

July 14, 2016

For information contact:
Johnny Ford, PCI, 312-558-1770

**Published Collection of Scientific Research on Zoo Elephants
Provides New Understanding to Enhance Zoo Elephant Welfare, Care**

PLOS ONE journal publishes collection of papers from world's most extensive study of zoo elephants

Portland, Oregon -- A special collection of peer-reviewed scientific research articles resulting from a comprehensive study on North American zoo elephant welfare is available today in the scientific journal *PLOS ONE*. The collection includes nine research papers, an overview and formal commentary explaining the significance of the work and its importance to better understand and enhance zoo elephant welfare.

"This is the first and only multi-institution study to comprehensively identify and measure variables that significantly contribute to North American zoo elephant welfare, thus allowing science to inform management practices," said Anne Baker, Ph.D., one of several principal investigators of the project. "In fact, many AZA-accredited zoos are already using knowledge we've learned from the research to improve the welfare of their elephants."

The collection, titled *Epidemiological Investigations of North American Zoo Elephant Welfare*, is available online and is accessible to the public. (See journals.plos.org)

The research is the outcome of work by a 27-member study team, which includes independent consultants, zoo professionals, and faculty from three universities. The study was funded by an \$800,000 leadership grant from the federal Institute of Museum and Library Services (IMLS) awarded to the Honolulu Zoo Society and administered by Kathy Carlstead, Ph.D. Team members and dozens of research assistants from widely varied disciplines developed quantitative measures to assess multiple elephant-welfare indicators as well as a large variety of housing and management practices.

"Zoo elephant welfare is a topic of public interest, but the lack of available data on this specific population made it difficult to differentiate fact from opinion," said Cheryl Meehan, Ph.D., the study's consulting project manager and director of *AWARE Institute, in Portland, OR*. "The collection provides a scientific perspective on a number of issues that are important to the conversation about elephants in zoos, and it is forward-looking as a resource that can help shape and inform the future of elephant care."

The collection resulted from a comprehensive study analyzing the daily lives of 255 Asian and African elephants in 68 North American zoos accredited by the Association of Zoos and Aquariums (AZA). Data were collected in 2012 and preliminary results presented at AZA conferences in 2013 and 2014. Research focused on factors related to the wellbeing of elephants that can be scientifically observed, measured, and analyzed, including: behavior, body condition, foot and joint health, female reproductive function, and walking distance. Nearly 96 percent of North American AZA-accredited zoos with elephants participated in the study.

Results showed that the elephants' social lives play the biggest role in supporting behavioral health. For example, primary importance is for elephants to spend time in groups, and not be socially isolated. Human care takers also can play an important role in an elephant's social life through husbandry, training and interactive sessions.

Although space is often linked to welfare in public discussions about elephants in zoos, researchers did not find evidence that the amount of enclosure space supports greater amounts of walking, decreased stereotypic behavior, improved body condition, or better foot and joint health.

The study did find that the quality of the space and management practices is important to elephant welfare. For example, the research demonstrated that decreased time spent on hard flooring significantly reduced the risk of foot and joint problems, which were found to be important health concerns for the population.

And the research team discovered a previously unknown link between the quality of enrichment and feeding programs and female reproductive health. This result indicates that day-to-day management practices could be an important tool in addressing the reproductive issues that are particularly common among female African elephants.

"This groundbreaking approach provides a model for measuring welfare in managed animal populations with the potential to conduct similar studies to benefit many different species cared for in zoos and aquariums," said Meehan. "And this research can be extended to inform elephant conservation efforts given that only a minority of free-ranging elephants exists in large undisturbed protected areas, while many "wild" elephants are managed in small reserves."

PLOS ONE

The world's first multidisciplinary Open Access journal, *PLOS ONE* accepts scientifically rigorous research, regardless of novelty. *PLOS ONE*'s broad scope provides a platform to publish primary research, including interdisciplinary and replication studies as well as negative results. The journal's publication criteria are based on high ethical standards and the rigor of the methodology and conclusions reported.

###