



# Piping Plover Habitat Considerations for Beach Nourishment Designs



Jim Fraser and Jonathan Cohen

# Plover Friendly Beach Nourishment

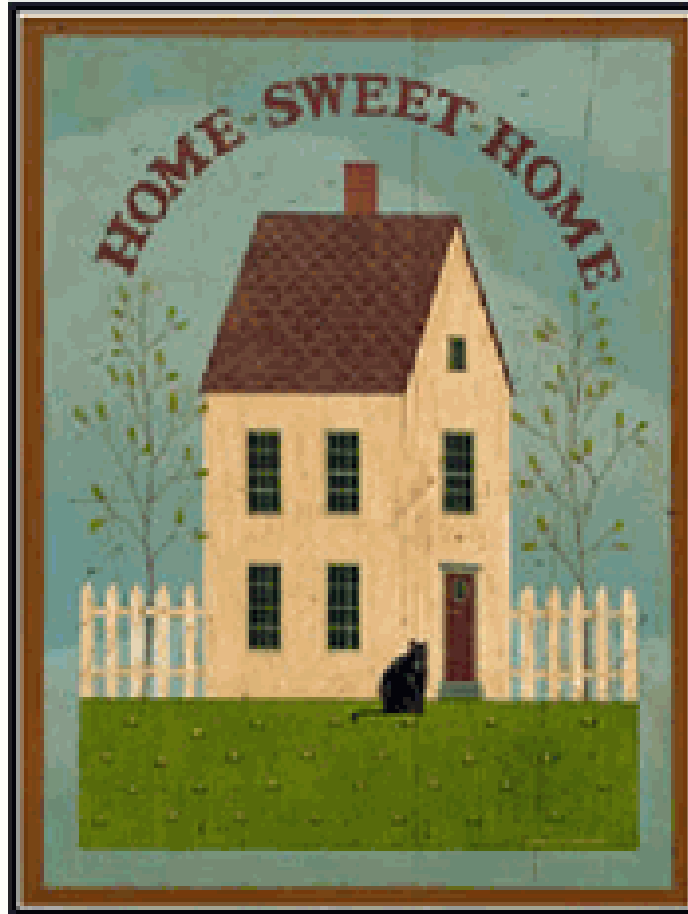


# Outline

- Interspersion/Juxtaposition
- Key piping plover habitats
- Beach nourishment
- Restoration opportunities



# Interspersion and Juxtaposition









## Ecological Law:

If all the kitchens were located in one quarter of a given city and all the bedrooms in another, ...the human population would be considerably reduced.



Aldo Leopold, 1939, Game Management. Scribners, NY.

## Ecological Law:

The maximum population of any given piece of land depends not only on its environmental types or composition, but also on the interspersions of these types ...



Aldo Leopold, 1939, *Game Management*. Scribners, NY.



# Key Habitats



# Protected Moist Substrate Habitat (MOSH)

- Bay side intertidal zone
- Ephemeral pools
- Moist overwash zones



# Piping Plover: A bird of the MOSH



## Wintering

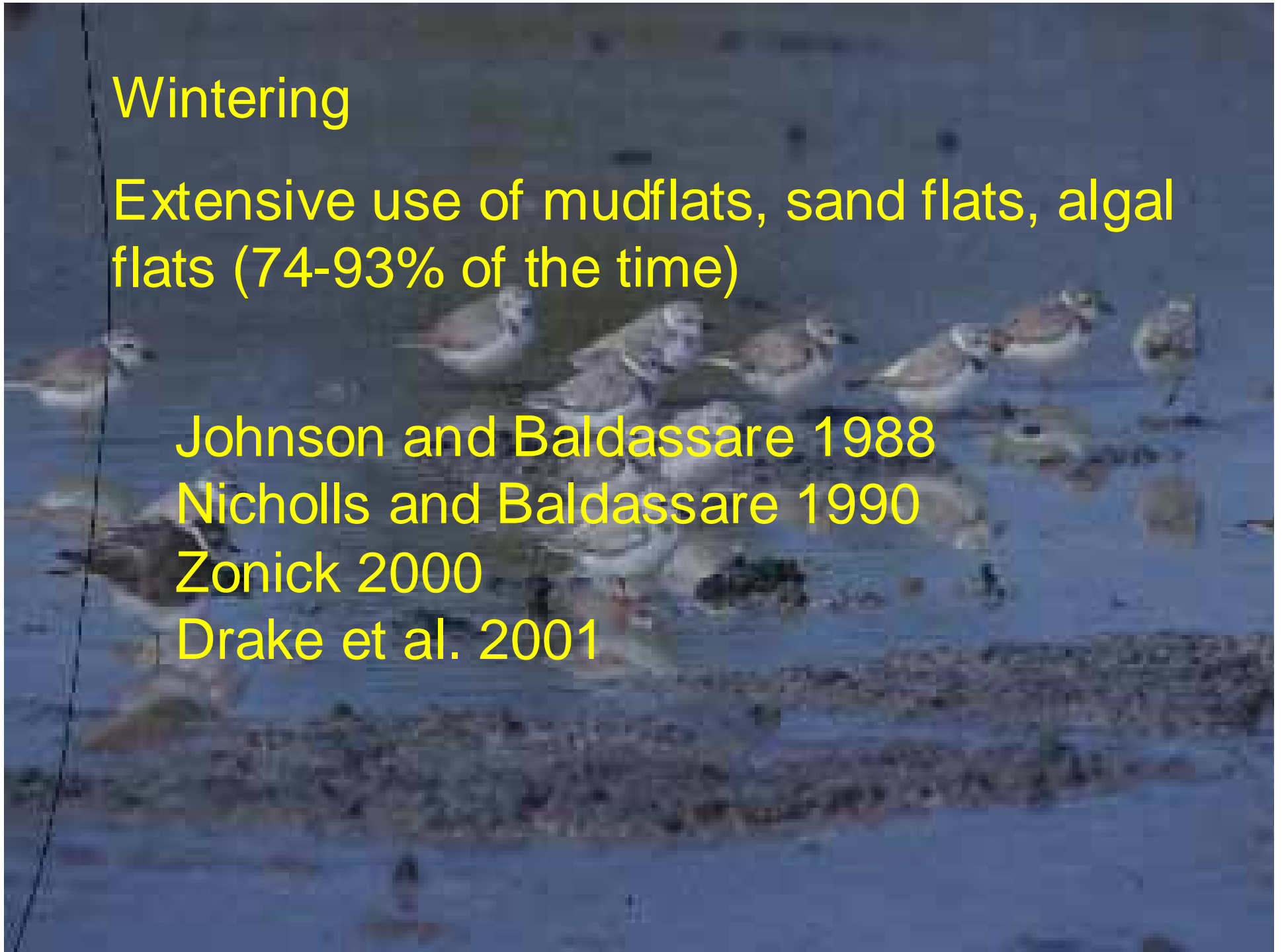
Extensive use of mudflats, sand flats, algal flats (74-93% of the time)

Johnson and Baldassare 1988

Nicholls and Baldassare 1990

Zonick 2000

Drake et al. 2001





Prenesting

> 85% Foraging plovers in protected MOSH.

Loefering 1992

Keane and Fraser 2005

Houghton et al. in Prep

Cohen et al. in Prep



## Nesting

Higher densities, higher foraging rates, faster growth, sometimes better survival near MOSH

Patterson 1988

Loefering and Fraser 1995

Elias et al. 2000

Keane 2002

Elias et al. in Review

Houghton et al. in Prep

Cohen et al. in Prep



A photograph of a coastal landscape. In the foreground, there is a wide, flat, sandy or muddy area. In the middle ground, a body of water stretches across the frame. On the left side, a white, rectangular building is elevated on wooden stilts. The sky is a deep blue with scattered white clouds. The text 'Post-nesting' is overlaid in the top left corner.

Post-nesting

Fledglings move to MOSH to gain weight prior to migration

Cohen et al. in prep



# Nesting Beaches, Atlantic Coast

Beach Widths

~30->200 m

Mean ~ 140 for Atlantic Coast

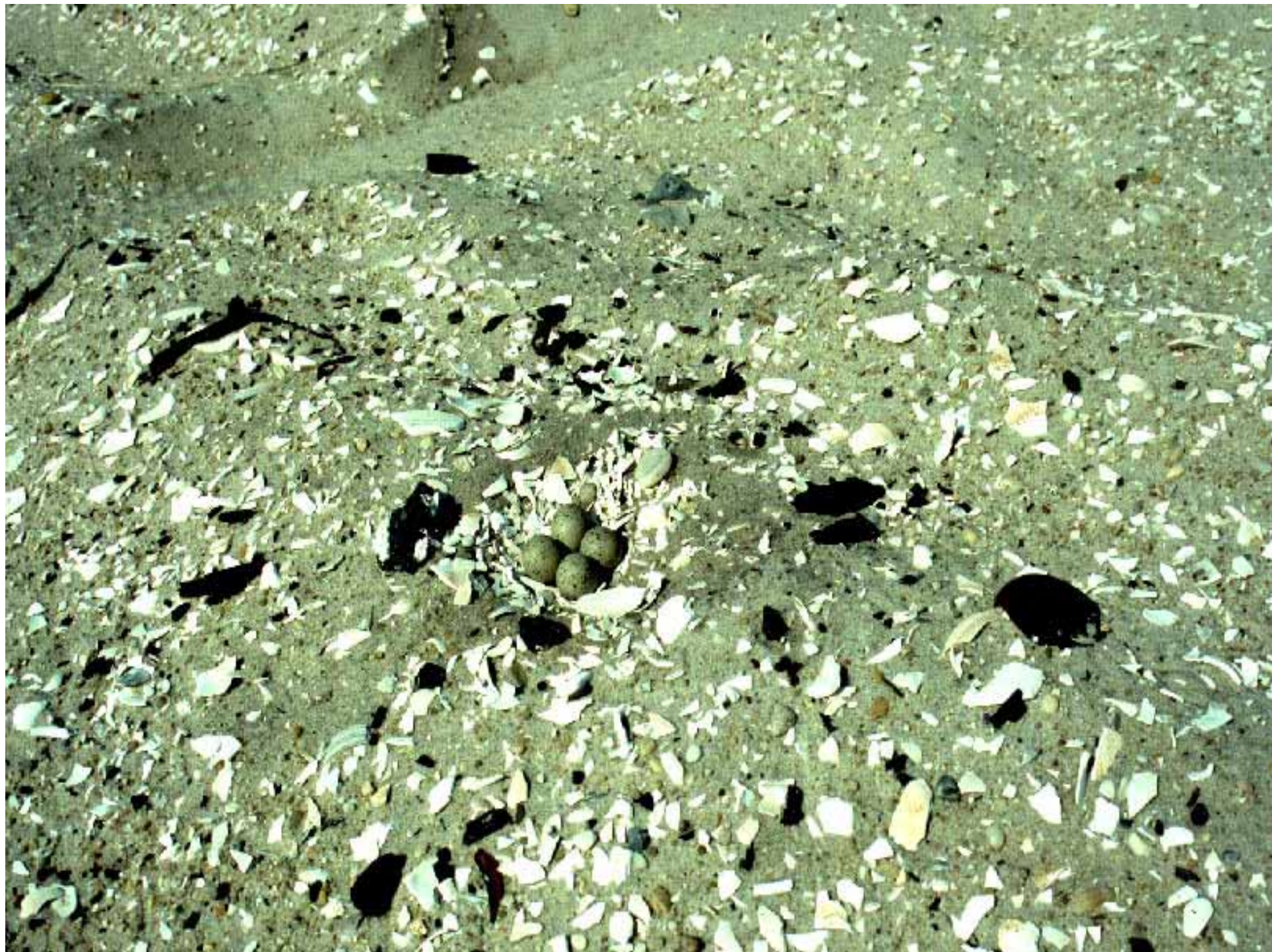
Beach Slope

Low, < 5-8%











Sparse vegetation is good for nesting

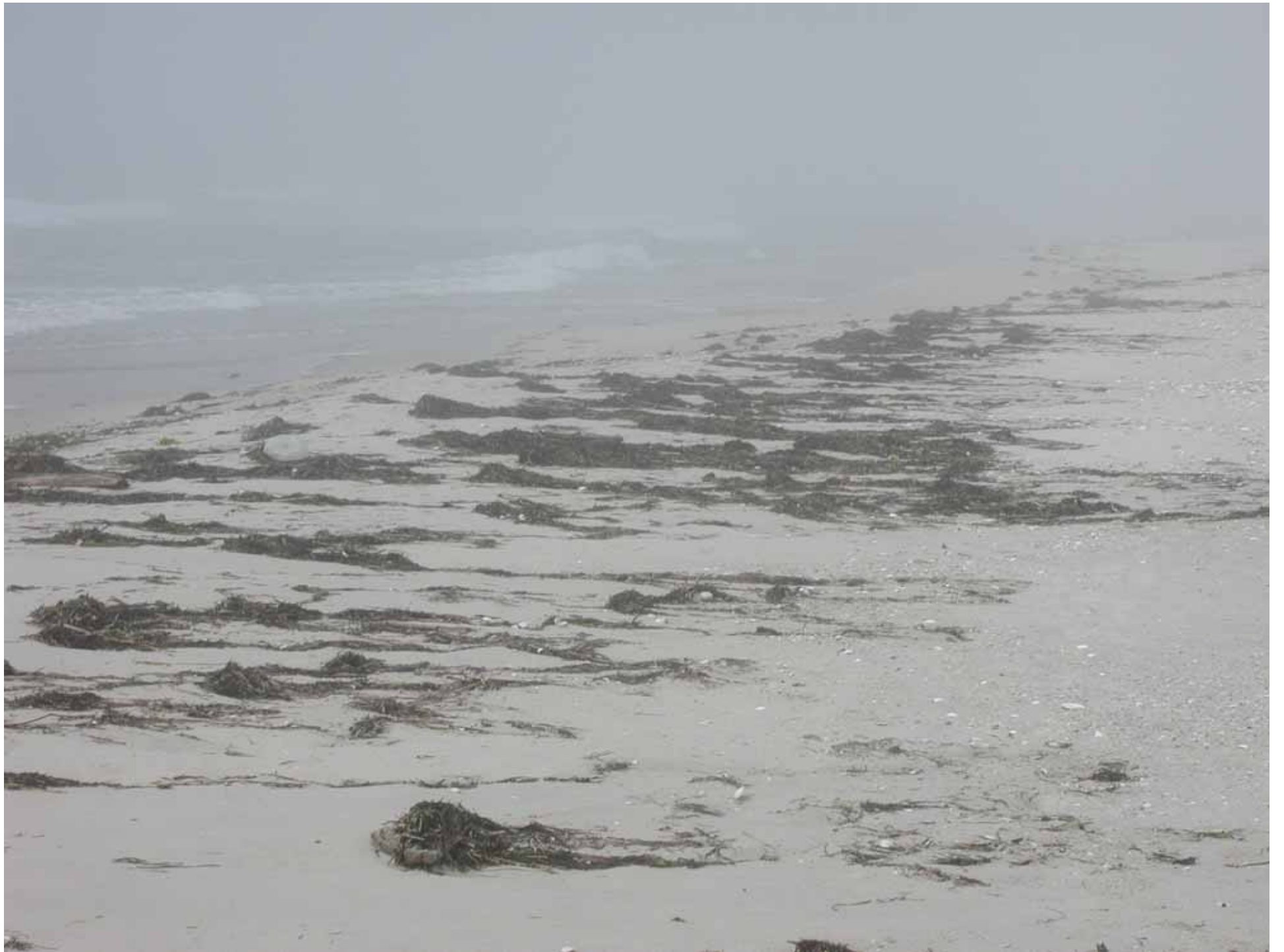




Dense vegetation is bad







# Renourishment





Wintering habitat

Wide beaches

Intertidal flats or lagoon flats

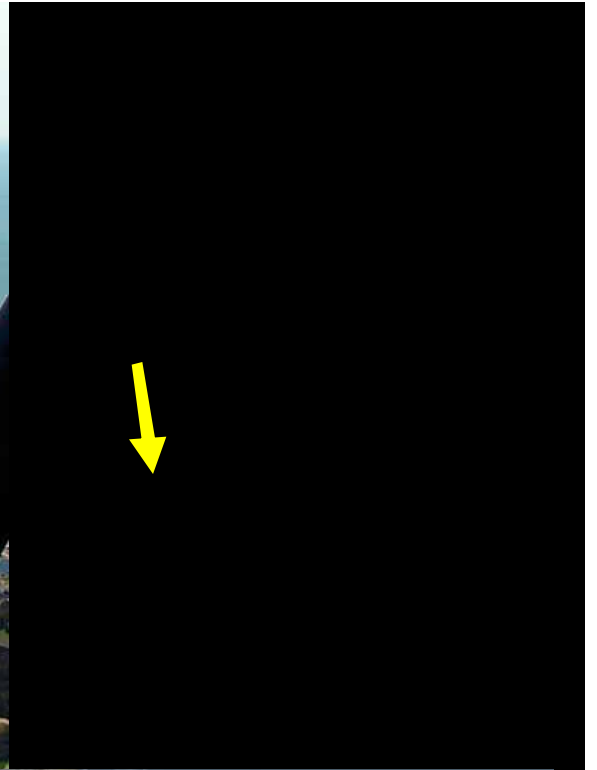
For nesting add

Sparse vegetation

Wrack

# Juxtaposition

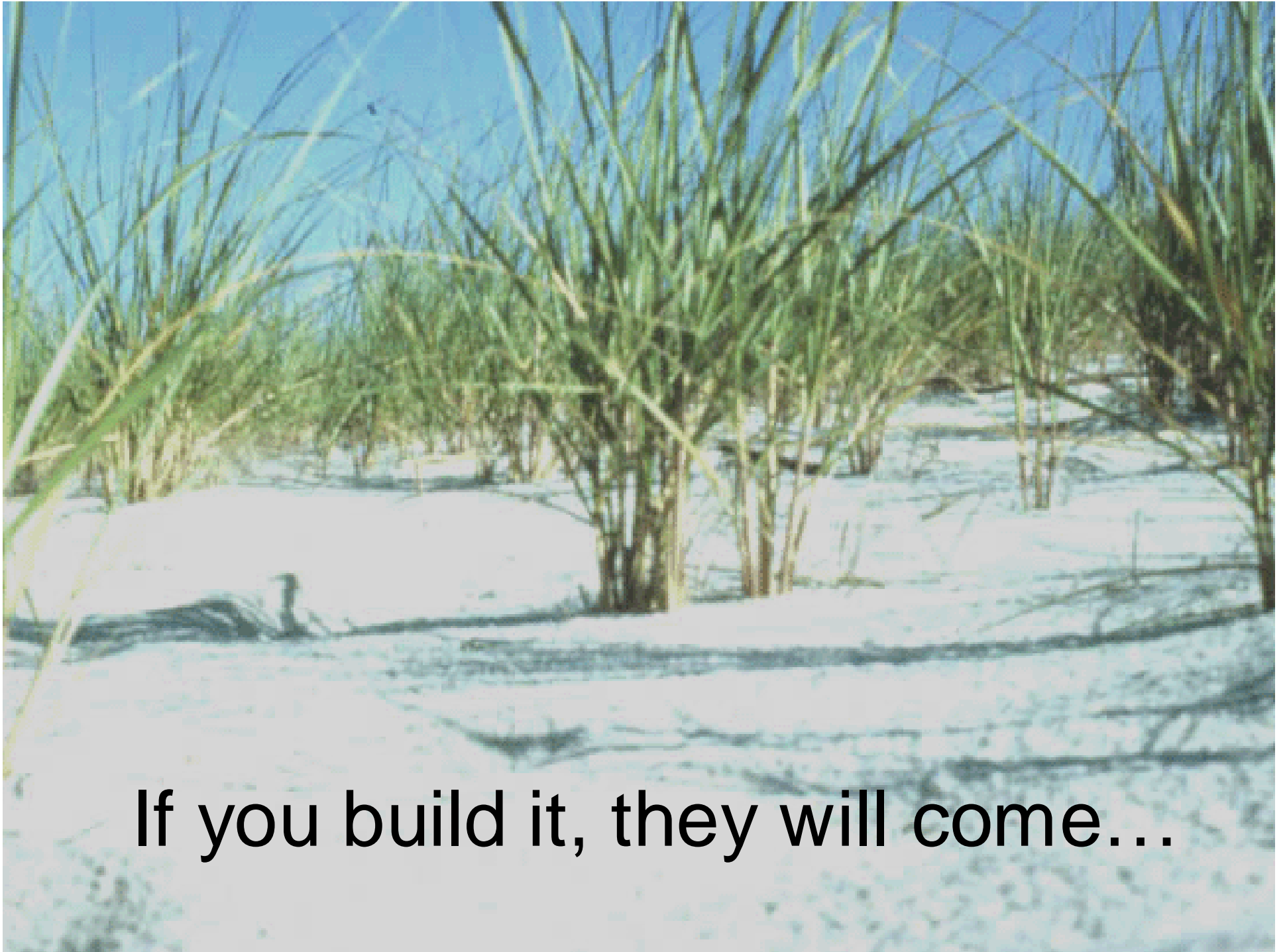






# Post Construction Issues





**If you build it, they will come...**



If you don't manage it, they will go...

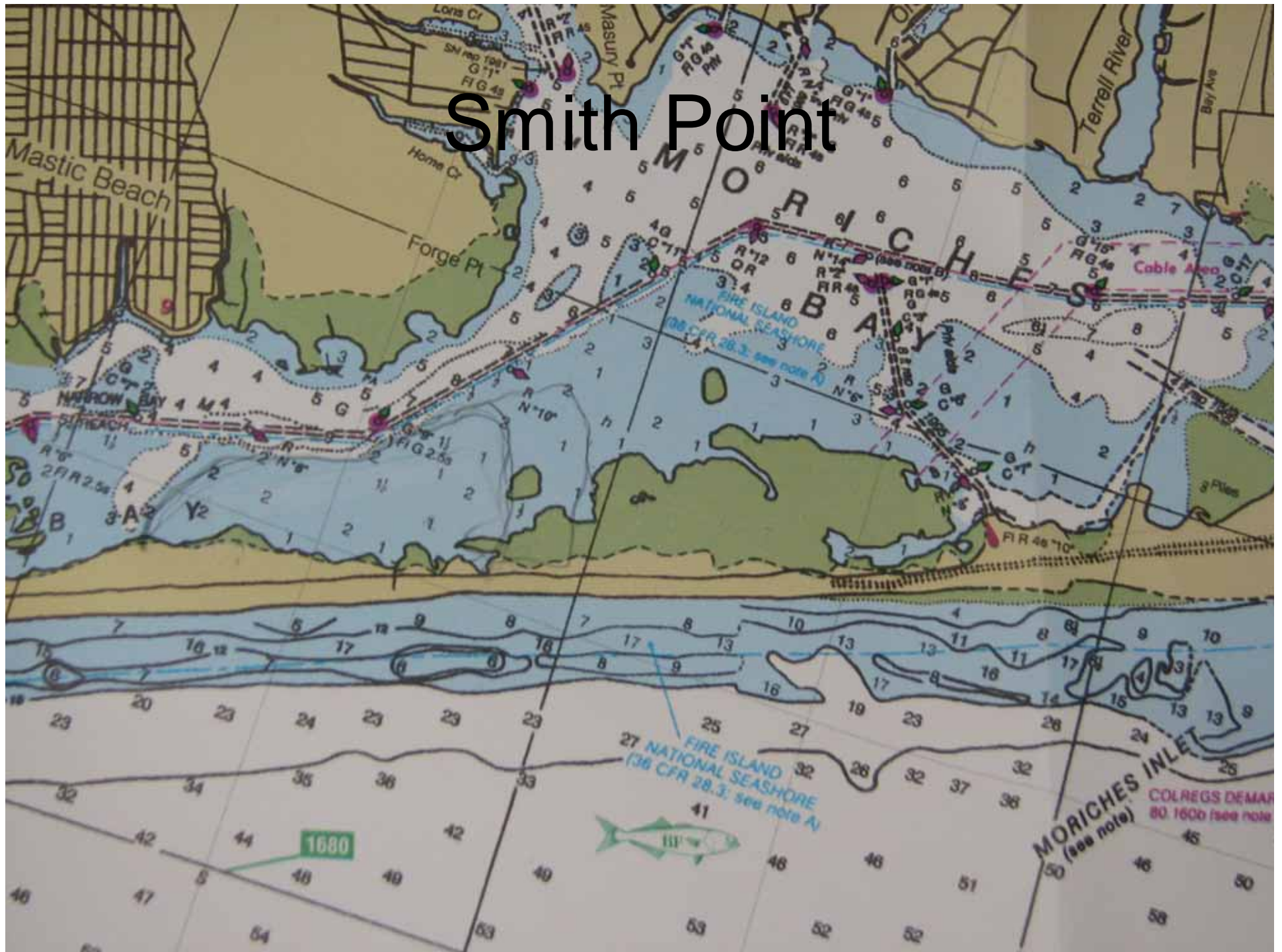


# Restoration Opportunities

- Barrett's Beach, Fire Island
- Old Inlet, Fire Island
- Smith Point
- West Hampton Dunes Spit



# Smith Point

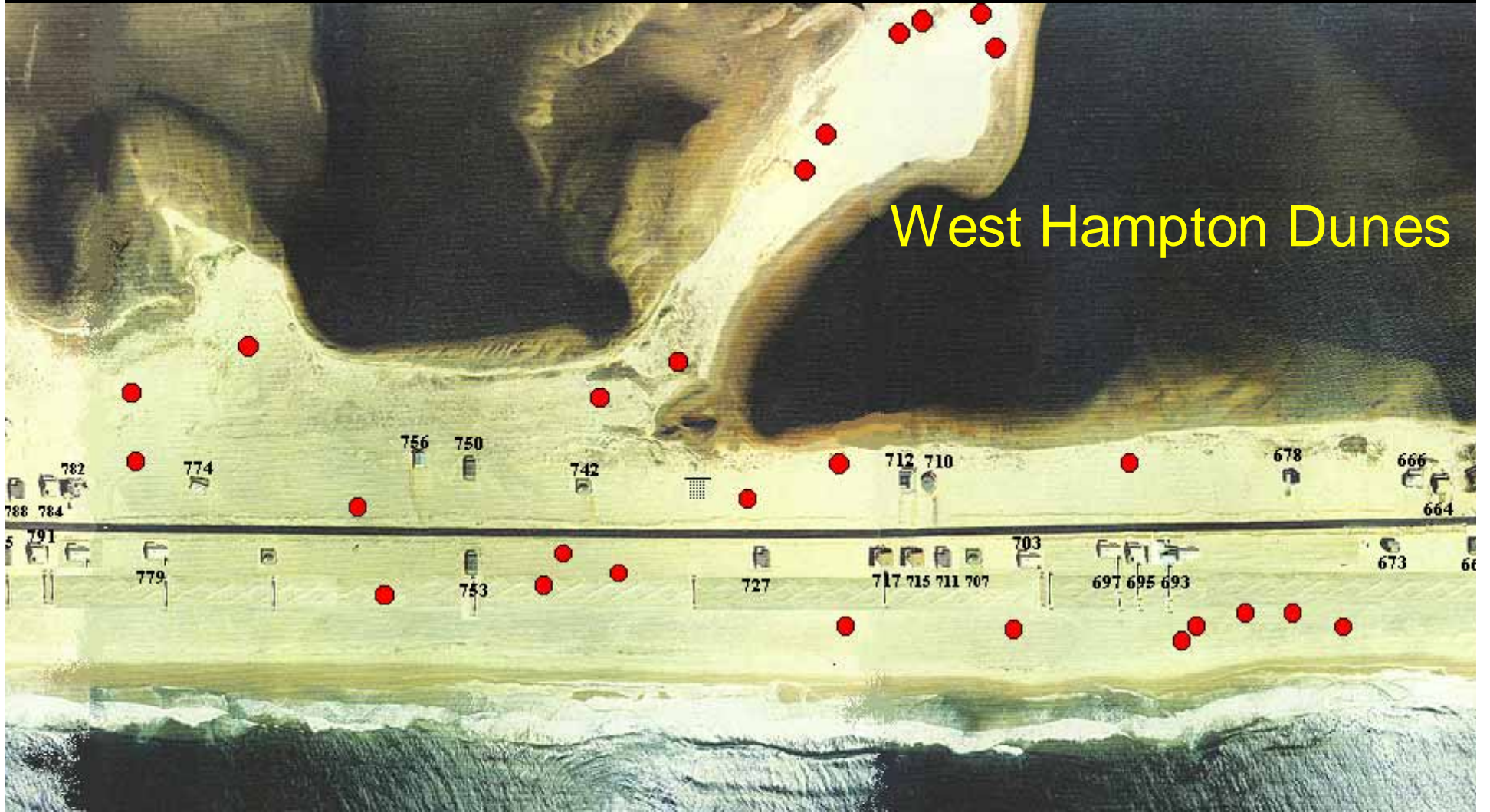








# West Hampton Dunes



782 774 756 750 742 712 710 678 666  
788 784 664  
791 779 753 727 717 715 711 707 703 697 695 693 673 66







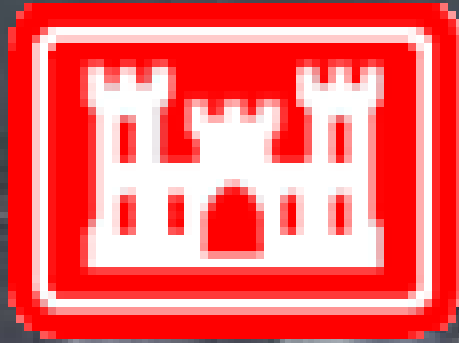


# Thanks to:

- National Park Service
- U. S. Fish and Wildlife Service
- U.S.G.S. Biological Resources Division



# Special Thanks



U.S. Army Corps of Engineers  
New York District  
Omaha District  
Engineer Research and  
Development Center







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