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Testimony of Ms. Shari Werb
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Chairman Lipinski and other distinguished Members of the Subcommittee, thank you for giving me the opportunity to testify before you today on some of the science education activities of the Smithsonian. I have been the Director of Education and Outreach at the National Museum of Natural History for a little more than two years. Before I arrived, my knowledge and experience of the Museum was that of a District of Columbia resident, a mother of two boys, and a Museum professional (I had been working at the Holocaust Museum for 18 years prior to coming). However, I had no idea of the incredible treasure trove of scientific resources hidden behind the scenes at the Museum. Out of reach of most visitors are more than 200 active scientists, hundreds of other experts including conservators, preparators, collections specialists and educators, and their research, their deep knowledge, their passion and their great stories. Behind the scenes and out of reach of most visitors are the more than 126 million objects and specimens that represent a unique collection of evidence about the universe, the Earth, life on this planet and human culture. With these assets, with more than 7 million visitors onsite and tens of millions more to its website, and as a National science museum the Natural History Museum has both a unique responsibility and an opportunity to further scientific literacy and public engagement and dialogue around science. This especially resonated when President Obama launched the Educate to Innovate Campaign for Excellence in Science, Technology, Engineering and Math (STEM) Education, challenging the nation to strengthen America's role as the world's engine of scientific discovery in the 21st Century.

The National Museum of Natural History is itself an engine of scientific discovery. Its mission is to inspire curiosity, discovery and learning about nature and culture through outstanding research, collections, exhibitions and education. The Museum plays an important role in the Smithsonian Institution's new Strategic Plan, helping to meet the Plan's Grand Challenges of Understanding and Sustaining a Biodiverse Planet, Valuing World Cultures and Unlocking the Mysteries of the Universe. Specifically, our education programs are designed to further the Plan's priorities of Broadening Access and Revitalizing Education, with exciting offerings for learners of all ages everywhere.

Through education and outreach programs, visitors to the Museum (both onsite and online) are becoming exposed to ongoing research and discovery and are enhancing their critical thinking skills. Regardless of how much time they have, students of all ages are being invited to actively participate in authentic science. For example, a family on a short visit may spend time in the Sant Ocean Hall with an invertebrate zoologist closely examining a newly identified jellyfish species at the "Scientist Is In" station. Teenagers doing an assignment on human evolution may spend

hours on the new Human Origins website manipulating and comparing 3-dimensional early human skulls – one of our new collections- and evidence-based websites for the public. Latino and other minority students may spend six months with Youth Engagement through Science (Y.E.S.!), an in-depth program at the Museum that provides access and opportunities for underrepresented minorities.

The following are three examples of education and outreach programs that have connected the public with the Museum's authentic science and collections. Eighteen months ago, in partnership with the Museum's forensic anthropologists, the Education and Outreach Office opened its very popular Forensic Anthropology Lab, an experimental hands-on, interactive, educational space embedded in the Museum's exhibition *Written in Bone: Forensic Files of the 17th Century*. The Lab provides students and the public with a unique opportunity to explore the past first-hand by examining bones and artifacts "found" at realistic research sites based on actual Smithsonian Forensic Anthropology cases. Through these activities, students learn to use the tools, technology, techniques and problem solving skills of forensic anthropologists. During the investigation, students collect evidence at six stations, examining real human bones and artifacts as well as reference materials, such as charts, graphs and databases. When the students finish collecting data, they analyze and synthesize it to form a conclusion about the person whose bones are part of the case. There are also other activities at which visitors can learn about anatomy, for example by using x-rays to examine bones and teeth. Already approximately 125,000 people have participated in these authentic science programs.

While the Forensic Anthropology lab is a temporary educational space connected with a temporary exhibition, the Museum is planning to open a much larger permanent laboratory experience in late 2012. The Museum's vast scientific assets and its educational resources will be brought out from behind closed doors so that hundreds of visitors each day will be able to engage actively and enter into dialogue with the Museum's world-class team of scientists and experts and the largest natural history collection in the Western Hemisphere. It will function as a physical learning center at NMNH, as a virtual learning space on the Museum's website, and as an open collaborative laboratory for the study and investigation of learning natural history science.

With the Museum's Sant Ocean Hall welcoming more than 5 million visitors each year and with the assets of the Smithsonian's active and extensive marine science research and collections program, the Museum fulfilled its commitment to Ocean Education by recently launching the Smithsonian Ocean Portal (www.ocean.si.edu) designed to inspire awareness, understanding and stewardship of the world's ocean through exploration of the Smithsonian's collections, science and variety of online ocean adventures, educational quests and teacher lesson plans. This project was led by the Natural History Museum in collaboration with other Smithsonian units as well as with more than 20 organizations including the National Oceanic and Atmospheric Administration (NOAA), Encyclopedia of Life (EOL), National Geographic, and the Ocean Conservancy. The Ocean Portal is already providing access to the Museum's collections that serve as a record of life in the Gulf of Mexico before the recent Gulf of Mexico oil spill. In the "For Educators" section of the Ocean Portal, there are a number of lesson plans to support teachers' efforts to communicate the impact of the spill on the ocean.

The Museum's commitment to bringing its scientific assets to students is being realized through the new Youth Engagement through Science (Y.E.S!) program. This program provides access to

educational and career development opportunities in science to Latino and other minority youth in the Washington D.C. region with the first year generously funded by the Smithsonian Latino Center and the Marpat Foundation. This summer from approximately 50 applications, we have selected 15 rising 10th and 11th grade students who have already had one year of science instruction laying the foundation for their research activities in Y.E.S!

During this six-month program students will explore natural history science and pursue meaningful authentic research projects with the Museum's best research scientists in the biological, geological and anthropological disciplines. It will also provide a curriculum to enhance the students' communication skills and support their college preparation activities through a partnership with the Center for Minority Achievement in Science and Technology (CMAST). This component is crucial because 10th grade is the year during which students begin to prepare in earnest for postsecondary education (e.g. PSATs, college visits). Y.E.S! will ensure that as students experience scientific careers as viable options for their future, they are also preparing for that future through college preparation planning. That planning will include improving critical reading, writing and mathematical skills, as well as understanding the college entrance process. By the end of their Y.E.S.! experience the youth involved in the program will have participated in important research with world-class scientists; started planning for college; and produced a project based on what they have learned. Students will share these projects, and NMNH will promote what the students have accomplished.

The Museum can have a great impact in Latino and other minority communities by using its tremendous science resources to train students in scientific research activities, at both the undergraduate and high school level, providing valuable experiences that will prepare these students to compete for positions outside the Smithsonian.

In closing, let me briefly mention one more program at the Museum that illustrates our strong commitment to training the next generation of scientists at the undergraduate level. In addition to the 400 interns and fellows that the Museum hosts each year, this year we have launched the Natural History Research Experiences (NHRE) program. NHRE summer internships pair undergraduates with members of the Museum research and collections staff, providing a hands-on introduction to scientific research and a scientific mentor from one of the Museum's research departments. NHRE provides successful candidates with a stipend, travel allotment, housing and funds for a research proposal. Students are being provided with behind-the-scenes events and tours of the Museum and all research departments. This summer we are hosting 18 students, and 40% of them are from under-represented groups. We are currently in discussions with the National Science Foundation to jointly host this effort in the future.

These are just a few examples of how the Museum is providing access to its scientific assets to engage and educate the public in furtherance of the Smithsonian's Strategic Plan, develop programs to train the next generation of scientists, and answer President Obama's call to action to join with him in a national campaign to engage young people in the STEM fields.

Again, thank you for giving me the opportunity to testify. I am happy to answer any questions you might have.