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EDITORIAL

Importance of collaboration on wildlife disease issues

Wildlife species are important components in disease transmission and persistence. They serve a critical role when viewing disease from a One Health perspective (One Health Initiative 2009). Although often misunderstood or underestimated, disease issues within wildlife species could greatly impact concerns in domestic animal or human health. Recent outbreaks of some zoonotic diseases can be traced, at least in part, to wildlife species. Beyond the potential threat to humans and agricultural resources, wildlife diseases also threaten biodiversity and animal welfare within natural ecosystems.

Pathogens carried by wildlife species are extremely complex. Wild animals exist in varied habitats, covering most of the globe and climatic conditions. The diversity of species and habitats renders a plethora of conditions for natural pathogens, such as parasites, bacteria and viruses. Scientific data show that many animal and human diseases, such as AIDS, high pathogenic avian influenza, Newcastle disease, plague, rabies, monkey pox and West Nile fever, were initially derived from wild animals, and that wildlife species serve as intermediate hosts, or vectors, or contribute some medium to a pathogen's life cycle.

Wildlife species are active in almost every environment and there is significant potential for interaction with domestic species. Backyard farms enable considerable encounters among wild and domestic animals. Even biosecure facilities can have rodent problems and small wild birds are difficult to eliminate completely. Whether these species can serve as bridge species to transmit diseases into facilities or as hosts to enable pathogens to persist is often unknown and frequently not investigated. Seasonal migrations of many mammal species or natural dispersals can spread disease significant distances. Migrations can range for thousands of kilometers, crossing many countries and covering multiple continents. These movements are only rudimentarily understood and impossible to control.

Wildlife disease infection and transmission occurs on a global scale, ignorant of borders. Pathogens in migratory species can pose risks across continents. Thus, increased cooperation among countries would benefit the knowledge of potential threats and improve response capacity. Sharing disease-monitoring networks to facilitate information exchange about emerging epidemics would benefit preparation efforts and enable neighboring partners to coordinate control tactics. When shared, the expertise or resources acquired in one country can improve response capacity of the global community. Collective knowledge gained through research or surveillance activities can greatly enhance the global intellectual capacity to understand and develop responses to emerging wildlife disease issues.

During October 2008, the Chinese Academy of Sciences and the United States Department of Agriculture co-sponsored a workshop to enhance cooperation on addressing avian influenza in wildlife species that may be moving among the Asian and American continents. Scientists from Canada, Mongolia and Russia, joined the workshops to exchange information. Discussions focused on avian influenza but also included information exchange on other established or emerging wildlife diseases that were of regional concern. Topics covered included an overview of the role of wild animal pathogens in human and animal health, basic concepts of disease ecology, consideration for components of a global wildlife health program with special emphasis on disease surveillance, along with methods and issues associated with responses to disease occurrences. Part of this issue of *Integrative Zoology* embodies content of the workshop, including papers on general public health and zoonotic diseases (Li *et al.* 2009; Sun *et al.* 2009), and perceptions of meeting international obligations regarding wildlife disease surveillance and reporting (DeLiberto *et al.* 2009; Parmley *et al.* 2009).

As editors, we hope you that you find this issue of

Integrative Zoology beneficial and that we, in some small part, can contribute to the existing body of knowledge pertinent to understanding wildlife diseases and their importance to human and agricultural health.

Hongxuan HE[1] and Dale L. NOLTE[2]

[1]National Research Center For Wildlife Born Diseases, Institute of Zoology, Chinese Academy of Sciences, Beijing, China and
[2]National Wildlife Disease Program, Animal and Plant Health Inspection Service, United States Department of Agriculture, Fort Collins, USA

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