

# KNOWLEDGE BASE

## New Hazards for the Wildlife Biologist



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An article in the latest issue of *The Wildlife Professional* made me think about the challenges faced by field biologists today compared to a few decades ago. Back when I was teaching field

techniques to wildlife majors, the concept of “personal protective equipment” (PPE) was something quite different from today. Back then, students were advised to wear leather gloves while trapping small rodents, but this had more to do with avoiding painful bites than preventing exposure to potentially deadly diseases.

This article addresses the very serious matter of minimizing infectious disease risks while working with wildlife in the field. The reason for caution is the appearance in recent years of many “zoonoses”—diseases that can be transmitted between humans and wild vertebrate animals—that pose particular risk to field biologists because of the greater potential for exposure. About 60 percent of known human diseases can be shared between people and animals. And of 800 zoonoses known at this time, scientists recently characterized 175 as “emerging infectious diseases.” Does that mean new diseases are coming into existence? No, most of these have been around for a very long time. It’s just that only recently have they been recognized.

How do these diseases get from wildlife into people? The mechanism varies. Vector-borne diseases are shuttled between people and animals by arthropods such

as insects, ticks, and mites. Well-known examples in North America include West Nile virus, Lyme disease, Rocky Mountain spotted fever, and tularemia. Others can reach humans through direct contact, for example rabies and anthrax. Yet others can be picked up from the environment in which the animals live, for example tetanus and histoplasmosis.

We often hear about sensational virus outbreaks in Africa, especially the hemorrhagic diseases such as Ebola and Lassa fevers. But now we know that hemorrhagic fevers are a real threat in North America as well. Hanta virus can reach humans through rodent bites, cuts, or by

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breathing in infectious aerosols. As recently as 1993 only a single hanta virus was identified in association with deer mice in the southwestern U.S. Now more than 35 hanta viruses are recognized throughout the Americas. It’s no wonder that when fieldwork involves possible exposure to a highly virulent disease such as hanta virus, today’s biologists don a full set of protective gear, including respirators.

Sometimes these diseases seem to spring out of nowhere, but closer inspections reveals that it was there all along. An example is the outbreak of a mysterious new respiratory disease in the suburbs of Brisbane, Australia, that first killed racehorses and then attacked their trainers. It turns out this viral disease was there for thousands of years, living in fruit bats with no apparent problems. In a series of chance events, the bats chose to forage in a fig tree on a horse farm, and at least one grazing horse picked up the virus in the bat waste that fell onto the grass. Once the virus jumped to horses, it quickly spread to other horses and then to people.

Is there some general trend that can explain the emergence of these diseases into the human environment? One theory is that habitat loss and human encroachment into previously wild areas have forced animals and people into closer contact than ever before. There is greater public awareness about the diseases that jump from animals to people, causing human death and suffering. But zoonoses travel a two-way street. Because they can also jump from humans to animals, zoonoses figure into wildlife conservation and management as well as human health.

If in your hunting and other outdoor pursuits you should encounter a scene from the classic sci-fi film *The Andromeda Strain*—with field researchers suited up with full-body protective gear—don’t be too alarmed. It’s probably just some wildlife biologists conducting a survey of desert mice. ■

**NO ENTRY: Animal Disease Control Precautions**