

Gly 558

Introduction to Coastal Management

Aeolian Processes and Dunes

Namib Coastal Desert

300m high

GE

Onshore prevailing wind

Benguela Current

Crescent dunes

Fog

Linear dunes

What Can Dunes Tell Us About the Coastal System?

Their presence can provides clues about:

- Wind direction
- Sand supply,
- Storm history (scarps & washovers)
- Erosion history
- Sea level change
- Shoreline stability (with vegetation)
- Relative age
- Presence of inlets
- Man's influence

Dune Types and Morphology

- Along NC coast there are two major types of dunes and several variations.
- Transverse
- Parabolic

Wind

Slipface

Transverse Dunes

Wind

Medanos

Sand sheets

Parabolic dunes

Dune Types and Morphology

Sand Sheet

Parabolic

Parabolics

Parabolics

Parabolics

Recurved Dunes and Spit Growth

Recurved dune ridge complexes typically develop on the updrift side of migrating inlets.

Caswell Beach, NC

Caswell Beach, NC

Rich Inlet 1984

New Topsail Inlet

SC Spits and Recurved Dune Lines

Large sand supply at migrating inlets leads to development of a variety of recurved dune complexes.



Modified Dune Ridges

- Vegetation has been stripped on some dune ridges (on regressive barriers). Results in remobilization of sand.
- Vegetation changes due to fires, hurricanes, man's activities (timber for boats & grazing).
- Remobilization of sand leads to different dune morphology (plan view and height).



Complex Parabolics



Ilha de Florianópolis – SC



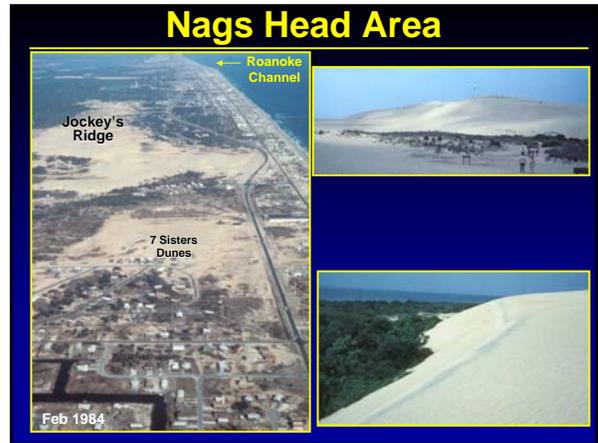
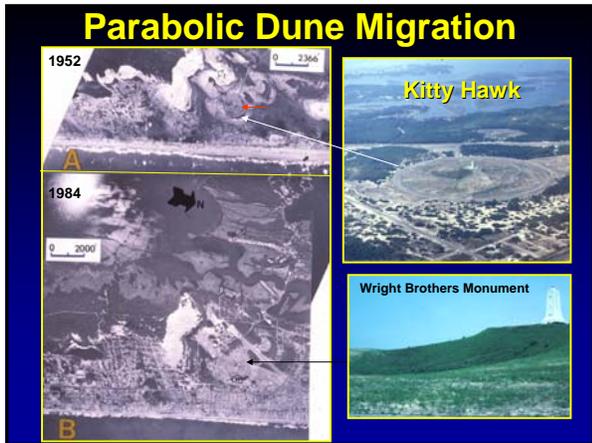
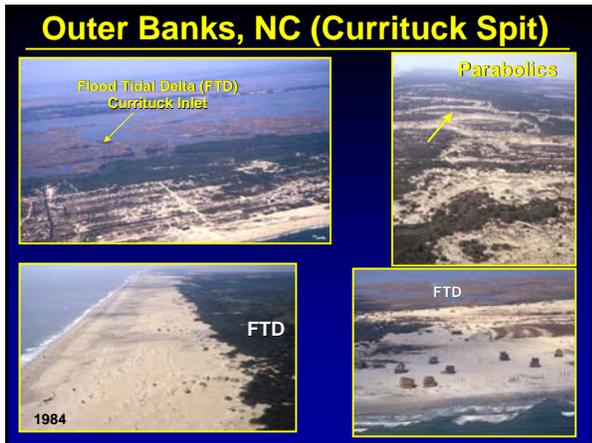
Migrating and arrested parabolics

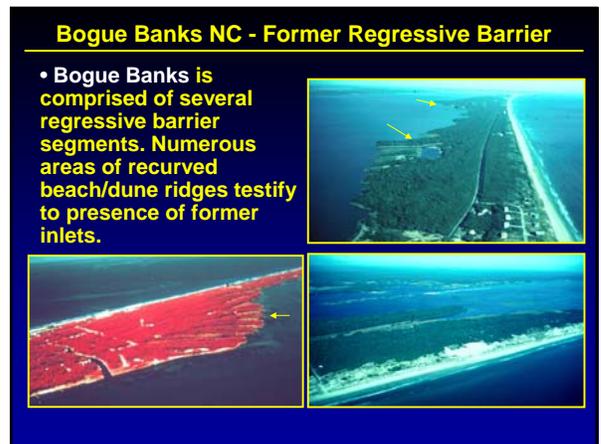
Praia Ingleses, SC, Brazil



Outer Banks of North Carolina





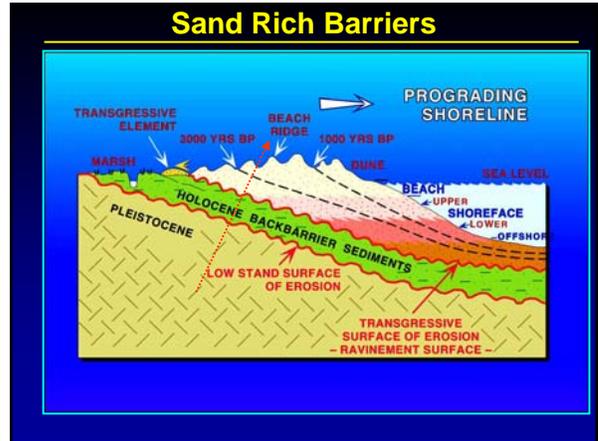


Forested Dune Ridges

Maritime forest colonized sequence of high dune ridges




Emerald Isle, NC (Bogue Banks)





Surf City, March 10th, 2001



Topsail Beach



New Topsail Inlet, NC



Topsail Beach Chronic Erosion

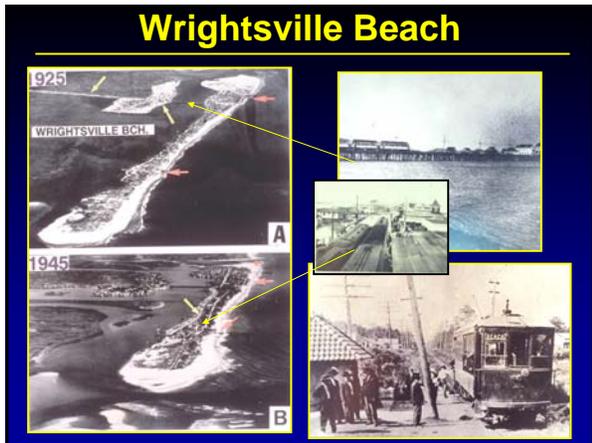


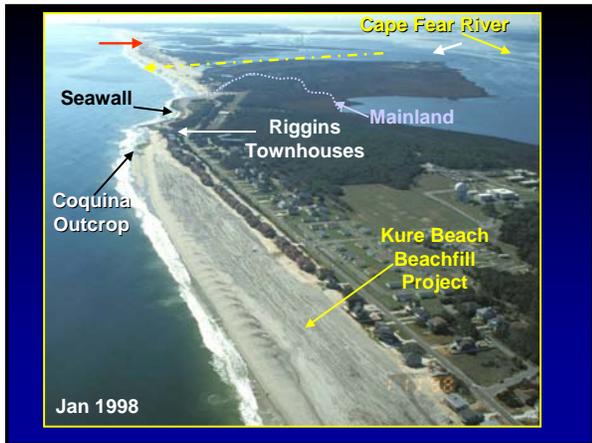
SE North Carolina



Lea & Hutaff Islands







Eastern Spit (Caswell Beach)



Western Spit Oak Island (Long Beach)



Hurricane Floyd (9/99)



Beach Nourishment



Holden Beach Inlet-Related Erosion



Holden Beach Erosion





Little River Jetties - Bird Island

