MEDIA ALERT

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Natural History Museums of Los Angeles County Receive Over $3.6 Million in Science and Research Grants

14 Project Proposals, Notable for New Collaboration and Heightened Democratization and Access of Data, Are Awarded by Federal Agencies

October 27, 2020 — Los Angeles, CA —The Natural History Museums of Los Angeles County (NHMLAC) have received $3,672,388 million in 14 research grants in 2020, marking the most successful year of awards in the museums' history. Eight grants come from the National Science Foundation (NSF), and others were made by NASA, the National Oceanic and Atmospheric Administration (NOAA), the National Endowment for the Humanities (NEH), the Disney Conservation Fund, and the John Randolph and Dora Haynes Foundation.

The projects that were funded range from global impact of Antarctic dinosaur research and wide-reaching marine specimen digitization, to local research on the earliest societies in Southern California. The areas of focus vary, but there's a connective theme of bringing museum discoveries and collection data more into the public domain, via digitalization and community engagement, so that everyone can use the resources for research, conservation, and education.

"It is a challenging and unprecedented time, and a time when science and research are questioned and politicized. But scientists and researchers believe in the planet. They build integrative teams to explore it, they protect and share the museums' collections for future generations, and we keep learning," said Dr. Lori-Bettison Varga, NHMLAC President and Director. "I am grateful these federal granting agencies recognize and support this work. We all pull together as a global scientific community to move forward."

The awarded projects were all proposed by curators and collections staff in NHMLAC's Research and Collections Department, the research division of the museums. NHMLAC's research staff creates new knowledge through academic scholarship in history and science, and maintains a world-renowned collection of over 35 million

specimens and artifacts. They work as a collective with museum visitors, digital audiences, partners, and communities, and build an inclusive, welcoming network and institution by engaging in dialogue that transcends political, cultural, and social boundaries. Their research activities are funded primarily by external grants and contracts, and by private donors.

“This year’s incredible grant success is a reflection of the team we have put together. I believe this is the strongest collective of researchers and collection specialists we have ever had at the museums,” said Dr. Luis Chiappe, Senior VP, Research & Collections and Gretchen Augustyn Director, Dinosaur Institute. “They’re ambitious and energetic, and mobilized to build partnerships for wide-reaching projects and activate the benefits of our collections for society.”

An overview of this year’s awarded projects follows:

Leading a National Digitization Project for Marine Specimen Data
NSF has awarded a four-year, $1.78M grant to a team led by Dr. Regina Wetzer, Curator and Director, NHMLAC Marine Biodiversity Center. Working with Dr. Trina Roberts, Associate Vice President for Collections, and Dr. Elizabeth Ellwood, Postdoctoral Fellow, Wetzer rallied 19 museums and educational institutions from around the country to develop DigIn, a national initiative to digitize museum collections of marine invertebrates. The project will improve the accessibility of marine invertebrate data by adding information for 7.5 million specimens to shared databases, more than doubling currently available records. Engagement with K-16 educators and the public will further improve the data and increase the project's impact. DigIn team members will host training workshops for STEM educators and museum scientists on how to effectively connect students and museums, building a sustainable digitization workforce in collaboration with California State University Dominguez Hills (CSUDH). Four fabrication laboratories (Fab Labs) located at CSUDH will be used for collaborative digitization technology projects with students, teachers, community members, and the DigIn team.

Southern California's Early Maritime Societies
NSF has awarded Dr. Amy Gusick, Associate Curator of the Anthropology Department, and her two collaborators from UCLA and Cal State University Channel Islands, $254,000 for their research in human long-term adaptations along the California coast. Gusick is known for collaborations with indigenous communities, and this project involves collaborations with members of the local Tongva community. It will also provide opportunities for significant student training from a wide variety of colleges and universities across Southern California. Though there have been numerous research

studies on early human coastal migration and adaptation, and the development of maritime societies on the Channel Islands—research usually does not take an archipelago-wide approach. Gusick's research does consider the entire Channel Islands archipelago by focusing on archaeological sites at Little Harbor on Catalina Island, Eel Point on San Clemente Island, and Punta Arena on Santa Cruz Island—all of which yield evidence of occupation from at least the early Holocene through to the Late or Historic Period, and a stunning array of cultural material. Gusick is interested in how native societies adapted to the changing environment and climate, and what we can learn from the past to inform the future.

Why Ferns Outlasted Dinosaurs, and Other Mass Extinction Lessons

NASA awarded Dr. Regan Dunn, Assistant Curator at the museum at La Brea Tar Pits, $98,612 for a project called "Surviving a Mass Extinction: Lessons from the K-Pg Fern Spike." It looks at why ferns responded differently than other plants to the post-impact mass extinction event that destroyed most of the world's Mesozoic species. Dunn's research seeks to understand the interplay between climate, plants and animal evolution through time. In this project, she's interested in furthering advances in the plant's survival in extreme environmental conditions (i.e., low-light intensity and acid rain) associated with the K/Pg mass that took place 65.5 million years ago—and what this might tell us about future environmental extremism.

Sharing Cultural Conservation Online

Prior to COVID-19, NHMLAC's Anthropology Department was working on a Pacific Island Cultural Heritage project focused on conserving, digitizing, and increasing access to its vast Oceanic holdings from the islands within Micronesia, Melanesia, and Polynesia. Among these collections are tapa (beaten bark cloth) and woven plant fiber objects which are important because of their ability to display indigenous cultural traditions and the level to which not only wartime campaigns and colonialism, but also environmental changes such as increased sea level rise, affect them. Exploring this relationship between nature, culture, science, and history is a major part of NHMLAC's mission and research focus—and though the pandemic does not change the mission, Dr. Amy Gusick knew her team had to change tacks. The Associate Curator of the Anthropology Department proposed a project that films the curation and conservation process of the Oceanic objects, and creates a virtual online tour in collaboration with members from the local Pacific Islander communities. NEH awarded her $154,058.

Tracking Archaeological Hot Spots Along Submerged Southern California Coast
NOAA awarded Dr. Amy Gusick, Associate Curator of the Anthropology Department, $370,807 to explore a submerged portion of the Southern California Bight, the curved coastline of Southern California. This region harbors one of the longest and most dense Paleocoastal hunter-gatherers archaeological sequences in the New World. With over 100 sites dating to between 15,000 and 8,000 calibrated years before present, it has become a focal point for research into coastal migrations into the New World after the last Ice Age. Building upon NHMLAC's ongoing research, Gusick and her collaborators from SDSU, Scripps Institution of Oceanography, and UNCW proposed a targeted exploration using electromagnetic technology and target identification—including paleochannels, paleoestuaries, and tar seep deposits—all features used by early maritime hunter-gatherer groups.

Mobilizing Millions of Marine Mollusks
NSF's Digitization TCN awards (Thematic Collections Network) support the digitization of existing specimens based on a research theme. Dr. Jann Vendetti and her colleagues' theme was marine mollusks of the U.S. Eastern Seaboard, the 6,000 km of the Atlantic coastline from Maine to Florida. The NHMLAC portion of this project was awarded $39,600 to create online, searchable, and georeferenced occurrence data for approximately 10,000 specimens of 800 species from NHMLAC Malacology collections. Mobilizing these data will enable a greater understanding of molluscan biodiversity in the Western Atlantic, its distribution, and its change over time.

Nineteenth and Early 20th Century Los Angeles and California Collections
The John Randolph and Dora Haynes Foundation awarded $35,000 to the Seaver Center for Western History Research, a section of NHMLAC's History Department, to support the archival processing of nearly 10,000 items recently donated by the Historical Society of Southern California. The goal is to make these materials publicly accessible to researchers. The collection includes an 1865 Civil War diary by the only Los Angeles resident of the time to fight and serve for the Union Army. Also in the donation are institution records of the Society dating back to 1883, including minutes and ledgers, the year it formed as the first historical society in California.

New Paleontology Prospects in Central Mexico
NHMLAC's Dr. Xiaoming Wang, Curator of Vertebrate Paleontology, and Dr. Regan Dunn, Assistant Curator of the La Brea Tar Pits Museum, won a $349,429 grant from the NSF for a project that investigates the fossil vertebrate plant record during the Great

American Biotic Interchange (GABI). During GABI, 5-3 million years ago, land and freshwater animals migrated from North America, through Central America, to South America, and vice versa. The timing of the GABI is much debated, but unique fossils in Mexico's Cenozoic sedimentary basins will help fill voids. This project will lead to exhibits at both NHMLAC and a new natural history museum being planned in San Miguel de Allende (Mexico), as well as bilingual content that engages students and scientists in Central Mexico's emerging—and remarkable—paleontological history.

Encouraging Science and Math Teachers in High-Need Schools

Dr. Austin Hendy, Assistant Curator of Invertebrate Paleontology, was a Co-Principal Investigator on a professional development project for teachers that garnered $2.9 million from NSF. The grant addresses the need in the U.S. for exceptional math and science master teachers in high-need schools, particularly teachers with similar demographics as the communities they serve. The project, hosted by California State University Dominguez Hills (CSUDH), will recruit 30 in-service K-12 teachers, then support them as they complete a rigorous five-year program and become prepared to collectively improve STEM teaching and achievements in 23 schools in South Los Angeles. NHMLAC is a partnering institute, along with the Los Angeles Unified School District, and will receive a $200,000 sub-award to support those teachers participation in collections-based research, museum field activities, and development of education resources. In particular, these exceptional teachers will work with museum staff to co-create virtual learning tools that mobilize natural history specimens and broaden the exposure of our collections and research beyond the physical walls of the museum and into the classrooms of young Angeleños.

Digitizing the Fish Collection

Dr. Bill Ludt, Assistant Curator of Ichthyology, was awarded $172,739 by NSF to implement CrytpoVert, a project that will bring extremely tiny, reef-dwelling, camouflaged fishes to the forefront of discovery and exploration using CT scans. These elusive fishes are significant because they are a critical, but underappreciated, component of the food webs and flow of energy on coral reefs. CryptoVert will be used as a model for understanding miniaturization in vertebrates. Its data-rich approach will push the limits of CT technology and is the only non-destructive way of understanding the internal anatomy of these fishes. While these fishes can be rare in collections, NHM is uniquely situated for this project, as these minute fishes are already a strength of our collection. Findings of this project will be ideal for creating novel digital educational content, and will be implemented into educational programs at NHMLAC, including teacher training initiatives. Additionally, the small fishes in this project will be integrated

into public display spaces and will be a perfect counterpart to the large megamouth shark, oarfish, and coelacanth already on display.

Continuing Antarctic Paleontology Research

Dr. Nathan Smith, Associate Curator, Dinosaur Institute, was awarded $32,548 in supplemental funding from NSF to continue work on his project “Collaborative Research: Understanding the Evolution of High-latitude Permo-Triassic Paleoenvironments and their Vertebrate Communities.” The COVID-19 pandemic and its economic fallout have had severe impacts on scientists’ abilities to carry out project research—and these funds will support a PhD student, as well as additional data collection and processing. Smith’s project has already had many successes. His team recovered hundreds of vertebrate fossils during its 2017-2018 Shackleton Glacier expedition, and many of these are remarkably preserved and will significantly advance our understanding of these animals and their ecosystems. Results from this expedition have been reported at several major conferences and workshops, and Smith has a paper related to the project in press at the *Journal of Vertebrate Paleontology*. The team’s outreach efforts have been far- reaching as well, including featuring Antarctic scientists and contractors at NHM’s annual “Dino Fest” (reaching 13,000 visitors each of the last two years), developing the *Antarctic Dinosaurs* exhibit that is currently traveling, and work on the large-format film, *Dinosaurs of Antarctica*.

Backyard Bats

The Backyard Bat Survey has been awarded a two-year $50,000 grant by the Disney Conservation Fund (DCF) to partner with residents of L.A. County to track and record bat activity through community science-based acoustic monitoring and roost mapping. By connecting to these local bats, thousands of city dwellers will be inspired to become stewards of the environments in which they live while providing data to inform conservation-focused policy decisions. The project prioritizes scientific discovery and community engagement equally and make a point to reach traditionally underserved communities through this initiative. During its 25th anniversary year, the Disney Conservation Fund is proud to continue providing critical support to community-led conservation efforts globally. The fund has been supporting local efforts around the world aimed at saving wildlife, inspiring action and protecting the planet with more than $100 million distributed to nonprofit organizations since 1995.

A Friendlier Scanning Electron Microscope

Dr. Jody Martin, Associate VP of Research and Collections, and Dr. Kirk Fitzhugh, Curator of Polychaetes, received a $130,809 award from NSF to defray the costs of

replacing NHMLAC's 2002 scanning electron microscope (SEM). Though the 2002 SEM is a workhorse, generating images for more than 500 publications, a newer and more user-friendly device will make it easier to provide broad training for staff, students, and associates. The museums have a long history of training graduate, undergraduate, and high school students in the natural sciences, and curators, most of whom are adjunct professors at USC and UCLA, offer classes and mentor students at all levels. Though funded separately from this award, museum scientists and educators are planning an exhibit that uses the new SEM's graphics, images, and live-feed video to show visitors how images in the sciences are produced and used. The exhibit will explain and compare the different forms and uses of light and electron microscopy, and allow visitors to watch and interact with scientists using the SEM in real time.

Protecting the Papers of Trailblazer Hildegarde Howard

Yoland Bustos, Museum Archivist and Library Resources Manager, has been awarded $4,786 from the Califa Group to secure the legacy of NHMLAC trailblazer Hildegarde Howard (1901-1998). The funds will be used to protect and curate the late scientist's papers. Howard was a California native and the foremost avian paleontologist not just in California, but in the world. She got her start working in paleontology at the La Brea Tar Pits, and returned to NHM where she became the museum's first female Chief Curator of Science and published over 150 scientific papers in her career. Her papers are often requested for research and inclusion in publication about scientific trailblazers.

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About the Natural History Museums of Los Angeles County

The Natural History Museums of Los Angeles County (NHMLAC) include the Natural History Museum, La Brea Tar Pits, and the William S. Hart Museum. They operate under the collective vision to inspire wonder, discovery, and responsibility for our natural and cultural worlds. The museums hold one of the world's most extensive and valuable collections of natural and cultural history—more than 35 million objects. Using these collections for groundbreaking scientific and historic research, the museums also incorporate them into on- and offsite nature and culture exploration in L.A. neighborhoods, and a slate of community science programs—creating indoor-outdoor visitor experience that explore the past, present, and future. Visit NHMLAC.ORG for adventure, education, and entertainment opportunities.