

Editorial Overview

EcoHealth: A Transdisciplinary Imperative for a Sustainable Future

The time has come for a scientific journal that recognizes the inherent interdependence of the health of humans, wildlife, and ecosystems, and that provides a “gathering place” for those exploring the perspectives, theories, and methodologies emerging at the interface between ecological and health sciences.

EcoHealth responds to this challenge and to the demands of a large and growing community of practitioners and scholars who require a high-quality, authoritative forum for reporting on research and practice that integrates human, wildlife, and ecosystem health. Health can be viewed as a central criterion for judging human sustainability (McMichael, 2002) and its understanding in this context draws on integrative and cross-disciplinary approaches involving both the ecological and health sciences.

This understanding requires research on the effects of global change on ecosystem sustainability and on human health; the emergence and effects of pathogens, parasites, and pollutants within human, non-human animal, and plant communities; the interaction between environment, development, and human health; and the management of these challenges across local, regional, and global scales. In the past decade, vibrant, complementary, and overlapping research communities have emerged to address these problems, grouped under several banners, including: conservation medicine; global change and human health; and a variety of integrated studies in ecology, health, and sustainability. The common, overarching purpose of these three overlapping research domains is to better understand the connections between nature, society, and health, and how drivers of social and ecosystem change ultimately will also influence human health and well-being. The reciprocal, often complex, and even messy relationships between and

among humans, other organisms, and their surroundings are clearly evident in the widening gap between those who have and those who have not, in the health effects of inequality, and in the environmental consequences of such disparities.

The global loss of biological diversity affects the well-being of both animals and humans. Habitat destruction and species loss have led to ecosystem disruptions including the alteration of disease transmission patterns, the accumulation of toxic pollutants, and the invasion of alien species and pathogens (Aguirre et al., 2002). *Conservation medicine* addresses the interactions among human-induced changes in climate, habitat, biodiversity, and ecology; the emergence of pathogens, parasites, and pollutants; and health within human, non-human animal, and plant communities. This is especially relevant in today’s human-modified landscapes, where habitat destruction and degradation, and episodes of emerging human and wildlife diseases are increasing. Conservation medicine embraces participation by practitioners of ecology (terrestrial and marine), biology, epidemiology, veterinary medicine, human medicine, and public health. Perspectives from the social and political sciences are also fundamental in understanding and responding to the underlying drivers of human-induced changes in climate, habitat, and the use of terrestrial and marine ecosystems.

Socio-economic change, public health initiatives, and gains in medical care have continued to improve our basic health indexes in recent decades. However, we have begun to understand that economic development can impair public health if environmental and social considerations are marginalized. Increasingly, the health of human populations is influenced by large-scale environmental changes,

including, among others, climate change, stratospheric ozone depletion, loss of biodiversity, emergence of antibiotic resistance, the increasing gap between the rich and poor, degradation and pollution of air, land, and water resources, urbanization, and mass migration of people due to war or natural disasters. Accordingly, interactions between the environment, development, and health are coming under increasing scrutiny as critical contributions to understanding sustainable development and the health of human populations on local, regional, and global scales. *Global change and human health* is a new and rapidly emerging area of research focusing on this interaction of social, economic, technological, and environmental factors and their affects on the health of human populations and ecosystems (Martens et al., 2000).

The application of ecological concepts toward understanding and nurturing sustainable human health, and, conversely, applying health concepts to understanding ecosystems, are referred to collectively as *integrated studies in ecology, health, and sustainability*. Such initiatives have contributed important conceptual and methodological advances that hold promise for managing, as well as preventing, ecosystem degradation and associated human consequences for human health and well-being. Among these, notable examples have been the development of ecosystem approaches to human health (Lebel, 2003; Waltner-Toews, 2004) and application of the concept of ecosystem health as a paradigm in the assessment and management of ecosystems (Rapport et al., 2002). These and other emerging understandings that require concerted interactions among many disciplines spanning the natural and social sciences are essential to the attainment of sustainability (McMichael et al., 2003). Paralleling this realization has been the international health policy movement based on a similar imperative for integrative thinking that coalesced with the ecologically-based concepts of positive health and health promotion (WHO, 1986). This imperative is echoed more recently in calls for greater emphasis in biomedical research on these as well as other integrative themes such as environmentally induced gene expression, healthy communities, inequality, and population health, employing new research methodologies and designs using an ecological perspective (IOM, 2001; NRC, 2001).

Arguably, each of the thematic areas (conservation medicine, global change and human health, integrated studies in ecology, and health and sustainability) might warrant a separate journal. Yet the experience each of us

has had working collaboratively across these areas shows that an extraordinary amount of synergy is possible when we combine our efforts. In particular, new and often surprising perspectives, understandings, concepts, and methodologies emerge when those trained to focus on human, wildlife, or ecosystem health have the opportunity to collaborate with and to critique each other.

In the spirit of these transcendent goals, the overriding purpose of this journal is to foster a collegial, transdisciplinary community of peers. This will be achieved across the above complementary and interdependent areas of research activity by integrating knowledge and practice in a forum in which the contributions from each area will make more than the sum of those disciplinary parts. *EcoHealth* will find audiences from public health practice and human and veterinary medicine, to conservation and ecosystem management, rural and urban development and planning, and beyond. Above all, the journal will be a place for those who see both the connectedness between health, ecosystems, conservation, sustainability, and equity, and the need to defragment our approaches to them. We understand the ambitious nature of this quest. Indeed, it will take time. Your readership, your papers, your cases, and your research will be the substance of this journal, and we invite you to share with us in this exciting journey.

BRUCE A. WILCOX¹

A. ALONSO AGUIRRE²

PETER DASZAK³

PIERRE HORWITZ⁴

PIM MARTENS⁵

MARGOT PARKES¹

JONATHAN A. PATZ⁶

DAVID WALTNER-TOEWS⁷

¹Division of Ecology and Health
John A. Burns School of Medicine
University of Hawaii
Honolulu HI

²Wildlife Trust
Palisades, NY

³Consortium for Conservation Medicine
Palisades, NY

⁴Consortium for Health and Ecology
Edith Cowan University
Joondalup, Western Australia, Australia

⁵International Centre for Integrative Studies
Maastricht University
Maastricht, The Netherlands

⁶Program for Health Effects of Global
Environmental Change
Bloomberg School of Public Health
Johns Hopkins University
Baltimore, MD

⁷Department of Population Medicine
University of Guelph
Guelph, Ontario, Canada

REFERENCES

Aguirre AA, Ostfeld RS, Tabor GM, House C, Pearl MC (2002) *Conservation Medicine: Ecological Health in Practice*, New York: Oxford University Press

IOM (Institute of Medicine) (2001) *Health and Behavior: the Interplay of Biological, Behavioral, and Societal Influences*, Washington, DC: National Academy Press

Lebel J (2003) *Health: an Ecosystems Approach*, Ottawa, Canada: International Development Research Centre

Martens P, McMichael AJ, Patz J (2000) Globalisation, environmental change and health. *Global Change and Human Health* 1:4–8

McMichael AJ (2002) The biosphere, health and sustainability. *Science* 297:1093

McMichael AJ, Butler CD, Folke C (2003) New visions for addressing sustainability. *Science* 302:919–920

NRC (National Research Council) (2001) *New Horizons in Health: an Integrative Approach*, Washington, DC: National Academy Press

Rapport DJ, Lasley WL, Rolston DE, Nielsen NO, Qualset CO, Damania AB, et al. (2002) *Managing for Healthy Ecosystems*, LLC: CRC Press

Waltner-Toews D (2004) *Ecosystem Sustainability and Health: a Practical Approach*, Cambridge, UK: Cambridge University Press

WHO (World Health Organization) (1986) The Ottawa Charter for Health Promotion. First International Conference on Health Promotion, November 17–21, 1986, Ottawa, Canada. Available: http://www.who.dk/AboutWHO/Policy/20010827_2 [Accessed December 10, 2003]

Published online: March 25, 2004