Resilient Coastal Systems & Community Planning

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Elko Coastal Consulting, Inc.

American Shore & Beach Preservation Association, Secretary

NOAA HSRP Meeting, 19 Sept 2014

History of ASBPA

Shore & Beach

Beach Erosion Board (CERB)

Who is ASBPA?

More than a thousand members around the U.S. and the globe

ASBPA 2014 National Coastal Conference

Oct. 14-17 • Virginia Beach, VA

www.asbpa.org

ASBPA Chapters

- Northeast (Jersey Shore Partnership)
- California
- Texas
- Great Lakes
- Central East Coast
- STUDENT chapters!

South Carolina Beach Communities Kick-off Meeting

Home | Beaches 101 | SC Beaches Meeting | Contact

Tues Aug 12 - Wed Aug 13, 2014

Courtyard by Mariott, Charleston, SC

AGENDA

Tuesday, August 12, 2014

Attendee List

Meeting Summary.pdf

1pm **Welcome**

Tim Goodwin, Mayor, City of Folly Beach (COFB)

1:10 **Beach Preservation Advocacy: Why are we here?** Elko.pdf

Nicole Elko, Elko Coastal Consulting

1:30 **Review of Coastal Policy Issues including those identified by the SCDHEC OCRM Blue Ribbon Committee & Shoreline Change Advisory Committee**

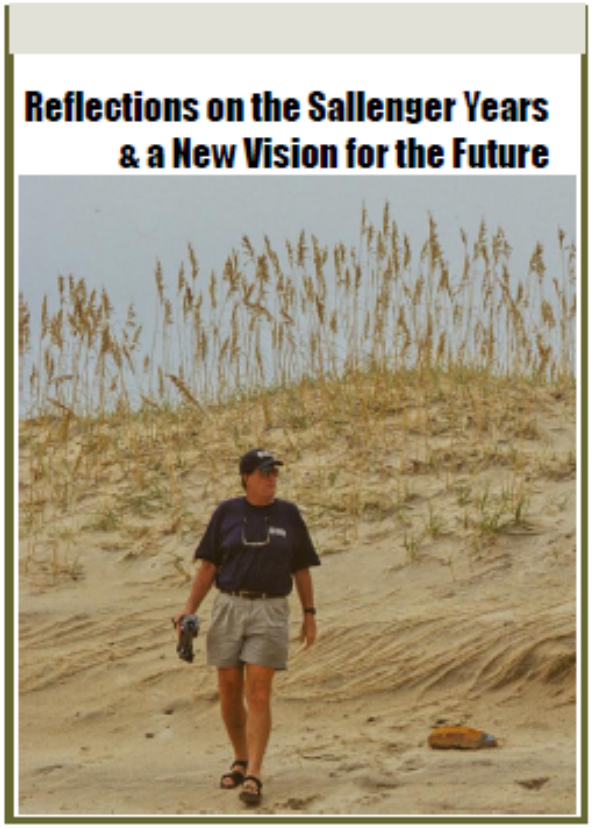
Burger.pdf

Dan Burger, DHEC-OCRM

2:00 **Federal Shore Protection & Navigation Projects relative to beach management in SC**

www.elkocoastal.com

The Past & Future of Nearshore Processes Research



Wednesday April 30 – Friday May 2, 2014

Kitty Hawk, NC, Hilton Garden Inn

Mobile Site:
http://cil-www.coas.oregonstate.edu/ASMeeting/

Attendees

- >70
- 30 institutions
- 43% academics
- 7 federal agencies
  - USACE
  - USGS
  - NOAA
  - FEMA
  - Naval Research Lab
  - National Park Service
  - U.S. Coast Guard

Predictive Skill

- Good:
  - Waves
  - Currents
  - Observation
- Not as good:
  - Flooding
  - Shoreline change & breaching
    - Post-storm recovery
  - Low-cost measurements

https://scripps.ucsd.edu/centers/nearshorefuture/

Future of Nearshore Science: 35 Authors

- Nicole Elko
- Falk Feddersen
- Diane Foster
- Cheryl Hapke
- Ryan Mulligan
- Tuba Ozkan-Haller
- Nathaniel Plant
- Britt Raubenheimer
- Stefano Brizzolara
- Dave Clark
- Todd Cowen
- Soupy Dalyander
- Steve Elgar
- Guy Gelfenbaum
- Sarah Giddings
- Bob Guza
- Alex Hay
- Todd Holland
- Rob Holman
- Tom Hsu
- Bruce Jaffe
- Jim Kirby
- Tom Lippmann
- Jamie MacMahan
- Kim McKenna
- Dylan McNamara
- Jesse McNinch
- Jon Miller
- Meg Palmsten
- Ad Reniers
- Julie Rosati
- Chris Sherwood
- Hilary Stockdon
- Jim Thomson
- QingPing Zou

ASBPA WHITE PAPER:

Resilient coastal systems and community planning

ASBPA Science & Technology Committee

March 2014

In the aftermath of recent storms such as Hurricanes Katrina in 2005 and Sandy in 2012, many communities and organizations have discussed the importance of developing resilient coastal systems to reduce risk to coastal populations from future hurricanes, severe storms or other natural disasters (e.g. tsunamis). This interest has been heightened by concerns over the potential future effects of climate change and sea level rise on the coastal zone.

The American Shore and Beach Preservation Association (ASBPA) recognizes the need for resilient coastal systems--the ecosystems and landscapes that comprise our coastal barriers, barrier islands, and strands — to increase the sustainability of our coastal communities. Herein, we discuss the definition of resilience, describe various components of a resilient coast, and present ASBPA's recommended community actions to plan, manage, and maintain a resilient coastal system.

DEFINING RESILIENCE

The term "resilience" can have different meanings depending on the context of usage. The National Academies of Science (2012) defines resilience as "the ability to prepare and plan for, absorb, re-

Adaptation — initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects (IPCC 2012).

Simplistically, a beach that naturally erodes via transport of sand offshore during a storm, then recovers to its previous functional performance as the sand returns to the beach in the days and months following the storm, can be thought of as a resilient coastal system. However, a beach that loses sand during a storm — due to the effects of inlets or adjacent structures or a localized storm event — may take years to naturally recover to pre-storm levels, if at all. From a human perspective, the shoreline system might not be considered resilient, because the recovery might not be quick enough to protect development due to a net loss of sand to the system. Humans could intervene to speed recovery or restore lost services, and not surprisingly the extent of appropriate intervention relates to the severity of disturbance and extent of damages. Since resilience applies to a wide spectrum of conditions and is a function of the ability of a system to recover from a given disturbance, a coastal system may be considered resilient to a certain set of disturbances but less re-

resilience differs in emphasis and how each might be demonstrated or measured.

Engineering resilience

"Engineering Resilience" is the ability of an engineered project to resist and recover from a given disturbance. The emphasis is on functional performance, which may be calculated as the rate at which pre-disturbance performance levels are recovered as compared to the design goals.

For instance, an engineered shore protection project commonly includes beach nourishment as a key component. Beach nourishment projects are designed, constructed, and maintained to replicate natural systems that 1) protect against economic losses from storms, 2) provide recreational space, and 3) restore and preserve the beach-dune ecosystem. Establishing the design parameters for protection involves complex analyses that consider the system's response to historical and likely future storm events to yield a beach designed to provide an optimal level of storm protection during its design life

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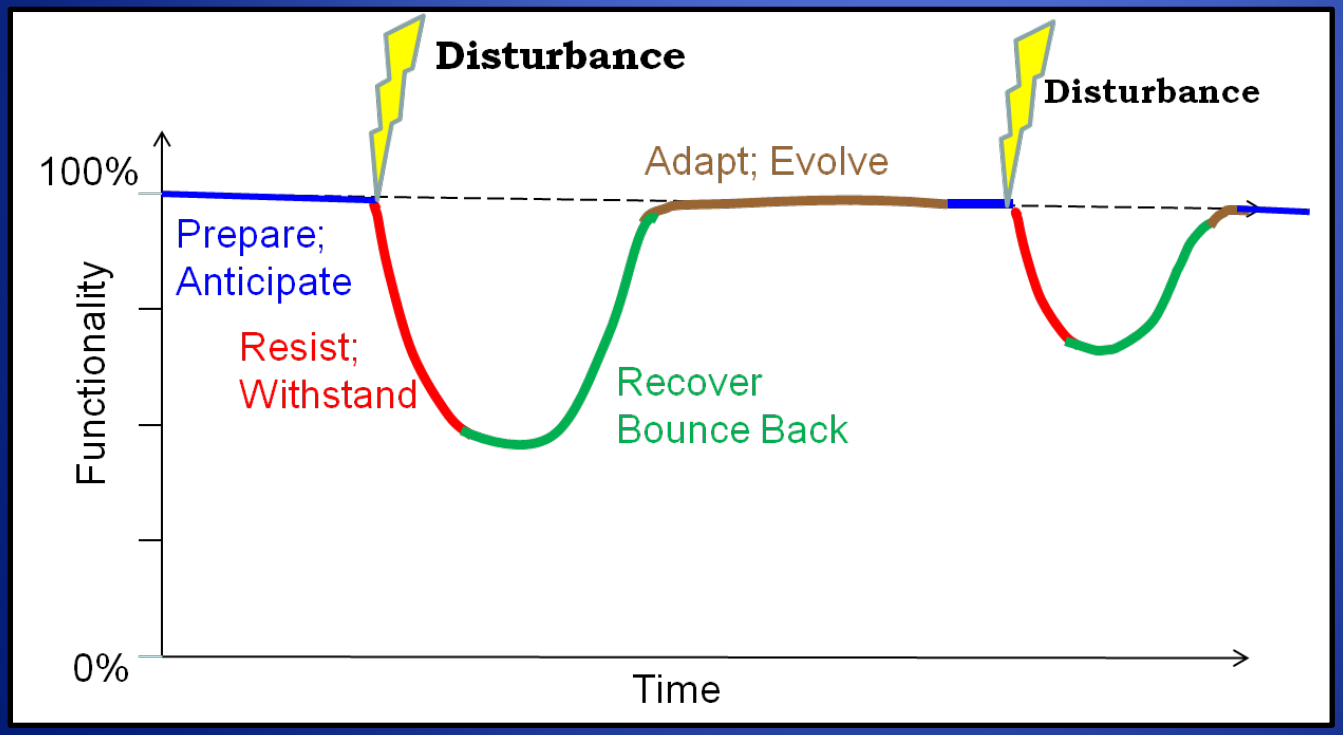
What is Resilience?

Agency/Study	Definition
"Disaster Resilience – A National Imperative" (National Academies 2012)	"Resilience is the ability to **prepare and plan for**, **absorb**, **recover from**, and more successfully **adapt** to adverse events."

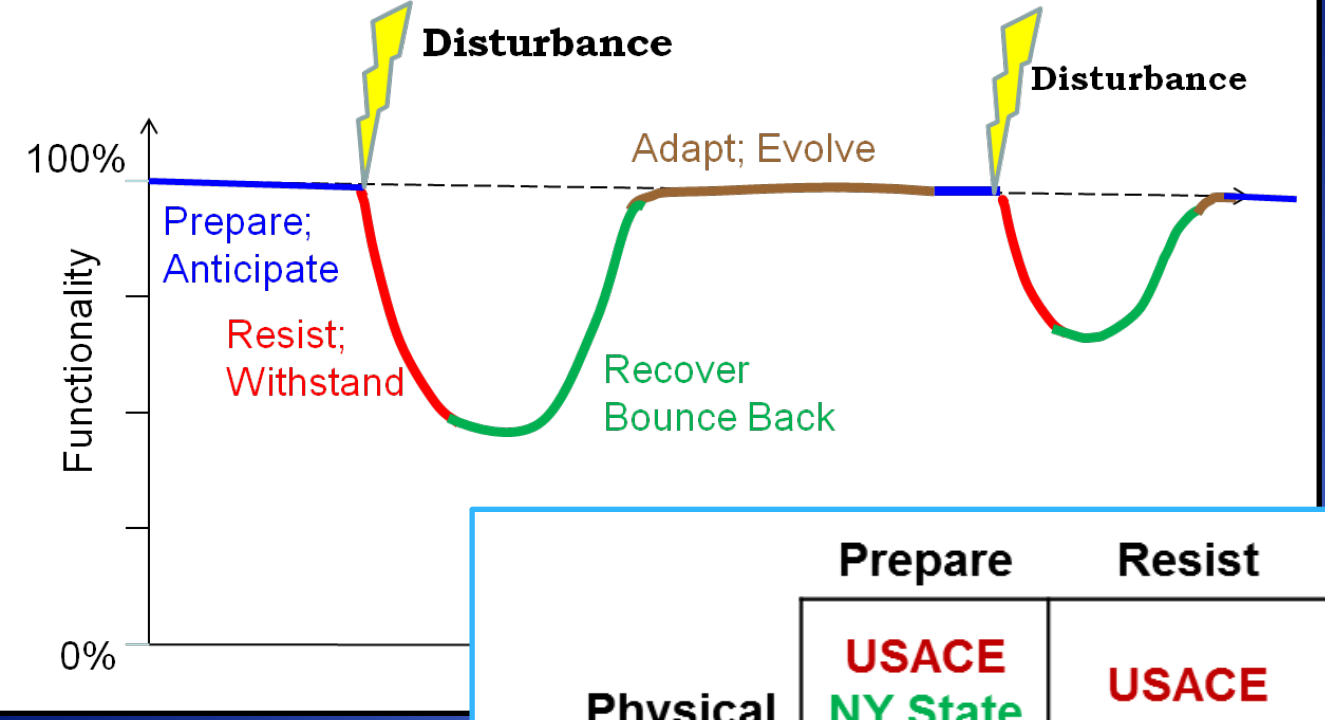


- Engineering
- Ecosystem
- Community

Julie Rosati, USACE ERDC-CHL

Coastal Resilience

- Engineering Resilience
  - Develop/implement an RSM plan
  - Provide multiple levels of protection (redundancy)
  - Recognize risks
  - Evaluate potential future conditions
  - Develop/maintain storm recovery plan
  - Replicate nature
  - Provide for maintenance



Resilience: Partners

	Prepare	Resist	Recover	Adapt
Physical System	USACE NY State NYC USGS	USACE NY State NYC	USACE NY State NYC FEMA USGS	USACE NY State NYC USGS
Data & Analysis	USACE NOAA USGS	Mayor's Office FEMA	USACE FEMA USGS NYC OEM	NYC Planning USGS
Decision-Support	NYC Planning	NYC OEM FEMA	FEMA NYC	USACE NYC
Community	NYC OEM	NYC OEM FEMA	NGO/Non-Profit HUD	NGO/Non-Profit

Julie Rosati,
USACE ERDC-CHL

ASBPA Resilience Quiz

1. Why did Fire Island, New York, fare better in Sandy than some of its neighbors?

A. Its rocky shoreline rebuffed the storm's winds and waves.

B. It had large seawalls along the coastline.

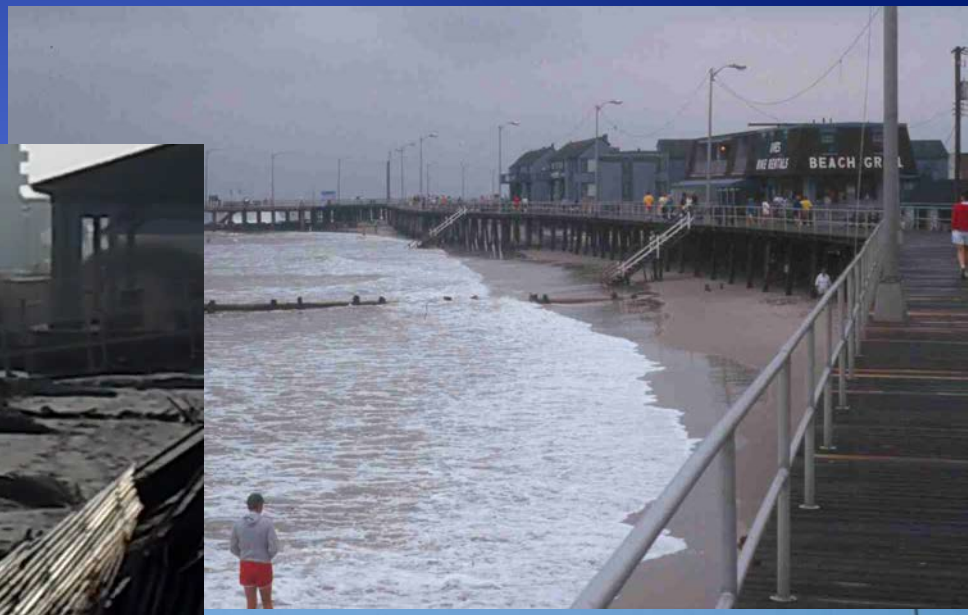
C. It had large dunes ranging from 10-20 feet in height that absorbed the storm waves.

The answer is C. The robust coastal dune system saved the bulk of the island's 4,500 homes. If you visited Avalon or Ocean City in New Jersey, post-Sandy you would have seen the same positive result for the same reason: Dunes make a difference.

Dunes that absorbed the waves

Avalon NJ

Dunes in Ocean city, NJ



Thank you Tom Campbell

Future Needs

- Observing capability is excellent
  - Need: Better observations during extreme events
- Utilize existing datasets to answer fundamental research questions
  - Need: Research $ to improve models used to increase community resilience

RESTORATION WORKS

The Nature Conservancy
Protecting nature. Preserving life.™

NOAA
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

We Agree!

asbpa
American Shore & Beach Preservation Association
Advocating for healthy coastlines

www.asbpa.org