

In This Issue

CROSS-SECTORAL ADVICE

One of the mantras of the sustainability agenda is that silo-thinking in western societal bureaucracies fragments our attempt to address a more holistic well-being. Our silos are our sectors: transport, health, natural resource management, welfare, treasury/finance, police, defense, and so on. This begs questions. What and how can government sectors learn from each other? Lisa Robins reviews the literature and identifies where some of the capacity building successes of the health sector might be applied to failures in natural resource management, using Australia's regional delivery model as her case study. The result is a fascinating compilation of potential contributions that might be made.

CLIMATE CHANGE AND HEALTH IN THE HINDU KUSH-HIMALAYAS

This review by Ebi et al. examines the main climate-related risks in the Hindu Kush-Himalaya region, which include the potential expansion of vectorborne diseases, increased risk of diarrheal diseases and an increase in the number of floods and landslides with consequent death and injuries. Climate change is also bringing some benefits to mountain populations, including milder winters and longer growing seasons. The extent of the health impacts experienced will depend on the effectiveness of public health efforts to identify and implement low cost preparedness and response measures, and on the speed at which emissions of greenhouse gas emissions, both at national and at global levels, can be reduced.

REIGNING RAMPANT RODENTS

From plague and leptospirosis to Hanta virus, for millennium commensal urban rodents have had serious public

health implication for humans. Numerous studies have examined rodent exclusion methods in different areas and many conclude that integrated methods, combining trapping, poisoning, environmental management, and education are most effective at reducing rodent populations to levels where disease transmission no longer poses a health risk. Fernandez et al. conducted the first complete South American evaluation and implementation of an integrated program for rodent control in a shanty town in Buenos Aires, Argentina. Not unsurprisingly, their results show that an integrated approach is effective at controlling rodents, but must be long-term, since effects fade quickly after cessation of control efforts.

SIMIAN SALVATION ON THE SUBCONTINENT

Well fed rats and pigeons may be the bane of many a modern city, since they are oft considered unsightly vectors of disease. Though these are most often unintentionally well-fed, some other commensal species such as monkeys that are worshiped and fed may weather the vicissitudes of ENSO-related drought far better than their wild brethren. Waite et al. compared populations of Hanuman langurs in the city of Jodhpur and in Kumbhalgarh Wildlife Sanctuary. Of the two populations, the urban one was buffered far more from the vicissitudes of drought than the protected one, suggesting that urbanized areas can in some instances serve as a refuge for biodiversity.

RESOLVING CONFLICT AND ECOHEALTH

Conflict arises around access to natural resources, seemingly inevitable and characteristic in societies wedded to an ethic of resource exploitation. The consequences of such

conflict – in terms of the relationships between human health and environmental quality – might be as severe as the consequences of unsustainable exploitation itself. For educators an imperative emerges: the need to train natural resources managers and ecohealth practitioners in conflict resolution, where conflict is the arena for intervention. Savard et al. demonstrate a Canadian, community-based education initiative designed to address this imperative, and discuss how a curriculum might best achieve such a training outcome.

OILED MINK AS A MODEL FOR SEA OTTERS

While the immediate effects of crude oil in the sea otter's (*Enhydra lutris*) environment have been illustrated by the Exxon Valdez incident in Alaska (USA) in March 1989, the sublethal, immune and reproductive effects have been more difficult to evaluate from field or laboratory observations. In this study, Bowen et al. identified in mink used as a model for sea otters, differential gene expression consistent with the presence of immune system-modifying and endocrine-disrupting compounds in fuel oil. This mink model can have a practical use in sea otters if a greater number of affected genes can be detected in peripheral blood leukocytes.

FROGS FACE ANOTHER FOE

Disease has been identified as an important player in global amphibian declines. With one-third of all known species of amphibians threatened with extinction, documentation of diseases presents a first step in managing recovery. At their northeastern Georgia field site, Davis et al. discovered a pathogen in tadpoles that has been diagnosed in other outbreaks of *Rana* species in Florida, Mississippi, Virginia, New Hampshire and Minnesota. While little information is known about this organism, here the authors provide baseline information about the impact of infection of infection in tadpoles and establish a method for screening specimens.

SPECIAL FOCUS: TASMANIAN DEVIL DECLINES

This issue of *EcoHealth* contains a Special Focus on Tasmanian devil declines edited by Peter Daszak and Hamish McCallum. These declines are associated with an emerging

facial tumor disease and put this species on a dangerous path towards extinction. The papers published here represent the first extensive synopsis of current research and conservation findings on this issue since the disease was first identified less than 5 years ago. They are the proceedings of a forum organized by Professor Hamish McCallum in early 2007 to evaluate the current state of research in order to set future directions of study and action. This Special Focus represents a significant milestone for the journal *EcoHealth* as a forum for rapid publication of cutting edge research and reviews. Because of the importance of this issue to conservation medicine, the reviewing and editing of these papers was expedited so that the time from submission to publication in print was less than 7 months. We hope that this will help bring attention to the issue, and generate the sort of quality science and conservation action that is needed to prevent another extinction.

The first article by McCallum et al. sets the scene with a review of current knowledge on the spread and consequences of the devil facial tumor disease (DFTD), a deadly cancer transmitted as a clonal cell line through wild populations of Tasmanian devils. The paper presents a dire prognosis for the species' survival beyond the next decade, since DFTD transmission is frequency and not density dependent and therefore likely to continue even when the devil population reaches very low numbers. Thus, unless swift action is taken, such as establishing isolated, disease-free populations on islands off Tasmania, the Tasmanian devil's extinction may well be another textbook example of an emerging infectious disease being the proximate cause of a species' extinction.

Jones et al. continue the dialogue with a review of conservation management strategies for the Tasmanian devil. All are immediate and draconian, but may be the only viable options: captive, "insurance populations," and wild populations on disease-free islands off the coast of Tasmania or fenced peninsulas; culling of infected individuals along with intensive management of wild populations. The authors propose that these methods will reduce disease prevalence and allow maintenance of genetically diverse and ecologically functional wild populations of devils that may someday evolve immunity to the DFTD. They will be expensive and logistically difficult to conduct, but, as suggested in the paper, may be the only viable strategy that is currently available to reduce the risk of extinction. The authors cite a pilot study of selective removal of infected devils that has had favorable results of

both maintaining the devils' natural population density and reduced the rate of disease spread.

Woods et al. look at the immune response of the Tasmanian devil to the DFTD. They propose, with supporting data, a hypothesis that the devils' lack of genetic diversity results in the inability of their otherwise highly functional immune systems to recognize the tumors as "non-self." They conclude that introducing either genetic or immunological resistance to the disease may be an alternative practical approach to management. Still even this approach, assuming a vaccine could be developed, presents a Herculean task.

Finally, Pycroft presents a discussion of the case definition, diagnosis, and etiology of DFTD. Current theory, supported by histopathological, ultrastructural and other data, is that the DFTD may be defined as a transmissible neoplasm from neuroendocrine tissue. The critical effort currently being applied towards a pre-clinical diagnostic method may be key to determining whether or not the

DFTD is associated with viral etiology, as well as to making decisions on which animals to cull.

PUBLIC HEALTH & ENVIRONMENTAL SERVICES

Human changes to the global environment such as natural resource over-consumption, rapid industrialization and its associated waste disposal, have intensified in the last century with deleterious effects on ecosystem services and public health. Tong and Soskolne provide their overview of progress and challenges in the area of global environmental change and population health in the past twenty years and pinpoint future priorities, including establishing and improving research methods to quantify the relationships between global environmental change and health and support for collaborative (EcoHealthy) approaches to resolving these pressing problems.

Published online: September 8, 2007