Emergency preparedness in zoos and aquariums

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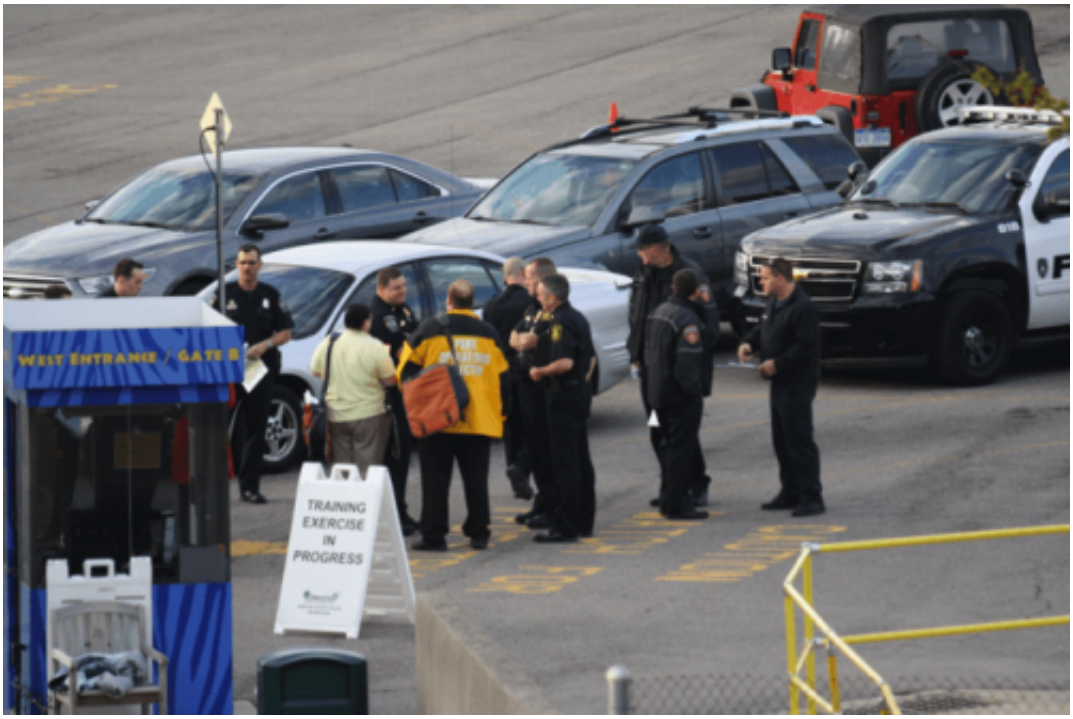

The incident command post during an emergency drill at the Detroit zoo. Credit: James Brennan, Author provided

You need only look at the papers or television news to see the reports. Infectious disease outbreaks, weather emergencies and disasters both natural and man-made. They're all not just threats to human populations – they have the potential to disrupt the daily operations of zoos and aquariums and the lives of their animal inhabitants.

Past disasters

In 2004 an outbreak of H5N1 avian influenza among tigers and leopards at zoos in Thailand resulted in the deaths of 45 animals. Hurricanes Katrina and Rita damaged the Audubon Zoo in New Orleans in 2005, though the only animals lost were two otters and a raccoon. The New Orleans Aquarium of the Americas did not fare as well after that storm; most of the fish in their collection died when they lost power. The 2007 California wildfires threatened the San Diego Wild Animal Park causing the facility to close and relocate some of the endangered species within its collection. These events can be devastating for the involved facilities.

There are more than 2,800 USDA licensed animal exhibitors in the US, ranging from very large facilities to private individuals with few animals. It's crucial for all the venues in this diverse community to prepare for disasters and have contingency plans in place. The 175 million people who visit zoos or aquariums annually form a unique ecosystem where humans, exotic wildlife, domestic animals and local wildlife interact with each other on a daily basis. As a result, emergency response planning must take the welfare of visitors, staff, first responders, collection animals, agricultural animals, and even local wildlife into consideration.

Get ready

For the past four years, a team of experts from the University of Illinois College of Veterinary Medicine, the US Department of Agriculture Division of Animal Care and the Association of Zoos and Aquariums has encouraged animal facilities to plan for the worst. Our group has been running preparedness exercises at large and small zoological institutions in urban, rural and suburban locations.

The first step for zoos is to figure out where they stand. Have they thought about what they would do if a tornado is headed their way or a contagious disease is affecting wild animals in their vicinity? The goal is to protect the health, safety and welfare of all the animals in their collection. But in the face of an emergency, it may not be possible to relocate all the animals that may be in harm's way. Endangered and threatened species often take priority for relocation – if there is a nearby facility to house the animals, and if they can be moved safely. In other circumstances the best approach may be to shelter-in-place. It should help to have decisions of this kind made before disaster strikes.

Zoo and aquarium personnel have to think through disease control measures as well. These can include isolation and quarantine of exposed animals, closing exhibits, moving animals normally housed outdoors to an indoor facility and using special disinfectants and personal protective equipment for personnel. Preparedness planning includes keeping needed items in stock and identifying emergency suppliers.

Practicing the plans

Once plans are in place, it's time to train zoological personnel and put those response plans to the test. And it's not just those who work at zoos that could potentially be involved in an emergency response at a zoological facility.

Imagine an outbreak of avian influenza; the alarm would muster state, local and federal agencies. Since it's a human health risk, public health agencies would be called upon. Risk to the commercial poultry industry would bring in the US Department of Agriculture and state animal health agencies. Departments of Natural Resources and the Interior would coordinate response activities involving free-living waterfowl like ducks and geese, since they could serve as a source of transmission to zoos and commercial poultry. Cleanup and disposal of potentially contaminated

bedding and manure may require approvals by the Environmental Protection Agency and Department of Transportation. If the animal involved is on loan from another country, even the US State Department may become involved.

Our Flu at the Zoo exercise brought together people from each of the potential stakeholder groups along with representatives from 16 zoos and aquariums. Attendees responded to a hypothetical outbreak scenario: an infectious disease begins to spread within a local zoo. Approximately 87% of the participants who completed the feedback form afterward indicated that understanding communication channels was most in need of improvement. So next, in our subsequent Zoo Ready program, we focused on training zoo personnel on the Incident Command System that state and federal regulatory agencies and local first responders use during a disaster. That way, we hope, communication challenges and insufficient coordination across agencies and institutions won't prevent a timely and effective emergency response.

Why it matters

Zoos and aquariums play beneficial roles in global conservation efforts and environmental and biomedical teaching and research. In 2010, American zoos and aquariums contributed US$16 billion to the economy and provided in excess of 142,000 jobs. In addition, zoos and aquariums enhance public understanding of wildlife and the conservation of the places animals live.

For these reasons, as well as concern for the welfare of the animals they contain, it's important that substantial progress has been made on the readiness front for zoos and aquariums.

Source: The Conversation