

In This Issue

MIGRATION OF WEST NILE VIRUS

West Nile Virus spread rapidly across the New World during the last 6 years. While its initial incursion was likely via a shining silver bird (a jet airplane), the mechanisms for its subsequent movements have been harder to identify. In this issue, **Owen et al.** demonstrate that birds infected with the virus show migratory activity, and suggest that migratory species spread this pathogen throughout the Americas. At the time of writing, we await the incursion of another avian disease with perhaps greater significance for our own health, and ponder upon migratory birds as a provider for this pathogen's passage.

COSTS OF ENVIRONMENTALLY INDUCED CHILDHOOD ILLNESS IN A REGIONAL ECOSYSTEM

The developmental status of children makes them particularly vulnerable to environmental contaminants. It is becoming increasingly apparent that pre- and postnatal exposures to high production volume (HPV) chemicals, which are historically increasing in industrialized regions, are an issue of ecosystem sustainability – the capacity of regional systems to sustain healthy human populations. In a study on the economic costs of childhood mortality and morbidity associated with environmental contaminants, **Davies** demonstrates that the monetary costs in the State of Washington alone approach 2 billion dollars annually. In light of these data, the author argues that failure to consider this tragic disease and disability burden in the environmental policy process represents its de facto acceptance.

POPULATION GENETIC DIFFERENCES PROMPT DIFFERENT RESPONSES TO AN INVASIVE PATHOGEN

Experimental manipulations of infectious agents have yielded major advances in disease biology and ecology. However, large-scale experiments are difficult and may be impossible at regional scales. In the current issue, **Dhondt et al.** take advantage of a natural experiment with just such dimensions. They examine the spread of a recently introduced disease into two geographically separated (until recently) populations of house finches. They reveal marked differences in the dimensions of the epidemic and suggest that this is a result of subtle genetic differences. Their study also demonstrates the simple fact that when anthropogenic factors manipulate populations, they also manipulate their pathogens.

FERAL PIGS, WATER CATCHMENTS, AND ZOOZOSES

Feral pigs are environmental and agricultural pests in many countries, and a major threat to native ecosystems and their biodiversity. They cause ecological damage through wallowing and rooting, including in riparian zones, where their impact on vegetation cover can cause a serious erosion problem, impacting surface water quality. When this occurs in municipal drinking water catchments, they may also represent a direct threat to public health, as the article by **Hampton et al.** shows. Pigs commonly carry a number of intestinal parasites pathogenic to humans. By sampling pig feces in municipal drinking water catchments in Western Australia, the authors detected *Giardia*, *Cryptosporidium*, *Balantidium*, and *Entamoeba*. Moreover, they applied molecular and population genetic techniques and analysis

to the captured pig tissue samples. The results indicate a high degree of population substructuring in the pigs along with distinct infection prevalence rates. The results indicate not only the need, but a new approach to disease management for drinking water source protection.

IMMUNE SYSTEM STATUS AS AN INDICATOR OF ECOSYSTEM HEALTH

Genetic diversity exhibited by the major histocompatibility complex (MHC) is considered an evolutionary response to selection pressure imposed by invasive agents, including pathogens and toxic or other foreign compounds in an ecosystem. Yet, expression of MHC genes, and thus fitness of a population in ecological time, is known to be suppressed by environmental insults from environmental contaminants/chemicals and nutritional stress. Using laboratory techniques to quantify the transcription of individual MHC genes, **Bowen et al.** discovered significant variation between individual Steller sea lions from different

wild populations. These findings suggest that MHC gene expression in marine mammals could be used as an early warning indicator of environmental stress and ecosystem degradation.

TRADITIONAL MEDICINE AND HEALING ACROSS CULTURES

In a Forum article, **Pesek et al.** argue for, and then propose, a partnership between modern medicine and traditional healing. They suggest the collaboration would provide mutual benefits, and a more holistic understanding of health and well-being. Part of their argument is based on the assumption that varied cultures from across the world share remarkable similarities in healing modalities, and that these can be taken, therefore, to be universally applicable. We hope that this assumption, and the outcomes of their proposal, can be the subject of future articles in *EcoHealth*.

Published online: May 4, 2006