

In This Issue

SPECIAL SECTION: MARINE SENTINEL SPECIES

A special section, based on a workshop held in 2002, looks at charismatic megavertebrates including sea otters, manatees, dolphins, sea birds, and sea turtles as the proverbial “canaries in the mineshaft” or “early warning” indicators that may reflect the quality and health of marine ecosystems. Simply put, a sentinel species provides an opportunity to gather integrative and robust scientific information on the health of oceans in order to take mitigative action or support predictive capabilities. The “utility” of the species selected should consider its value and relevance to conservationists and to society at large. The articles in the **Special Section: Marine Sentinel Species** provide readers with evidence that assessing ecosystem health requires a “suite” of sentinel species representing different trophic levels, ecological roles, taxa, or different spatial and temporal scales. The insights from this special section highlight the need for transdisciplinary conservation medicine teams to work together with children, decision makers, and the general public to improve not only our assessment of ecosystem change but also our behaviors towards the planet and the species with which we share it.

DUST STORMS AND THEIR IMPACT ON OCEANS AND HUMANS

Our understanding of desert dust storms and their impact on a global scale has been greatly enhanced by satellite imagery. **Griffin and Kellogg’s** thought-provoking review not only reveals the scale of influence of desert dust on ocean and terrestrial processes but also highlights the important potential health impact on downwind ecosystems through toxin accumulation or immunosuppression, or both. The review focuses on the ability of dust storms to

influence marine microbial population densities and to transport soil-associated toxins and pathogenic microorganisms to marine environments. New collaboration across disciplines and sectors is an essential first step to improve our understanding of the effects of atmospheric dispersion of pollutants and disease-causing agents on ocean and human health, and also to avoid exacerbating related problems such as desertification.

INTRODUCED AQUATIC SPECIES AND HUMAN HEALTH IMPACT

While introduced organisms can severely disrupt ecosystem structure and function, the impact of exotic organisms on human health have traditionally been overlooked. **Levy’s** review of the human health impact of introduced species in aquatic environments focuses on the direct introduction of human pathogens and their hosts, and also points to important indirect effects on species and ecosystem services that support human well-being. The article argues for substantially more focus on the spread of exotic and invasive species as important drivers of human disease emergence.

ANTHROPOGENIC LANDSCAPE CHANGE AND HABITAT FOR MOSQUITO DISEASE VECTORS

The introduction of exotic mosquito disease vectors is an important public health threat in island nations and regions. To examine the interaction between deforestation, agriculture, and exotic species in New Zealand, **Leisnham et al.** use a manipulative experimental approach focused on the role of shade and nutrient level as central determinants of mosquito productivity. Whereas native species were found to dominate most experimental conditions, no native or exotic mosquito productivity was observed in con-

tainers with extremely high nutrient loads. Invasive exotic mosquito species known to thrive on high nutrient conditions may therefore find favorable vacant niches. Conditions for invasion and spread are further enhanced by anthropogenic changes in climate and increased opportunity for virus and vector importation through global travel.

DETECTING SEWAGE CONTAMINATION IN CORAL REEFS

Identifying appropriate markers for anthropogenic pollution in coastal marine environments is an ongoing

challenge, especially in tropical marine waters. Sampling for enteroviruses is proposed as a more sensitive method than many fecal indicator bacteria to detect contamination from human sewage. Drawing on findings from their study in the Florida Keys, USA, **Lipp and Griffin** suggest not only that enteroviruses are enriched in coral mucus (the mucopolysaccharide layers from scleractinian corals) but also that coral mucus could be screened as a useful marker for anthropogenic pollution in tropical waters.

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