Conclusion

"Few ideas have been so ingrained in the literature of medicine and parasitology as the idea that parasites [i.e., all infectious pathogens] should evolve toward benign coexistence with their hosts. Few ideas in science have been so widely accepted with so little evidence. And few ideas are so at odds with the fundamental principles on which they are supposedly based, with such a great potential for missed opportunity…. In recent years both theoretical and empirical studies have led to a rejection of obligate evolution to benignness, yet it is still presented in well-respected journals and medical texts as the foundation upon which evolutionary arguments are built …." (Ewald)[1]

During recent times, much of society has believed that evolutionary processes, like those noted in the above quote, will minimize the effects of individual infectious diseases on humans in the long term and that advances in technology can provide much of the short-term protection needed. Tuberculosis and rabies, two diseases of antiquity, are examples of the fallacy in these perspectives and are prominent in the current era of global emergence and resurgence of infectious diseases that began during the 1980s. Both of these diseases are zoonoses, as are many of the other emerging and resurging diseases.[2] The importance of zoonoses as a continuing challenge to human well-being is associated with human lifestyles (work and leisure) that bring people into contact with animals (wild and **domestic**) and with other environmental reservoirs of infectious agents.[3] Wildlife are an increasingly important aspect of infectious disease emergence and resurgence, as evidenced by recent events of pathogens crossing species barriers and the rapid spread of West Nile fever across the USA (see Box 2–3).[4–8] The need to better understand the ecology of diseases of free-ranging wildlife has never been greater. Public health; the global economies of the livestock, poultry, and aquaculture industries; and the economies associated with wildlife ventures (e.g., tourism and other recreational pursuits) require enhanced efforts to obtain this understanding and are factors that stimulated the development of this publication.

This project began as an overly ambitious effort to bring together timely overviews for many of the diseases of free-ranging wildlife that have zoonotic implications. A primary consideration for this project was depicting the ecological aspect of these diseases in a highly illustrated manner, allowing nonspecialists a basic understanding of these diseases. Each module was designed to have an introductory chapter providing an overview for the subject area (e.g., viral diseases) followed by chapters for primary diseases (e.g., rabies) and completed by a chapter on other diseases within that category (e.g., miscellaneous viral zoonoses). Numerous chapters developed by subject experts have been prepared to meet this goal. However, a variety of circumstances have delayed completion of other chapters that are essential components of the disease modules.

With great apology to the authors that completed their zoonoses chapters, time delays in completing all of the chapters for each module resulted in separating those components from the more general information presented here. Even with this separation, the time required to reach publication for this part of the project has resulted in the emergence of additional diseases of concern that are not included within these chapters. Highly pathogenic avian influenza H5N1 is the most notable of these diseases, because it poses a significant threat for a global pandemic akin to that which resulted in millions of human deaths between 1918 and 1919. A unique aspect of this influenza virus strain is its potency for some species of migratory waterbirds, in addition to poultry and humans.[9–11] The involvement of wildlife, domestic animals and humans emphasizes the concepts stressed throughout this publication. Specifically, there is a continuing need for enhanced wildlife disease surveillance and monitoring, and collaborative approaches between public health, **domestic animal**, and wildlife interests to address infectious disease emergence and resurgence.

Other recent noteworthy disease events include an outbreak in China of *Streptococcus suis* that killed 38 humans and more than 600 pigs. This outbreak of a rare, and rarely fatal, bacterial disease may involve a new, more virulent form of the bacterium.[12] Concern also has arisen that pigs in South Korea may have become infected with a research influenza strain (WSN133) not known to occur in nature, and there are potential human health effects associated with exposure to this virus.[12,13]

The information provided in this publication is sufficiently independent, currently relevant, and sufficient in scope and volume to be issued as a stand-alone document. The value in doing so is associated with continuing concerns about

increases in emerging infectious diseases and global unrest that could result in **bioterrorism** activities. The information provided in this publication offers perspectives for combatting these threats if wildlife are involved and will be enhanced by the subsequent publication of the supplemental circulars on specific zoonotic diseases.

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