

In This Issue

THE DISEASE WITH THE MOST SIGNIFICANT IMPACT ON VERTEBRATE BIODIVERSITY?

It is now almost a decade since chytridiomycosis, a disease associated with global declines of amphibians, was first described. Along with a handful of other diseases, including canine distemper in black-footed ferrets, lions, and African wild dogs, chytridiomycosis has become a symbol of the newly recognized phenomenon of disease emergence in wildlife. In this issue, **Skerratt et al.** critically review the ecology and impact of chytridiomycosis. They conclude that evidence is overwhelming for chytridiomycosis as both an emerging disease and a major cause of amphibian declines and extinctions. Indeed, its impact on vertebrate biodiversity may be the most significant so far recorded for any single disease.

GLOBAL MARINE MAMMAL HEALTH AND DISEASE TRENDS

There is growing evidence that the ecological integrity of marine ecosystems is under increasing threat. Massive development of the world's coastal zones and consequent contaminant input and silt in runoff are known to facilitate algal blooms and infectious disease outbreaks in marine mammals and other organisms. **Gulland and Hall** review the trends of marine mammal disease reports during the past 40 years and conclude that strandings doubled between 1980 and 1990, but in recent years these have remained relatively high. Current efforts by many scientists to examine the systemic health threats to marine mammals are key to describing the state of the ocean as it relates to marine mammal and human health.

MONKEY MADNESS

Ebola virus has a bad reputation for a pathogen. To be sure, its impact on human populations at the village level is severe with an 89% case fatality rate reported in the Kikwit, Zaire outbreak. However, Ebola virus has not yet broken out of local-scale dynamics within the human population. But what about nonhuman primates that are susceptible and already under pressure through bushmeat hunting and deforestation? In this issue, **Rizkalla et al.** use a mathematical model to analyze how combined Ebola virus transmission and hunting affect western lowland gorillas and produce a gloomy forecast for this threatened ape.

THE DEFORMITY DEBATE REVISITED

Reports of amphibian deformities hit the headlines repeatedly in the last decade, with causal hypotheses proposed, tested, debated, and discussed. The issue has become controversial because some have proposed that deformed amphibians are sentinels of decreased environmental health (Dare we say, Ecohealth?) that may have relevance for us. In this issue, **Skelly et al.** provide intriguing evidence that the widely supported hypothesis, namely, that most deformities are caused by a parasite of amphibian limb buds (*Ribeiroia ondatrae*), may not explain the pattern of deformities seen at their study sites in Vermont. With this article, we reopen the debate on causal mechanisms—at least for one region of the USA.

DRUGGING THE WATERS

We know about the dangers of having mercury and other pollutants in our drinking water supplies and certainly are

aware of by-products of chlorination and even caffeine in the water, but what about pharmaceuticals and their metabolites? **Collier** found that 26 drugs have been detected in water systems worldwide, 7 in drinking water, 16 in ground water or post-treatment effluent, and 3 in both places. Current water treatment practices clearly do not always remove pharmaceutical residues. She concludes that while healthy adults are unlikely to be adversely affected at the levels of exposure reported, children were shown to have up to eightfold higher risk and may be exposed to several drugs that are contraindicated or not established for safe use in pediatric medicine.

FROG FUNGUS COLONIZES CUBA

Chytridiomycosis, highlighted in another article in this issue as a major cause of amphibian declines, is being found at new sites regularly. However, its presence in a new country, where endemic amphibians related to species that suffer declines in nearby regions, is significant. In this issue, **Diaz** demonstrates the disease in an endemic Cuban toad. This is the first report from Cuba and is a clarion call for Cuban conservationists to examine its potential impact on their amphibians.

SPECIAL FOCUS

This issue of *EcoHealth* contains a Special Focus on Indicators of Wetland Health. This is a collection of articles from a group of scientists working on wetlands in the USA that investigates ways of measuring the health of these important ecosystems. This Special Focus deals with a core “ecosystem health” issue (as laid out in the seminal book by David Rapport and colleagues, *Ecosystem Health: Principles and Practice*, Blackwell, Oxford): How do we measure the health of an ecosystem in a way that is cost effective and rigorous and therefore can be taken up by agencies tasked with making management decisions on ecosystems? The Special Focus is introduced with an article from the two guest editors, Robert Brooks and

Ganapati P. Patil, and others who highlight the key issues that the articles address.

The first article, by **Wardrop**, lays out a new classification system for the various types of indicators used by managers to assess wetland health. These include indicators of the wetland’s condition, the underlying causes of its condition, how it is perceived, how it is likely to change in the future, and how to assess the indicators’ efficacy. These are addressed on different spatial and temporal scales and in a social context. This is followed by an analysis of this indicator classification system applied to the Chesapeake Bay by **Hershner et al.** Indicators were selected and examined by a team of experts. Each assessed whether the proposed indicators were simply measurements of a single component of an ecosystem or whether they provided information on the state of the ecosystem at a higher spatial or temporal scale—a robust indicator of system health. Their results, set within the framework of this well-known system, provide a clear strategy for managers to now adopt. **Hanowski et al.** tested another strategy using data on breeding bird communities as a measure of the health of 222 wetlands in the Great Lakes basin. They found that different indicator approaches, based on bird guild composition and wetland ecological dependence, had strengths and weaknesses. They concluded that indicators need to be tailored to fit different wetlands, but some common rules may apply. **Reiss and Brown** use neighborhood analyses of landscape development indices to test three EPA categories of wetland indicators in Florida. They found that approaches requiring different levels of assessment intensity were correlated, suggesting less intense methods could suffice. Finally, **Lane** revisits the classical approach of employing diatoms as indicators. Examining 69 wetlands, he shows that fine-scale taxonomic identification is needed for accurate assessment.

This *EcoHealth* Special Focus provides a snapshot of a rapidly developing field that brings together ecology, environmental health, taxonomy, geography, and other fields to tease apart the complexity of ecosystem health.