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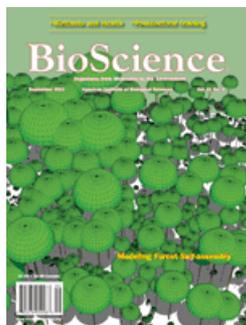
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## Wetlands as Settings for Human Health: Incorporating Ecosystem Services and Health Impact Assessment into Water Resource Management

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- [Wetlands as Settings...](#)

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# Wetlands as Settings for Human Health: Incorporating Ecosystem Services and Health Impact Assessment into Water Resource Management

PIERRE HORWITZ AND C. MAX FINLAYSON

*Reconsidering the relationship between human well-being and environmental quality is central for the management of wetlands and water resources and for public health itself. We propose an integrated strategy involving three approaches. The first is to make assessments of the ecosystem services provided by wetlands more routine. The second is to adopt the "settings" approach, most developed in health promotion, wherein wetlands are one of the settings for human health and provide a context for health policies. Finally, a layered suite of health issues in wetland settings is developed, including core requirements for human health (food and water); health risks from wetland exposures; and broader social determinants of health in wetland settings, including livelihoods and lifestyles. Together, these strategies will allow wetland managers to incorporate health impact assessment processes into their decisionmaking and to examine the health consequences of trade-offs that occur in planning, investment, development, and decisionmaking outside their direct influence.*

*Keywords:* healthy settings, ecosystem services, trade-offs, health impact assessment, wetland management

**T**he consequences of increased interaction between people and wetland ecosystems have received more attention in recent years, particularly in global assessments (UNESCO 2006, Falkenmark et al. 2007, Gordon et al. 2010, Vörösmarty et al. 2010), with an emphasis on the relationship between ecosystems and human well-being (MA 2005a, UNEP 2007). A common outcome of these assessments has been a desire for wider recognition of the meaningful relationships that exist between the well-being of people and the quality of their surroundings, including food and water sources. For wetlands, in the broadest sense, this desire is acute. Because people are producing more food globally and extracting more water globally, wetlands continue to decline, and their capacity to provide such benefits is diminishing. At the same time, the public health and living standards of many people have not improved and access to water and sanitation remains problematic. Wetland ecosystems provide resources for people directly and indirectly, and these benefits are taken for granted—even hidden—by the technologies that successfully provide water and sanitation, with a persistent negative view of wetland ecosystems being held

by the public in general and the public-health profession in particular. Despite the evidence that wetlands provide many benefits for people, they are perceived as the source of vectors or waterborne infectious diseases, and they are thought to pose a sanitation challenge for the safe disposal of human excreta and to make access to health services more difficult for those populations living in and around them. The "problem" for human health is therefore perceived to be the wetlands, rather than the upstream factors that determine disease occurrence. For inland wetlands (including swamps, marshes, lakes, and rivers), the importance of developing environmental management strategies that concurrently support the maintenance of both the ecological character of wetlands and human health has been recognized (Corvalan et al. 2005, MA 2005b).

The desire to recognize a richer relationship between wetland ecosystems and human health has come from a realization that the causes of harm to human health and well-being can be disguised by the time, spatial scale, and socioeconomic and cultural distances between policymakers and those who suffer, particularly where environmental

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678 BioScience • September 2011 / Vol. 61 No. 9

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Abstract:

Reconsidering the relationship between human well-being and environmental quality is central for the management of wetlands and water resources and for public health itself. We propose an integrated strategy involving three approaches. The first is to make assessments of the ecosystem services provided by wetlands more routine. The second is to adopt the "settings" approach, most developed in health promotion, wherein wetlands are one of the settings for human health and provide a context for health policies. Finally, a layered suite of health issues in wetland settings is developed, including core requirements for human health (food and water); health risks from wetland exposures; and broader

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