



The One Health Institute

[The One Health Institute](#) grew out of UC Davis School of Veterinary Medicine's recognition and long-standing consideration of the inextricable link between animal, human and environmental health. The One Health Institute's international research programs, collaborations and sharing of knowledge have had far-reaching and significant impacts on animals, people and the fragile environment that they share. From the investigation of emerging zoonotic diseases and veterinary care for endangered Mountain gorillas to the implementation of critical national guidance documents for rapid response during oil spills, the Institute works across a myriad of disciplines to help solve emerging global problems.

Disease Discovery and Prevention

- Through the PREDICT program, the One Health Institute (OHI) has discovered more than 350 new viruses in wildlife around the world and detected more than 100 known to cause disease. Veterinary researchers are prioritizing which of the new viruses require further characterization, and they are combining these discoveries with data on rates and types of human-wildlife contact in order to assess risk and inform mitigation strategies.
- Veterinary scientists teamed up with colleagues to discover that a virus that causes respiratory disease in humans is linked to the deaths of wild mountain gorillas. The finding confirms that serious diseases can pass from people to endangered animals; and has influenced precautions to protect both animals and humans.
- Work from the Institute's HALI Project resulted in a [publication](#) that reports the detection of a bacterium that can cause tuberculosis in animals and humans, in eight species of wildlife - including the first detection of the bacterium in three new species.
- HALI is sampling bat colonies and roosting sites at high-risk human-wildlife contact interfaces throughout Tanzania, including train stations and heavily-touristed caves. Team members run tests to determine what viruses the bats might be carrying that are likely for disease transmission to humans and other animals.
- The Wildlife Health Center (WHC) is working in partnership with other institutions to understand the ecological and virological factors that drive the transmission and emergence of avian influenza viruses within and across species. The research will help human and wildlife health specialists better understand the ecology and flow of avian influenza viruses in urban ecosystems.
- Scientists from the WHC joined colleagues from other agencies to investigate an alarming rise in sea otter deaths. They determined that the otters were succumbing to Toxoplasma infection, which causes brain disease in the marine mammals. The investigation indicated that land-based freshwater runoff to the ocean is the likely method of transportation of eggs from the parasite Toxoplasma gondii, which are present in cat waste.
- In 2013, more than 1,300 bottlenose dolphins were found stranded along Atlantic shores from New York to South Carolina. Through testing at the One Health Diagnostic and Technology Development Laboratory, the cause of the dolphin deaths was determined to be an outbreak of Dolphin Morbillivirus. The virus was isolated in culture and scientists are now in the process of sequencing the whole viral genome. Researchers are working to learn more about this very virulent virus, including how it is transmitted, how long an animal can shed the virus and how the virus is maintained in the population.

International Collaboration

- The OHI's Oiled Wildlife Care Network (OWCN) is recognized as a world leader in oil spill response, rescue, rehabilitation and research, and is an outstanding example of what's possible when diverse institutions and organizations work collaboratively toward a common goal. Our experts are frequently called upon to advise foreign government and industry leaders when they need comprehensive protocols and response plans.
- Through the PREDICT program, the One Health Institute has coordinated with 59 government ministries and dozens of scientific institutes, local organizations, and other stakeholders to advance One Health capacity and infrastructure in more than 20 countries. As just one example, PREDICT works with Nepal's Center for Molecular Dynamics to detect zoonotic viruses in high-risk human-animal transmission interfaces. The results of this research help predict and respond to diseases of pandemic potential.
- The SeaDoc Society coordinates and collaborates across international borders with the Canadian government, the US, several sovereign Tribal and First Nations governments, and local industry stakeholder groups to realize its mission of protecting the health of marine wildlife of the Salish Sea through science and education. The SeaDoc Society is a shining example of solving complex problems within ecosystems that cross multiple political boundaries.

Educating Communities Worldwide

- Through its PREDICT project, OHI researchers have trained over 2,500 government personnel, physicians, veterinarians, resource managers, laboratory technicians, hunters, and students in 20 countries in surveillance, diagnostics and outbreak response.
- In local communities where people hunt, trap and eat mice and rats, the HALI project team has educated hunters and local leaders about the risks of zoonotic diseases and ways to minimize disease transmission between people and rodents. HALI also partners with rural pastoralist communities to evaluate the impacts of education on livestock health, maternal and child nutrition, and livelihoods in the Ruaha ecosystem. As part of these efforts, our team developed and produced the interactive *Wildlife Health Handbook: Recognizing, Investigating, and Reporting Diseases of Concern for Wildlife Conservation and Human Health* – printed in English and Kiswahili - designed to assist people who work in a wildlife related field or are interested in wildlife epidemiology.
- In 2005, though the Wildlife Health Center, veterinary faculty wrote the first and most comprehensive California Wildlife Action Plan for conserving California's wildlife resources while responding to environmental challenges. The plan, written for the State's Department of Fish and Wildlife, has been instrumental in educating stakeholders about California wildlife and conservation and serves as a model for other states and ecosystems.
- The Gorilla Doctors program has provided African professionals and students working in the area of veterinary science and wildlife conservation with many opportunities for training and research. Program staff members assist the surrounding African communities by consulting on livestock and pet health issues in the region, thereby improving community health.

Standardizing Care for Wildlife

- Established in 1974, the Zoological Medicine Service was the first of its kind in the world and is recognized as one of the premier training programs in the world for students and residents interested in zoological medicine and ecosystem health. The Service and its residency program provide instruction to veterinary students, training for residents, and clinical services to the zoological community. Through rich collaborations with California zoos, faculty and residents have engaged in conservation research, wildlife health and disease surveillance in endangered species, and contributed to the improved health and lives of

many individual zoo animals. In the last 5 years, over 75 veterinary students have been mentored as Zoological Track students.

- In addition to nine published guides, from *Providing Assistance During a Zoonotic Disease Outbreak Response to Data Collection for Surveillance*, our PREDICT team has established standardized animal sampling protocols to ensure safe wildlife handling all over the world. Primates, bats, rodents, and small carnivores each have their own published protocol and all publications are free and available to the public.
- The Oiled Wildlife Care Network (OWCN) teamed up with partners to develop and implement a national guidance document for responding to the needs of animal species during oil spills; as well as regional response plans throughout the country so that regional stranding networks have a defined plan in place that is understood by, and integrated within, the overall planning components for oil spill response.

Informing Public Policy through Research

- As a result of The SeaDoc Society's attention to poaching problems in the Salish Sea, San Juan County is now working with anglers, citizens, the Washington Department of Fish and Wildlife and the Tribes to create a new plan for protecting bottomfish. Law enforcement has been increased, as has public outreach by the Vancouver Aquarium.
- Research generated by The SeaDoc Society has influenced the federal recovery plan to save killer whales by adding disease as a risk factor. This study has also convinced scientists to conduct ongoing killer whale health monitoring.
- The One Health Institute's research on the risk of lead exposure to scavenging birds prompted California to pass a bill prohibiting the use of lead ammunition for take of wildlife with a firearm statewide in 2013.
- The SeaDoc Society's investigation into the impact of hunting on the recovery ability of Surf and White-winged Scoters, whose populations have declined by more than 50% over the last 25 years, resulted in a Washington Department of Fish and Wildlife's adjustment to scoter hunting limits.

Cleaning Up Coasts and Oceans

- The Oiled Wildlife Care Network has responded to over 75 spills throughout California, and has cared for over 8,000 oiled birds and marine mammals.
- Since May 2006, the OHI's Lost Fishing Gear Recovery Project has retrieved more than 60 tons of gear from California's coastal ocean. It has also cleaned more than 1,400 pounds of recreational fishing gear off public fishing piers from Santa Cruz to Imperial Beach in California; and removed 650 discarded toilets and automobile tires weighing almost 20 tons from a rocky reef in Malibu. These efforts enhance and restore underwater habitats for marine wildlife.
- The Oiled Wildlife Care Network is studying the effects of chemical dispersants and chemically-dispersed oil on the waterproofing of seabirds. Information gleaned from the study will provide spill managers with important information that will help them decide whether dispersant is appropriate for use during spill response, and if so, the best practice to use it when wildlife is present.