

LETTER FROM THE EDITORIAL OFFICE

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This issue of *Environmental Practice* is devoted to water resources. Water issues, including water quality and supply, are projected to be the global geopolitical hot button issues of the twenty-first century. While much media attention has been paid to water shortages in states like California and Arizona, the Great Lakes, representing 20% of the world's fresh water supply, are also under threat. Peter Annin's 2006 book, *The Great Lakes Water Wars*, provides a cogent discussion of how competition for Great Lakes water resources is likely to play out. He notes that at the time of the writing of the book, water quality and invasive species including the zebra mussel had been the chief concern in the Great Lakes. Invasive species is still of great concern, as witnessed by the attempts to prevent invasive Asian carp from entering Lake Michigan via the Chicago Area Waterway System (CAWS). However, attention has shifted from invasive species to the issue of water supply and quality. Annin states: "Water scarcity throughout the world—and even in parts of the Great Lakes region—will put mounting pressure on one of the most abundant freshwater ecosystems on earth.... The lakes are the region's most important and precious natural resource—they define the area's economy, culture and environment." The debate and tension among water-parched states over access to Great Lakes water resources will no doubt provide some great political theater in the coming decades and could ultimately lead to major changes in water resource policy at the local, state, and federal levels. Stay tuned! Water resources and Great Lakes issues will be two of many exciting tracks at the 2016 NAEP annual conference, April 11-14 in Chicago. We hope you will be able to attend.

This issue of *Environmental Practice* contains a mixture of interesting research

articles, environmental reviews, case studies, and perspectives from the field.

Research Articles:

In their research article, **Dirrigl, Huston, and Bazaldua** assess the role of storm water conveyance canal systems in the Lower Rio Grande Valley (LRGV) of south Texas on water quality. They examined representative canal segments in the LRGV to determine the effects of storm water conveyance structures and crossings and surrounding land use on water quality and the ability of the canal system to meet Texas freshwater surface water standards. Results of the analyses suggested that structures and crossings and land use significantly affected a majority of the water quality parameters. Overall, water quality in the canal system surveyed met federal and state standards and aquatic life criteria. The findings of our water quality survey provide significant information to assist with municipal, county, and regional environmental compliance management.

Vogt presents an interesting research article examining the use of unmanned aircraft systems to remotely sense and monitor water turbidity over large areas. Their interdisciplinary method used a novel multi-spectral imaging sensor deployed by a hand-launched small unmanned aircraft system (sUAS). Current methods of measuring water turbidity are human labor-intensive and often limit coverage such that available samplings are extrapolated unrealistically when representing large water resources. Their study established the spectral sensitivity and spatial coverage of the instrumentation, and correlated turbidity estimates against traditional Secchi disc readings taken across the lake. Plans have been made to extend this technique to be suitable for deeper, clearer lakes, and they conclude that this technique represents an improved monitoring tool for environmental scientists, watershed managers, and civil engineers.

Bahauddin, Rahman, and Hasnine present an interesting case study on the use of the Social Ecological Inventory Tool (SEI) to gauge public perception, knowledge, and participation in climate change adaptation governance in the coastal region of Bangladesh. They suggest, as have many others, that public perception, knowledge, and participation are generally important normative goals in formulating response to climate change risks. They found that local people and other stakeholders were more or less familiar with the term 'climate change' but that their understanding of this term varied and that many people were uncertain about the solution to climatic problems. SEI allowed the authors to inventory and map the various actors, their values, motives, activities, knowledge, and experiences with the ultimate goal of identifying and selecting the most appropriate set of actors to work with in order to enhance a region's sustainability and resilience.

In her case study, **Kristan Cockerill** notes that there is a lack of consensus on the relationships among what the public sees when they view a river, the actual ecological quality of that river, and a perceived need for management measures. She conducted an assessment of a people's perceptions of a high quality stream in North Carolina, including the links between perceptions of how attractive or how natural the river appeared and perceptions of specific ecological conditions. She also assessed the public's perceived need for flood protection or river rehabilitation. Results showed that public perception is complex and in some ways aligns well with available monitoring data but simultaneously reflects a lack of knowledge about what constitutes a high quality river, which influences a perceived need for flood control and rehabilitation.

Willems, Dalvie, London, and Rother present a case study of the health risk perception associated with fracking in the Karoo region of South Africa. As in the

United States, the desirability of fracking among South Africans is being debated due to increasing evidence of associated environmental and health risks. Their cross sectional study explored through a household survey, the knowledge, health risk perceptions, and information sources related to fracking amongst 102 Central Karoo residents. Results indicated that 40% of participants do not know what fracking is or the potential risks and benefits thereof. More than half of participants

(52.9%) believe that fracking poses an extreme health risk, and 78% thought fracking will harm their health. Despite this, 45% indicated a willingness to work in the fracking industry. Their study found high levels of risk uncertainty related to fracking among Central Karoo residents.

Two authors present interesting perspectives from the field. **Michael Francis** opines on the use of NEPA in future water resource planning, while **Kenneth**

Reckhow discusses why and how unattainable surface water quality standards may diminish public support for water quality improvements. Rounding out this issue is the first article in our newly created Career Development section. NAEP member **Kris Thoemke** presents what we hope will be continuing dialog on the future of the environmental job market.

James Montgomery, Dan Carroll