Dune Management Challenges on Developed Coasts: American Shore and Beach Preservation Association's 2015 Workshop

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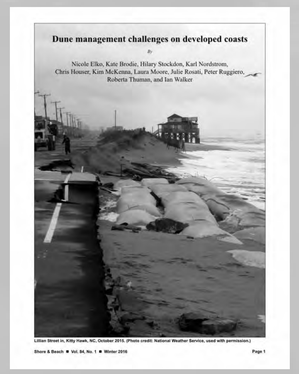
MANAGEMENT CHALLENGES

The inherent uncertainties of beach and dune evolution, competing interests among stakeholders, and multi-scale physical, environmental, and socio-economic forces complicate the management of developed coasts. Management challenges include how to:

1. balance natural and human-use values when determining dune functions and needs;
2. sustain dynamic dunes given spatial and temporal constraints from static human development;
3. address long-term physical process challenges;
4. manage stakeholder expectations and interests over both short and long time-scales;
5. provide improved education and outreach programs to support appropriate dune construction and management;
6. improve management planning and policies; and
7. prioritize funding challenges.

The need to better incorporate input from social science was also identified as an emerging and important theme across the listed management challenges.

For more detailed information on the 2015 Workshop, pick up a copy of Volume 84, No.1 of *Shore & Beach,* ASBPA's peer-reviewed journal



RESEARCH NEEDS

Workshop participants identified a number of specific research needs, that were grouped into the following five research themes or goals:

1. improve numerical models of dune formation, growth, and erosion to cross spatial and temporal scales;
2. expand observations of beach-dune morphodynamics and sediment budgets over greater spatial and temporal scales;
3. develop systems-based management approaches by integrating hydrodynamics, geomorphology, ecology, and coastal management;
4. identify success factors and incorporate into dune designs and management plans; and (
5. quantify and convey social and economic benefits to a couple natural/human dune system.

RECOMMENDATIONS

The challenges and needs identified during the workshop reflect the backgrounds of the participants and emphasize engineering, geomorphology, ecology and municipal planning. There is a clear need to engage a broader range of social scientists to find out how physical science and economic evaluations can expedite social decision-making. The connection between scientists/engineers and coastal managers can be addressed through a strong, diverse Community of Practice (CoP) that provides a forum to exchange ideas. The CoP would serve to advance the field and create new directions in research by increasing interdisciplinary collaboration and engagement across academia, federal and state agencies, and community managers. The CoP could achieve its goals by leveraging resources and facilitating the exchange of ideas and results to move the state of the art of dune management and research forward, to develop community standards, and communicate the results to stakeholders. ASBPA plans to coordinate with its partners to coordinate and foster the new CoP, through continued workshops and online presence.

$265,672 of FEDERALLY FUNDED RESEARCH

- **University of Pennsylvania**: Wind Tunnel Analyses of Vegetation Species Differences in Sand Capture Efficiency & Dune Morphology for Natural & Nature Based Dune Management — Principle Investigator (PI) Brenda Casper
- **University of North Carolina at Chapel Hill**: Modeling Dune Growth on Managed Coasts — PI Laura Moore
- **Texas A&M University**: Perceptions, governance, and stakeholder relationships along the Texas Coast — PI David Cairns
- **Oregon State University**: Simulating Dune Evolution on Managed Coastlines: Exploring Policy Options with the Coastal Recovery and Storms Tool — PI Peter Ruggiero
- **North Carolina State University**: Development of Dune Design Criteria for Overtopping Considering Constructed Beach Berm — co-PIs Elizabeth Sciaudone and Margery Overton
- **University of Alabama**: Estimating Coastal Dune Vulnerability to Storm Sequences — PI Douglas Sherman

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