

Dune Management Challenges on Developed Coasts

An American Shore and Beach Preservation Association (ASBPA) Workshop

Executive Summary

November 11, 2015

From October 26-28, 2015, nearly 100 members of the coastal management and research communities met in Kitty Hawk, NC, USA to bridge the apparent gap between the coastal dune research of scientists and engineers and the needs of coastal management practitioners. The workshop aimed to identify the challenges involved in building and managing dunes on developed coasts, assess the extent to which scientific knowledge can be applied to the management community, and identify approaches to provide means to bridge the gap between needs and potential solutions. An agenda, attendee list, and other meeting materials are available at: http://www.asbpa.org/dunes/dune_workshop.htm.

Workshop participants agreed that Hurricane Sandy's landfall on the U.S. northeast coast in 2012 resulted in an observable relationship between the amount of damage a community realized and the capacity of that community's dune system to reduce storm erosion and overtopping. However, in some cases, dunes have only recently been included as a design feature in beach nourishment projects and are often a point of contention for residents and visitors wishing to have easy access and a clear view of beaches for recreation purposes. This workshop aimed to promote a non-technical dialogue and information sharing between researchers and managers/policy makers to identify ways the technical community could provide and communicate solutions for design, natural evolution, and maintenance of dunes for consideration by practitioners.

The meeting included a series of presentations from 21 speakers in two sessions: 1) local managers who discussed successes and challenges in implementing dune management strategies, and 2) academics whose research has focused on coastal dune processes. At the end of each session, discussion was facilitated by two small-group breakouts to develop prioritized lists of dune management challenges and research needs, building upon previous presentations and discussions. The meeting culminated in a large group discussion to determine pathways to science-based management goals.

The first session highlighted that successful dune management strategies were:

- locally-specific, educational, and engaging to stakeholders,
- systems-based (considering the combined aspects of social, ecological, and geomorphology processes), and
- adaptive and flexible (time-variable and adjustable to changing natural and human systems with recognition that options for dunes could be alternatively to maintain or naturally evolve).

To create successful dune management strategies that incorporate these elements, the following management challenges were identified:

- provide education and outreach while utilizing more input from social science,

- manage stakeholder expectations and balance short- and long-term priorities,
- design functional, sustainable dunes in a dynamic natural environment adjacent to relatively static human development,
- overcome limited funding, and
- address long-term physical challenges such as sediment supply, sea level rise, and chronic erosion.

The second session highlighted research needs to expand observations and modeling capability by extending spatial (including littoral and beach zones) and temporal (including dune formation, growth, and post-storm recovery) scales; to better understand interaction between hydrodynamic, geomorphologic, and ecologic processes; and to develop success factors for different types and characteristics of vegetation to foster dune growth and recovery. There is also a need to quantify and convey social and economic impacts to the coupled natural/human dune system and to incorporate competing needs into designs for different coastal systems.

The overarching recommendation was to leverage existing facilities and resources to develop a strong and diverse community of practice to provide an information clearinghouse to share comparative case studies, disseminate large datasets, best practices and lessons learned, and facilitate continued communication.

The concluding large group discussion highlighted the benefits of the community of practice in providing a forum for managers to express challenges to researchers and facilitate communication and understanding between the different sectors. The ASBPA website and future conferences will foster the dune management community.

The meeting was adjourned with several tasks: 1) the production of this executive summary, 2) publication of a report on the workshop outcomes and recommendations, and 3) development of a community of practice to carry out the goals outlined above.

Steering Committee: Kate Brodie (USACE ERDC CHL), Nicole Elko (ASBPA), Kim McKenna (DNREC), Karl Nordstrom (Rutgers), Julie Rosati (USACE ERDC CHL), Hilary Stockdon (USGS), and Roberta Thuman (Town of Nags Head).