinated collecting efforts in the future.

The paper marks just the first step in an ambitious effort to create a global natural history inventory. "We wanted to find a fast way to estimate the size and composition of the global collection so that we could begin to build a collective strategy for the future," Johnson said. Tapping into the immense scientific resources stored in museums around the world could help scientists and decision makers find solutions to urgent, wide-ranging issues such as climate change, food insecurity, human health, pandemic preparedness and wildlife conservation.

Fossil Preparators Re-Excavate Tyrannosaurus from Century-Old Display

After decades on display, a 75-million-year-old tyrannosaurus skeleton was recently removed from its plaster mount by preparators in the museum's FossilLab. Belonging to a species of prehistoric predator named *Gorgosaurus libratus*, a smaller, older relative of *Tyrannosaurus rex*, the skeleton was uncovered more than a century ago in Alberta. However, the original museum display entombed half of the bones in a matrix of plaster, burlap and metal, making it difficult for researchers to study this specimen.

Fossil preparator Myria Perez and the rest of the FossilLab team have worked for more than a year to free the tyrannosaurus's bones from the mount. As they chip away at the plaster, they sometimes find surprises like oversized metal screws and even some of the original rock the skeleton was buried in. "It's very surprising because this side of it hasn't been looked at in over 100 years," Perez said.



3D WORMS:
A team of Smithsonian scientists led by research zoologist and curator Karen Osborn created digital three-dimensional models of some of the museum's most delicate specimens: marine segmented worms. These specimens were originally described decades ago by pioneering curator Marian Pettibone. Using micro-CT scanners, Osborn and her colleagues are making these specimens accessible to researchers around the world as part of the Pettibone Legacy Project.

A Killer Addition to the Museum's Collection

In early January 2023, a 21-foot-long female orca was found stranded along a beach in Florida, the first time an orca had stranded in the state in nearly 70 years. Marine mammal specialist John Ososky responded to the stranding to ensure the animal's skeleton ended up at the museum, where it would be available for researchers to study.

Before it could enter the museum's collection, the orca was buried in Gainesville for five months to skeletonize. In August, Ososky and museum technician Theresa Hsu retrieved the specimen and drove it to the museum's Osteo Prep Lab in Suitland, Maryland, where the bones were cleaned and prepared for storage. The new specimen is the first complete mature orca skeleton in the Smithsonian's collection. It provides a valuable data point for understanding at-risk populations of orcas living off the Southeastern coast of the United States.



MYSTERIOUS MOLAR:
While sifting through cabinets in the museum's paleobiology collection, postdoctoral researcher Kumiko Matsui came across an unlabeled fossil tooth from an ancient hippo-like herbivore called a desmostylian. Matsui teamed up with curator Nicholas Pyenson to determine where the strange tooth, which is shaped like a bundle of rods, came from. Archival museum records and photographs revealed the tooth was unearthed in Northern California's 22-million-year-old Skooner Gulch Formation back in 1965.



STRANGE SEA STARS:
Research zoologist Christopher Mah described 11 new species of Antarctic deep-sea starfish while surveying a stache of specimens discovered in the 1960s. Several of the sea star specimens were stuffed with their miniature offspring like star-shaped nesting dolls. According to Mah, "it's just as fun to discover something in a drawer than on a boat."



Ancient toolkit offers glimpse of surprisingly handy hominins

Many researchers think that only humans and other species in the genus *Homo* fashioned stone tools to hunt big game. But paleoanthropologist Rick Potts, the director of the museum's Human Origins Program, and his team recently uncovered a 2.9-million-year-old butchered hippo skeleton in Kenya that appears to have been the handywork of another ancient hominin.

The hippo bones were buried alongside some of the oldest known stone tools and a pair of massive molars. These teeth belonged to a species of *Paranthropus*, an ancient group of hominins closely related to humans. "Finding *Paranthropus* [teeth] alongside these stone tools opens up a fascinating whodunnit," Potts said. Their findings, published in the journal *Science*, raise intriguing questions about which human ancestors could craft and wield stone tools.

Ancient human relatives used stone tools to butcher this hippo skeleton nearly 3 million years ago in Kenya. (T.W. Plummer, Homa Peninsula Paleoanthropology Project) ¹

Early humans may have lived in a hominin-eat-hominin world

Paleoanthropologist Briana Pobiner was looking through the fossil collections of Kenya's Nairobi National Museum when she came across peculiar cut marks on a 1.45-million-year-old hominin tibia. To determine what left behind these lacerations, Pobiner and her colleagues analyzed 3D models of the fossil's surface. They compared the cuts to hundreds of other tooth, butchery and trample marks.

Their results, published in the journal *Scientific Reports*, revealed that several of the cut marks were a clear match for stone tool damage, providing potential evidence for the oldest known instance of hominins butchering other hominins. However, more work is needed to confirm whether early hominins truly had their own evolutionary relatives on the menu.

Nine cut marks on a fossilized hominid shin bone are all oriented in the same direction, suggesting that they could have been created by a stone tool. →



Researchers uncover the genetic legacy of enslaved and free iron workers

For more than half a century, enslaved Africans and African Americans churned iron products like stoves and cannon balls out of Maryland's Catocin Furnace. But when the iron forge transitioned to a system of hired workers before the Civil War, the histories of the site's early enslaved and free workers were largely forgotten.

Biological anthropologists Kari Bruwelheide and Douglas Owsley recently worked with a team of scientists and historians to uncover the [genetic legacies of these forgotten forge workers](#). Using a new genetic approach, the team connected nearly 42,000 people living today to 27 African Americans who were buried near Catocin Furnace in the late 18th and early 19th centuries. The highest concentration of potential descendants was in Maryland, indicating that many stayed in the region following the furnace's transition away from enslaved labor.



Catocin Furnace in Cunningham Falls State Park, Maryland. (ANETA KALUZNA) ¹

Sloth pendants turn back the clock on the arrival of humans in the Americas

The ancient relatives of today's slow-moving, tree-dwelling sloths were thousand-pound behemoths that once roamed across South America. Ancient human communities lived alongside these gigantic ground sloths for thousands of years and appear to have put their bones to use.

A team led by paleontologist Thais Pansani, a Peter Buck postdoctoral fellow, and paleoanthropologist Briana Pobiner analyzed three polished sloth bones with holes drilled through the center.

In a paper published in the journal *Proceedings of the Royal Society B*, the researchers concluded that the bones, which were found in a Brazilian rock shelter, were deliberately crafted into pendants by local humans between 25,000 and 27,000 years ago. These dates provide additional context to help scientists pinpoint when people migrated throughout the Americas.



Three sloth bones were carved and polished to be worn as personal ornaments over 25,000 years ago in Brazil. ¹

Scientists discover a bevy of new soft-furred hedgehog species

Because mammals are so well studied, discovering new mammal species is rare. But in December, a team led by museum research zoologists Arlo Hinckley and Melissa Hawkins described five new species of soft-furred hedgehogs, or gymnures, from the tropical rainforests of Southeast Asia.

The team used modern genomic techniques to examine tissue samples and prepared specimens. They described the new species in the *Zoological Journal of the Linnean Society*. While three of these gymnures were previously described as subspecies, two were completely new to science. This included the shrew-like *Hylomys vorax*, which had been hiding under researchers' noses for decades. The first *H. vorax* specimen was collected in North Sumatra and deposited in the Smithsonian's collection 84 years ago.



A pair of *Hylomys dorsalis* soft-furred hedgehogs seen in the wild in Borneo, Malaysia. →

The world's first bees evolved on an ancient supercontinent

Although bees play a critical role in many modern ecosystems, their evolutionary origins have puzzled researchers for decades. Last summer, Smithsonian research entomologist Seán Brady worked on a study in *Current Biology* that traced bee evolution back more than 120 million years to the ancient supercontinent Gondwana.

The researchers sequenced the genes of over 200 modern bee species and compared them to traits found in bee fossils and extinct populations. They created a genealogical model that suggested the first bees originated from their wasp ancestors tens of millions of years earlier than previously thought. As new continents formed, bees diversified at a remarkable speed to follow the rapid spread of flowering plants.



There are over 20,000 known bee species in the world, and researchers use high-definition imaging systems to compare their physical characteristics. †

A DEEP-SEA DILEMMA: stressed jellyfish reveal dangers of seabed mining

With over a billion cubic kilometers of living space, the ocean's midwater is the largest and least understood ecosystem on Earth. And little is known about how the creatures that live here are responding to environmental change.

Invertebrate zoologist Vanessa Stenvers recently took a closer look at the effects of seafloor mining, which creates suffocating plumes of sediment, on midwater helmet jellyfish. In a paper published in *Nature Communications*, Stenvers and her colleagues found that jellyfish exposed

to simulated sediment plumes produced excess mucus and began to express genes related to respiration, innate immunity and wound repair. These stress responses could lead to starvation and death if left untreated. The research team hopes that their study may encourage deep-sea mining companies to consider their environmental impact before it's too late.

Midwater helmet jellyfish were collected using a remotely operated vehicle in the North Pacific Ocean. (Vanessa Stenvers) →



Awards+Honors



Brian Huber was named a Paleontological Society Fellow.

Doug Ubelaker received the 2023 Dr. Richard Saferstein Award in Forensic Science from the Barnett Institute for Chemical and Biological Analysis at Northeastern University.

Jerome Conlon, Stanley Yankowski and **Alice Tangerini** each received 50-year Career Service Awards.

Joanna Scherer was awarded a Lifetime Achievement Award by the Society for Visual Anthropology.



Torben Rick was inducted as a member of the National Academy of Sciences. †

Kirk Johnson and **Doug Erwin** were awarded with lifetime fellowships from the American Association for the Advancement of Science (AAAS).

Douglas Owsley was inducted by Government Executive into the fifth class of the Government Hall of Fame.



Elizabeth Cottrell was named a Geochemical Fellow by the Geochemical Society and the European Association of Geochemistry. †

Jeffrey Post received the 2023 Antonio C. Bonanno Award for Excellence in Gemology. †

Torsten Dikow was named the Editor-in-Chief of the journal ZooKeys.

Alfred Gardner was honored in a special issue of the journal *Therya*, becoming the namesake of the genus *Gardnerocyteris* due to his "important contributions to the knowledge of neotropical bats."

"I am over the moon with joy. I think of all the people that I work with and how much fun I have doing science with them. When I think of all my brilliant colleagues, I feel very humbled by this honor."

— Elizabeth Cottrell, NMNH Curator and Research Geologist



Smithsonian's Award-Winning Botanical Illustrator Celebrates 50 Years at NMNH

As the [National Museum of Natural History's first botanical illustrator](#), **Alice Tangerini** has been an essential part of the museum's Botany Department for 50 years. Over her career, the award-winning artist has depicted over 1000 plant species with her detailed drawings. Tangerini's illustrations have helped researchers describe hundreds of new species, enthralled museum visitors and inspired the next generation of scientific artists.

Why are botanical illustrations so essential to understanding plant life?

Alice Tangerini: A camera just takes a picture and records exactly what it sees. That's it. As a botanical illustrator, you are reconstructing what the plant would have looked like in the natural world, and highlighting what the botanist wants to emphasize in the details. Entire species will be compared on the basis of these illustrations and how different these plants look. What I'm doing now will last through the centuries. Every time I'm drawing a line, I try to make it the best line I've ever drawn.

How did your illustration of a new bromeliad plant lead to researchers naming the species after you?

AT: I became something of a botanical detective. After I found that certain features were very different [compared to other bromeliad plants], they had to change the name they were going to give [the proposed species]. So, they named it *Navia aliciae* after me.

What advice would you give to current and future botanical illustrators?

AT: I want them to capture the personality and the feel of every organism as they draw by hand. That's the only way they will learn to love botanical illustration as much as I do, which is quite a lot.

A Look Ahead to 2024

NASA Unveils Earth Information Center experience at Smithsonian

Most people are familiar with NASA's groundbreaking work exploring other planets and distant stars. But for the past 50 years, NASA satellites have also provided in-depth data on Earth itself to see how our unique planet's land, water and climate are changing in real time.

This year, NASA is teaming up with the museum to present its crucial research stories alongside Smithsonian science in an experience that will illustrate for our visitors how a planetary perspective can help solve some of Earth's most pressing issues. The immersive space will include graphics, interactives, and a sprawling, state-of-the-art video wall that will showcase awe-inspiring visualizations and stories told by people using NASA's unparalleled Earth data.

The EIC experience will open on the museum's second floor in late 2024.

NMNH Celebrates Earth Day with Biodiversity Summit

This April, the museum is celebrating Earth Day with the three-day summit, "[Life on a Sustainable Planet: Exploring and Understanding Biodiversity.](#)"

The festivities kick off on April 18 with a natural science symposium featuring talks by former [Peter Buck Fellows](#) covering topics ranging from global climate change and Earth's evolution. On April 19, undergraduate students will participate in a biodiversity careers workshop, gaining insights from professionals and networking opportunities. On April 20, families can enjoy hands-on activities and engaging conversations with scientists and educators during a biodiversity-themed family day.



Museum Acquires Shimmering Ammonite Shell

During the dinosaurs' heyday, spiral-shelled relatives of living squid called ammonites reigned supreme in the world's oceans. Among the last of these ancient cephalopods were the *Placentieras*, who lived in an inland sea that once covered much of western North America.

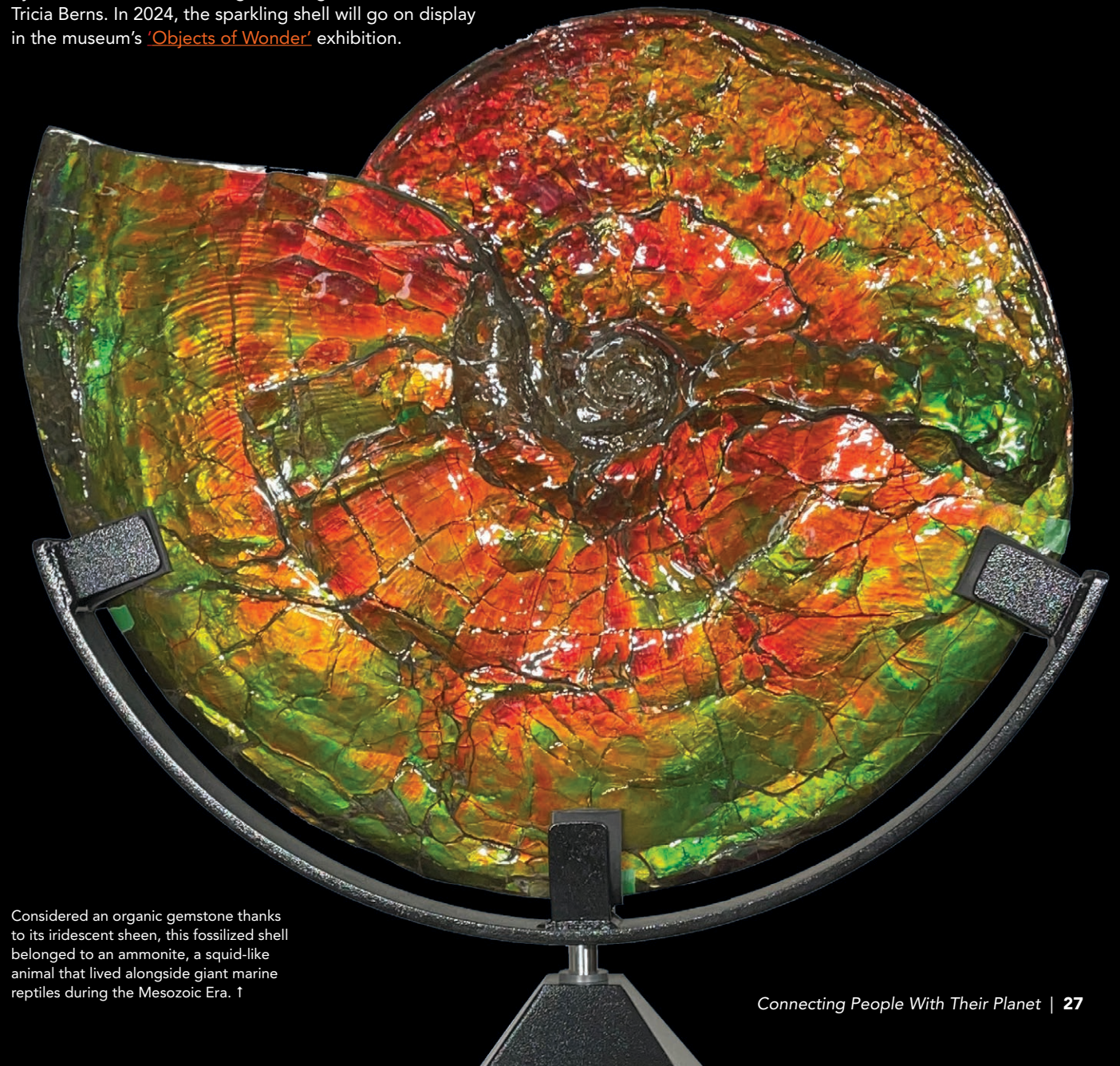
Placentieras ammonite shells were composed of the same organic minerals as nacre, or mother of pearl. When these ammonites died and sank to the muddy seafloor in what is now southern Alberta, some of their shells were entombed in concretions. Due to the weight of the sediment above them, pressure caused the material inside the shells to deform and create a spectrum of reflected colors. Today, these fossilized shells are considered organic gemstones and reflect light in iridescent shades of red, green and blue.

One of these gleaming ammonite shells was recently acquired by the museum thanks to a generous gift from Michael and Tricia Berns. In 2024, the sparkling shell will go on display in the museum's ['Objects of Wonder'](#) exhibition.

Ocean DNA Project

The Smithsonian's [Ocean DNA Program](#) is launching in 2024. As a major component of the museum's Ocean Science Center, the new research initiative aims to leverage our collections and expertise to help sequence environmental DNA (eDNA). Analyzing the genetic material in the marine environment will help scientists survey marine life and assess ocean health.

In its first year, the Ocean DNA Program will hire two new postdoctoral researchers. These scientists will concentrate on building a trusted, voucher-based reference library for all United States fish species. They will also work to test environmental DNA approaches alongside our long running benthic monitoring program—which is based out of the Smithsonian's Marine Station in Fort Pierce, Florida—in the state's Indian River Lagoon.



Considered an organic gemstone thanks to its iridescent sheen, this fossilized shell belonged to an ammonite, a squid-like animal that lived alongside giant marine reptiles during the Mesozoic Era. †

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Supporting Signature Initiatives

A generous gift of \$2.5 million by John and Laura Foster is just one of many ways the couple has and continues to support the museum and its mission: to connect people with the planet we call home, and leverage science to help us understand our place in it.

John and Laura's gift advances the museum's work to tackle big questions about nature, science and society. The Fosters' support will enable us to inspire new work—from the scientists of today and of tomorrow—to understand our planet, its origins, and its future. Their gift will activate three of the museum's Signature Initiatives: Inclusive Science; Our Unique Planet, and People in Nature.

The Fosters' involvement with the museum began when John joined the Advisory Board in 2018. Not long after, as the museum joined so many other organizations around the globe in confronting the challenges of the pandemic, John was asked to serve as its chair. Throughout that difficult period, John was instrumental in not only keeping the board's members connected to one another, but in helping the board and the museum emerge from the pandemic stronger and better able to achieve its mission.

During his tenure as Chair, John's dedication to the core mission and values of the museum were unwavering as he worked with Sant Director Kirk Johnson to launch and execute a new strategic plan charting a path for the museum's future. We are grateful for his continued service.

Both John and Laura are avid students of the natural world. Whether they're traversing the badlands of Wyoming searching for fossils alongside Smithsonian scientists or traveling around the world to explore different ecosystems and cultures, John and Laura are constantly learning about the planet, how it was formed, and how people can contribute to a sustainable future.



* Deceased

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Expanding Curiosity

Whitney and Elizabeth MacMillan's transformational gift will inspire curious learners across the country.

Natural history museums inspire wonder about the world, and spark questions about our place in it. Seeing a 65-million-year-old fossil tooth, or a feather from a bird from the other side of the world, collapses oceans of time and distance in an instant. Add to that tales by experts who can give those objects meaning and context, and the questions flow: What was life like for that creature? What might the future hold for us on our changing planet? How can I do this kind of work?

Over 4 million visitors came to the Smithsonian's National Museum of Natural History in 2023, with many thousands drawn to get even closer to the museum's objects and their stories at Q?rius, the Coralyn W. Whitney Science Education Center. And from 37 states and 6 countries, more than 15,000 students tuned in for online science programs in 2023.

An historic gift from The Whitney and Elizabeth MacMillan Foundation will dramatically expand the ability of the Museum to reach the next generation of thinkers, questioners and problem solvers. The MacMillans' generous contribution will enable the NMNH to expand its digital programming, reaching thousands more students and lifelong learners.

The MacMillans' gift also advances the development of the Museum's People in Nature Experience, a 100,000-square-foot space for Museum visitors to immerse themselves in visions of a positive future where humans and nature can thrive together.

The MacMillans have been staunch supporters of the Smithsonian, serving on several boards and commissions since 1996. Whitney served on the Museum's board from 2008 until 2017; he passed away in March 2020. Elizabeth is currently an emeritus board member of the National Museum of American History.

Today's young learners are already dreaming of the future. Whitney and Elizabeth MacMillan's tradition of philanthropic leadership supports NMNH's ability to reach those leaders of tomorrow—wherever they may be.

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Smithsonian National Museum of Natural History's Legacy Society

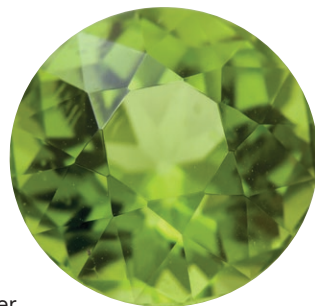
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Small Insect, Mighty Impact

Mosquitoes are one of humanity's enduring scourges. Highly adaptable and quick to evolve resistance to pesticides, mosquitoes have spread diseases that shaped the course of human evolution. Even today, illnesses from mosquitoes kill more than 400,000 people every year. Yet as prolific pollinators, mosquitoes help to feed a growing global population.

Teasing apart the nuances of mosquito biology was the life's work of the late museum entomologist Dr. Yiau-Min Huang, who passed away on May 8, 2023. During her 53 years here, Dr. Huang devoted herself to distinguishing species of mosquitoes and their evolutionary history. Her work benefited medical, travel and defense professionals the world over.

Among Dr. Huang's achievements working in and contributing to the national mosquito collection—the world's largest—and with the U.S. Army's Walter Reed Biosystematics Unit, she confirmed the first invasion of the (Asian) tiger mosquito, collected in 1985 in Houston, Texas. Dr. Huang's peers lauded her contributions to human health with a major award in 1999 from the American Mosquito Control Association.

As the climate warms, mosquitoes bear old diseases into new territory. New mosquito species are added every year to the more than 3,700 known species. But any fresh finding could unlock insights critical for preventing the spread of disease.

A \$1 million pledge by the family of Dr. Huang supports the future of mosquito study at the Smithsonian and around the world. The Dr. Yiau-Min Huang Endowment will support scientists and students in advancing knowledge of mosquito biology and behavior.

An additional \$250,000 pledge by the Huang family also honors Dr. Huang's deeply cherished friend and close colleague. The Young Tai Sohn Endowment will support training for the creation of visuals of freshwater and land-based arthropods.



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