

Manatees reflect quality of health in marine ecosystems, longterm study finds

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(Phys.org)—A longterm study conducted by researchers at George Mason University may be a benchmark in determining health threats to marine mammals.

Over ten years of research in Belize was conducted studying the [behavioral ecology](#), life history and health of manatees in an area relatively undisturbed by humankind.

"Manatees are the proverbial 'canaries in the mineshaft,' as they serve as indicators of their environment and may reflect the overall health of [marine ecosystems](#)," says Alonso Aguirre, executive director of the Smithsonian-Mason School of Conservation and coauthor of a paper on this research published recently in [PLoS One](#) journal, in collaboration with scientists of University of California-Davis, USGS and Sea to Shore Alliance.

Aguirre calls them a "sentinel species," which means they are early warning indicators of environmental change. Because they may be highly susceptible or highly resistant to different [environmental stressors](#), manatees can indicate a severe environmental change before other species or humans are affected.

"Studying them may help us predict a change that has the potential to be devastating to an ecosystem or a habitat if left unaddressed," Aguirre says.

The study was conducted in a small fishing community that is beginning to prosper and gain more tourists in southern Belize. It documented changes in a relatively pristine area with low human impact as researchers saw the effects of human influence, more stress, boat strikes and other changes occurring as time went on.

Researchers like Aguirre are focusing on discovering the systemic health threats to marine [vertebrate species](#), including marine mammals, as they relate to marine ecological health. There has been an unprecedented number of emerging and re-[emerging diseases](#) in dolphins, [coral reefs](#) and [marine turtles](#) in recent years. "The single species approach may provide a series of "snapshots" of environmental changes to determine if animal, human or ecosystem health may be affected," says Aguirre.

The researchers captured the animals to tag and track them before releasing them back to their habitats. Health assessments were conducted based on clinical exams, ultrasonic fat measurements, hematology, blood biochemistry, and urine and fecal analyses. The team was able to collect close to 200 blood samples between 1997 and 2009. In addition, aerial surveys by helicopter were conducted twice a year to monitor population numbers.

Aguirre, also a professor in the Department of Environmental Science and Policy at George Mason University, said, "This longterm study, unique within marine mammals, provides insight on the baseline health of this species now threatened primarily by human encroachment, poaching and habitat degradation."

Aguirre concluded that "this study is a benchmark aiding in early disease detection and the current environmental impacts affecting the epidemiologic patterns in the manatees of this region."

Additionally, the study will provide some of the initial tools to explore

the broader application of manatees as sentinel species of nearshore ecosystem health. The researchers next hope to strengthen the conservation plan of the manatees, extend protection of migratory paths and areas where manatees live and work with local populations as well as tourists to educate them about conservation activities.

Provided by George Mason University

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