I hope you are having a wonderful fall season. Our science teams have spent most of the past few months traversing the globe working at field sites in Bangladesh, Thailand, Malaysia, Indonesia, South Africa, and China to identify new disease threats and to foster the conservation of wildlife and natural habitats. It's a staggering fact that more than 60 percent of emerging infectious diseases over the past 50 years have jumped from wildlife to people and the increased number of new and never before seen viruses have become more and more frequent. Consider the fact that the HIV/AIDS virus erupted in Africa many decades ago from hunting wildlife for food and trade. To date, the HIV/AIDS virus has claimed more than 39 million lives and currently affects more than 35 million people worldwide.

EcoHealth Alliance is laser-focused on predicting and preventing possible pandemic events like SARS, Middle East Respiratory Syndrome (MERS) and Nipah virus from becoming the next global health crises. We created the first-ever global disease hotspots map that identifies at-risk regions where the next pandemic virus could erupt. Our predictive map and analysis helps our scientists and in-country partners focus on the drivers that cause disease outbreaks.
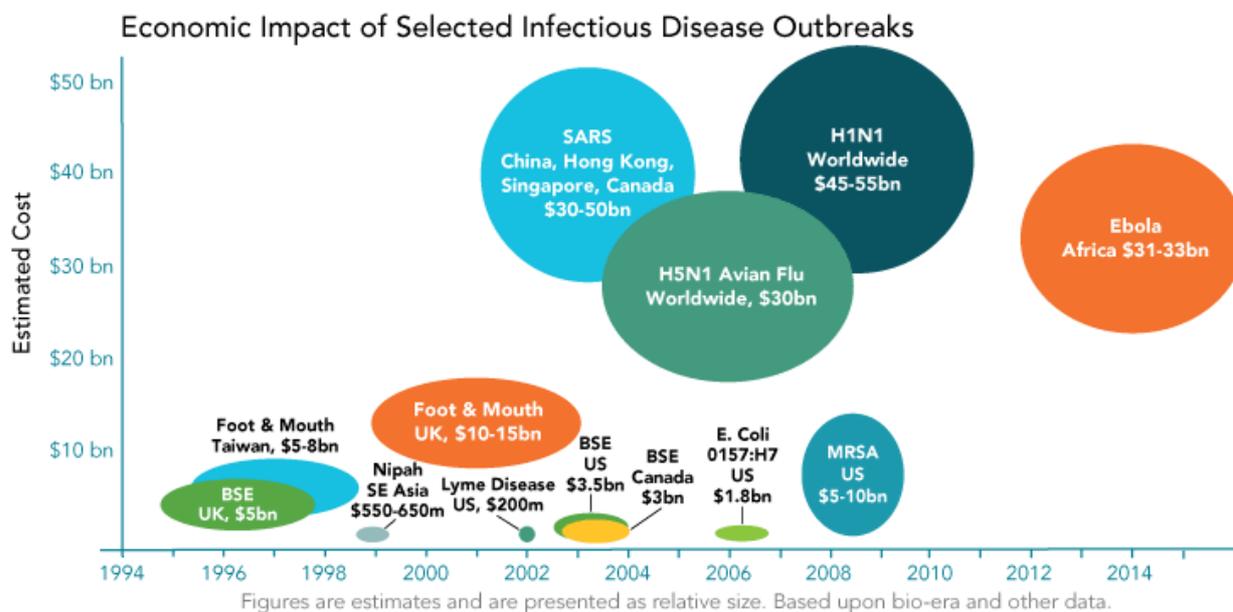
Our scientists are some of the best and brightest, and include wildlife veterinarians, epidemiologists, ecologists, researchers, software developers, and public health professionals. We employ a 'One Health' approach to our programs that brings people, animals and the environment together under the same health umbrella. **All our major project expansions and achievements are a direct result of your support.** Your generosity makes the world a better, safer, healthier place for animals, and people alike. I hope you enjoy this update on our work. Thank you for all you do for the environment, conservation and public health!

Sincerely,

Peter Daszak, Ph.D.
President, EcoHealth Alliance

Meet me at the intersection of human and animal health

When, where and how are zoonotic diseases (caused by viruses that are transmitted from animals to humans) jumping from wildlife to people? Surprisingly, very little is known about this. It's even more surprising when you consider the staggering cost of life in humans and animals, the amount of resources needed to stop an emerging infectious disease once it starts, and the economic impact these diseases can have which often reaches billions of dollars.

Economic Impact of Selected Infectious Disease Outbreaks

Figures are estimates and are presented as relative size. Based upon bio-era and other data.

Over the past 50 years, 60 percent of all new emerging infectious diseases have originated in animals, and are direct result of human activities such as deforestation, wildlife trade, climate change and other wide scale changes to the natural environment. These viruses include Ebola, SARS, HIV, MERS, and Avian influenza, just to name a few. EcoHealth Alliance scientists have estimated that there are over 300,000 pathogens lying dormant in various animal species all over the world, and our aggressive exploration and use of natural resources is creating a perfect storm for the next major pandemic to become a reality. Yet, despite being armed with this knowledge most endeavors are focused on reactive efforts once an outbreak has emerged with lives lost and precious time wasted. The good news is solutions do exist to combat and get ahead of pandemics to ensure that humans, animals and the environment continue to have a healthy relationship. And with your help, we're working to bring these solutions to a global scale.

PREDICTing Outbreaks

Beating pandemics first requires identifying the areas with high potential for disease emergence. Using a variety of scientific and environmental factors, EcoHealth Alliance developed the first-ever global hotspots map of regions likely to have an emerging disease outbreak. These are the places on the planet with dense human populations that cohabit with the most diverse wildlife populations - places like the rainforests of Borneo and Africa, where palm oil plantations bring workers right into the heart of highly biodiverse regions.

Using the disease hotspots map as our compass, we partnered with USAID on an initiative called PREDICT, the most comprehensive zoonotic surveillance and virus identification program. PREDICT outposts have been stationed in over 20 countries with the goal of building in-country capacity to identify zoonotic disease threats, and put in place systems to address and prevent those diseases. In addition, the goal is to increase communication and information sharing between government sectors (wildlife, livestock, and human health) to create a "One Health" approach that is sustained locally.

To date, over 35,000 species have been tested by humanely collecting swabs or small amounts of blood, and analyzing the samples in a lab to look for evidence of disease - 984 new diseases have been discovered so far. The findings are then cataloged in a database that mathematical experts use to create predictive maps of potential disease outbreaks. This approach not only allows researchers to find new diseases, but also helps communities prepare for and respond to the threat of an outbreak in a proactive manner.

Sharing and PREDICTing as a Global Community

Along with our partners, our research has already shown to be valuable, but our limited resources restrain our reach. The ultimate goal is to have the input of scientists across multiple disciplines from all over the world. Today's technology can be a powerful tool for collecting and disseminating data. The challenge is that not all platforms, software, and data collection are the same, and pulling a lot of different datasets with varying parameters usually equates to having a lot of information, but not the effective means of sharing and learning from that information. Our technology team has been hard at work on a solution called Mantle, an open-source web platform for the storage, sharing, and visualization of 'One Health' research.

It allows for scientists - in the lab or in the field - to upload datasets in multiple formats to Mantle's database where they will be stored for easy download and analysis. It allows scientists to collaborate across geographic, institutional, and disciplinary boundaries to accomplish large-scale data collection efforts that would not otherwise be possible. The goal is to make data readily available and help speed up the process of dissecting the information and putting programs in place to stop pandemics before they begin.

Using environmental and health data covering the past 60 years, EcoHealth Alliance scientists created the first-ever, global disease hotspots map that identified at-risk regions, to help predict and prevent the next pandemic crisis. That work is the foundation of EcoHealth Alliance's rigorous, science-based approach, focused at the intersection of the environment, health, and capacity building.

Working in the U.S. and more than 20 countries worldwide, EcoHealth Alliance's strength is founded on innovations in research, training, global partnerships, and policy initiatives.

Get to know our scientists!

Andrew Huff, Ph.D. Associate Vice President

Dr. Andrew Huff began his formal education after two combat tours of duty as an infantryman in Operation Enduring Freedom throughout Central America and in Iraq. After earning a bachelors degree in psychology, and masters degrees in security technologies and geographic information systems (GIS), he was appointed a research fellow at the National Center for Food Protection and Defense (NCFPD) while earning a Ph.D. in Environmental Health specializing in emerging and environmental infectious disease at the University of Minnesota.

While working at NCFPD, Dr. Huff researched the human, environmental, and engineered aspects of global food systems and patented a novel technology to collect and fuse data from multiple disparate sources to determine which food systems are at risk to spatial hazards, mapping global supply chains in near real-time, and to rapidly identify contaminated food products and supply sources. After completing his Ph.D., Dr. Huff transitioned to Sandia National Laboratories as a Senior Member of the Technical Staff where he worked on interdisciplinary teams to develop novel methods of biosurveillance, to build public health capacity for foreign governments, and to model the effects of pandemics on interdependent infrastructure systems (e.g., food, water, energy).

As Associate Vice President at EcoHealth Alliance, Dr. Huff is working to develop novel methods of biosurveillance, data analytics and visualization for disease detection, and unique methods to identify disease emergence. His research centers on the interaction of human disease reporting, machine learning of passive and active surveillance data streams, and the interaction of both engineered and natural systems. Additionally, he has been an active participant in government and private sector committees that work to establish effective policies for food systems and multiple aspects of public health. Dr. Huff completed all of his degrees at the University of Minnesota. Although he completed all of his coursework at the University of Minnesota, he studied at the College of Liberal Arts (B.A. psychology), the College of Science and Engineering (M.S. in Security Technologies & GIS), and the School of Public Health (Ph.D. in Environmental Health, Environmental & Emerging Infectious Disease). Lastly, his research has been published in wide variety of academic journals, government, and industry publications.

About EcoHealth Alliance

Building on over 40 years of groundbreaking science, EcoHealth Alliance is a global, nonprofit organization dedicated to protecting wildlife and safeguarding human health from the emergence of disease. The organization develops ways to combat the effects of damaged ecosystems on human and wildlife
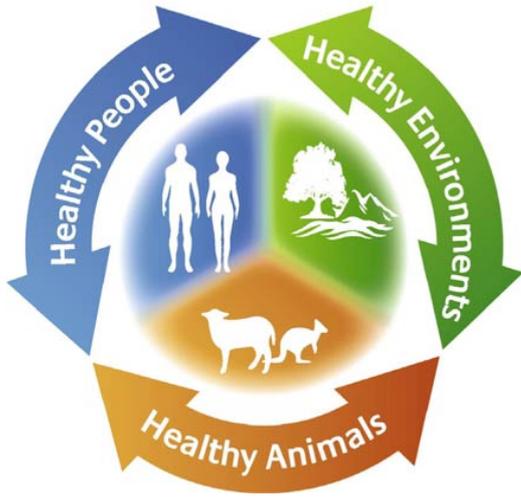
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To learn more, please visit:
www.EcoHealthAlliance.org

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**Local Conservation.
Global Health.**