



## New and emerging diseases — The wildlife interface

Gary Wobeser

**E**merging diseases are defined as those that have newly appeared in a population or that have existed but are increasing in incidence or geographical range. Most emergencies occur because of a breakdown in the barriers that previously limited the geographic or host range of the disease agent. Infectious diseases appear to flourish in disrupted environments. There are about 200 species of wild mammal and > 500 species of wild bird in Canada. These provide a potentially rich pool of new disease agents and disease hosts, which is increased further by the introduction of new species from other areas of the world.

Several factors influence the involvement of wild animals in disease emergence; a) the introduction of new disease agents with translocated wild animals; for example, rabies moved with raccoons (*Procyon lotor*) and coyotes (*Canis latrans*) that were translocated for hunting in the USA; *Echinococcus multilocularis* was translocated with foxes (*Vulpes vulpes*) to the southeastern USA; *Fasciolides magna* moved with elk (*Cervus elaphus*) from North America to Europe; and chronic wasting disease moved with farmed elk; b) the introduction of a disease agent that becomes established in indigenous wild animals; for example, the establishment of West Nile virus in eastern North American birds and of plague in wild rodents in western North

America; c) the introduction of a wild animal that alters the ecology of an existing disease; for example, the brush-tailed possum (*Trichosurus vulpecula*) introduced to New Zealand became the major reservoir for bovine tuberculosis; d) environmental change that favors range expansion or population increase of wild animals involved in a disease; for example, habitat changes have resulted in increased deer and tick populations associated with the emergence of Lyme disease; environmental changes have led to expanded populations of double-crested cormorant (*Phalacrocorax auritus*) and epizootics of Newcastle disease; and range expansion of raccoons has introduced *Baylisascaris procyonis* to the prairie provinces; e) changes in land use that bring humans, domestic animals, and wild animals into closer contact; and f) changes in human activities that alter disease transmission; for example, the impact of artificial feeding on the maintenance of bovine tuberculosis in white-tailed deer (*Odocoileus virginianus*) in Michigan and brucellosis in some elk populations; and the occurrence of mycoplasmosis and salmonellosis in songbirds associated with backyard feeders.

The involvement of wild animals may complicate management of a newly emerged disease in several ways, including the difficulty in detecting the occurrence of the disease or disease agent in wild animals compared with in human or domestic animal populations, the difficulty in implementing standard disease control measures in free-ranging animals, the need to involve many agencies with different mandates, and public resistance to disease measures that are perceived to be harmful to a publicly owned and highly treasured resource.

---

Canadian Cooperative Wildlife Health Centre, Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan S7N 5B4.

Address correspondence and reprint requests to Dr. Gary Wobeser.