

# Reproductive Success of American Oystercatchers in South Carolina: Sources, Sinks, and Traps



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# Oystercatchers in South Carolina

- 395 Pair Nest in SC
  - 294 Pair in Cape Romain Region
- 27% Barrier Beaches
- 26% Estuarine Islands
- 47% Shell Rakes





A photograph of a colony of Sooty Terns on a nesting ground. The birds have black heads and necks, white chests, and brown wings. They have long, straight, orange-red bills. They are standing on a ground covered with dry, light-colored nesting material. The background is a clear, light blue sky.

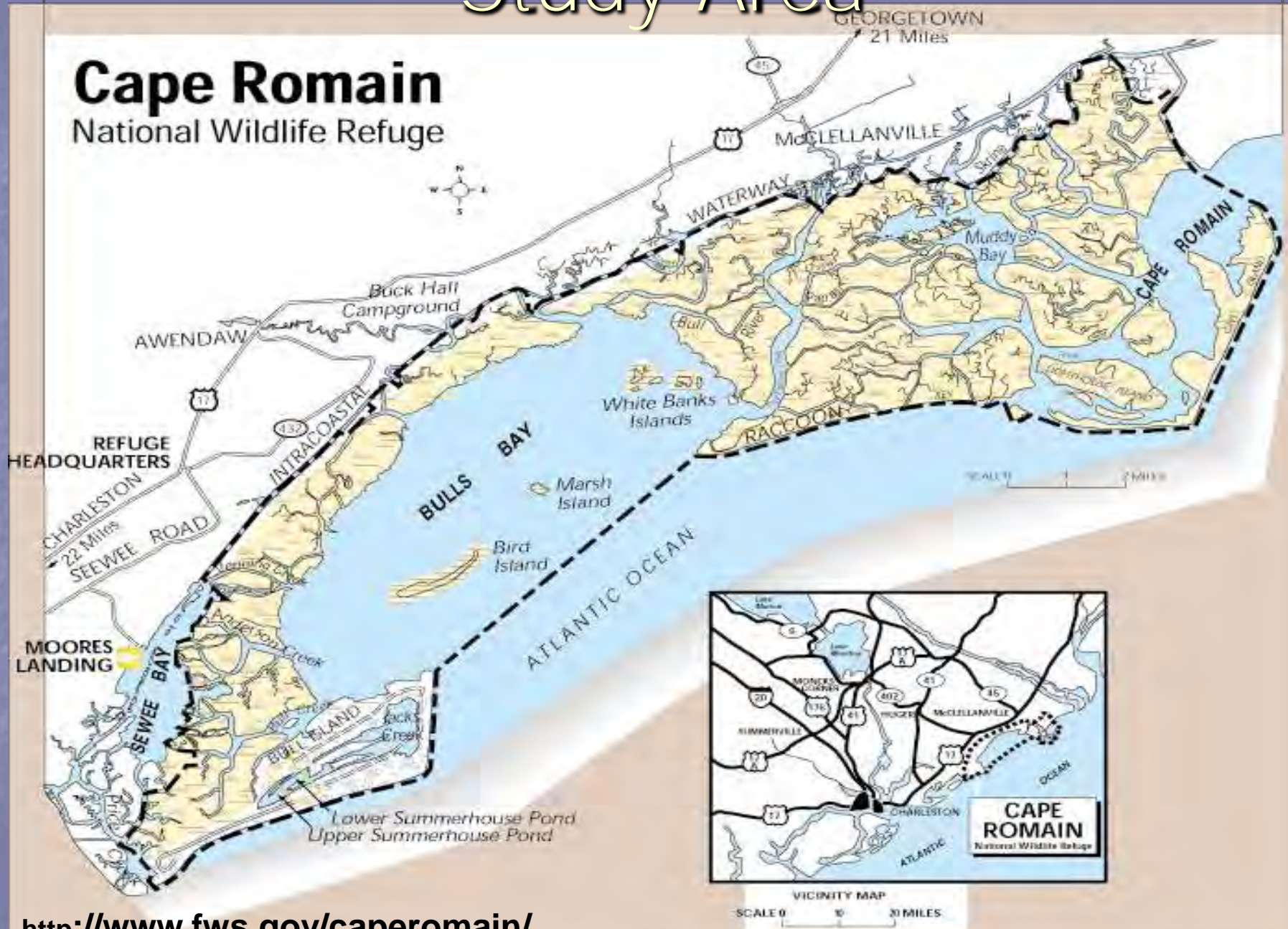
# Purpose: Investigate Reproductive Success in South Carolina

- Difference in Reproductive Success Between Areas?
- Difference in Foraging Behavior of Breeding Pairs Between Areas?



# Study Area

## Cape Romain National Wildlife Refuge



# Atlantic Intracoastal Waterway

- 3,000 miles
- Boston, MA to Key West, FL
- Commercial and Recreational Traffic
- Shell Rakes Formed by Boat Wakes









# Bulls Bay





# Habitat Concepts

- Source
  - Positive population growth
- Sink
  - Reproduction insufficient to balance mortality; maintained by immigration
    - Pulliam, 1988
- Ecological Trap
  - “low quality habitat that organisms prefer over superior habitats” (Dwernychuk & Boag, 1972)

# Objective

- Measure productivity of American Oystercatchers along ICW and Bulls Bay
  - Assess reasons and timing of failure





# Methods









# Results

## ICW 35 Pair

71 attempts

- 14 nest hatched  $\geq 1$  egg  
**20%**
- 57 Failed  
**80%**

## Bulls Bay 18 Pair

24 attempts

- 10 Hatched  $\geq 1$  egg  
**42%**
- 14 Failed  
**58%**



# Apparent Hatch & Fledge Success

## ■ ICW

- 14 nests hatched (out of 71 attempts)
- 9 chicks fledged
- Productivity 0.26 chicks/pair



## ■ Bulls Bay

- 10 nests hatched (out of 24 attempts)
- 14 chicks fledged
- Productivity 0.78 chicks/pair





# Estimated Daily Nest Survival\*

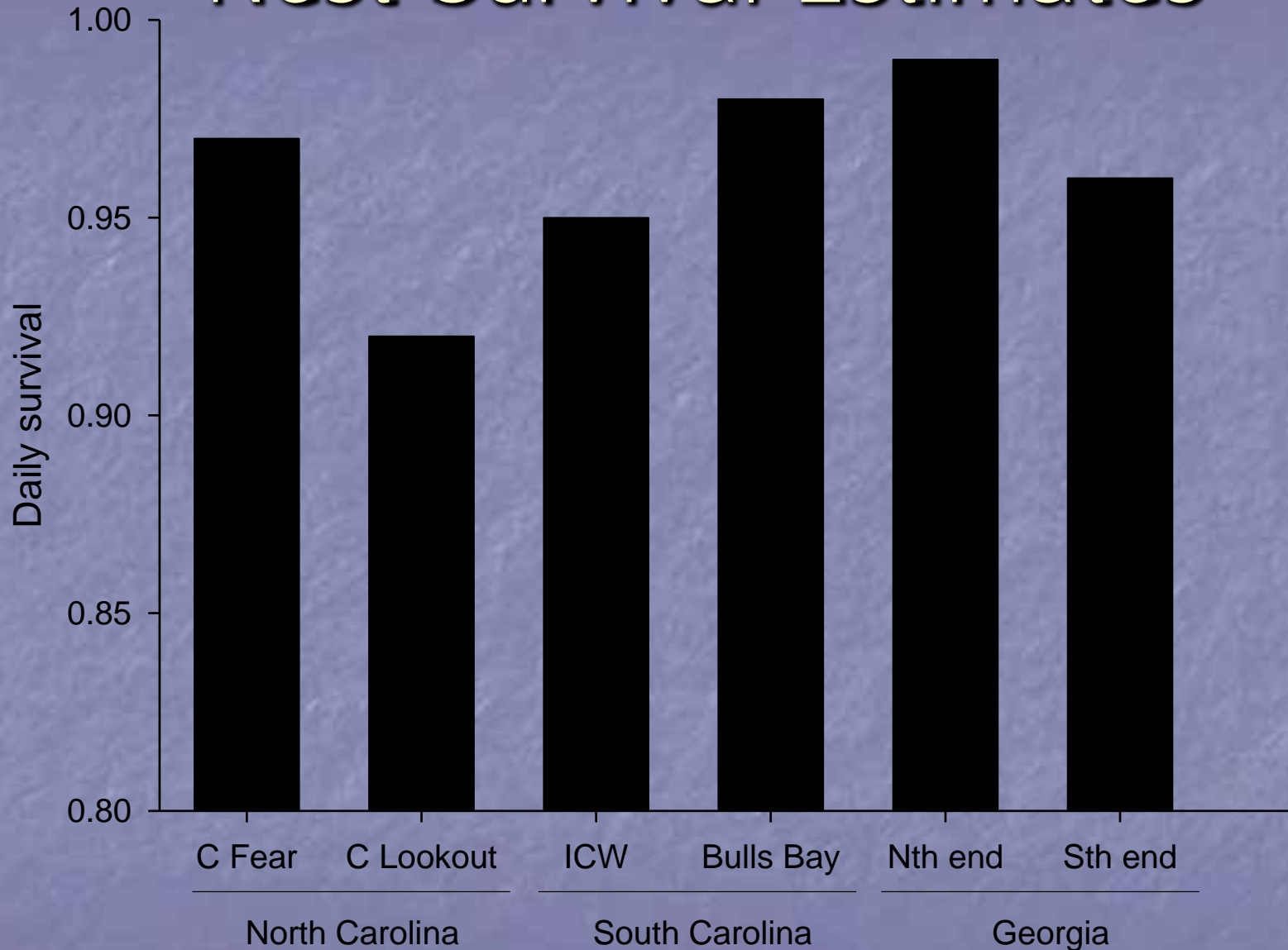
## ■ ICW

- 35 Pair
- Daily Survival  $.9432 (\pm .008)$  incubation
- Daily Survival  $.9667 (\pm .011)$  brood rearing

## ■ Bulls Bay

- 18 Pair
- Daily Survival  $.9732 (\pm .008)$  incubation
- Daily Survival  $.9906 (\pm .005)$  brood rearing

# Nest Survival Estimates



McGowan et al. 2005

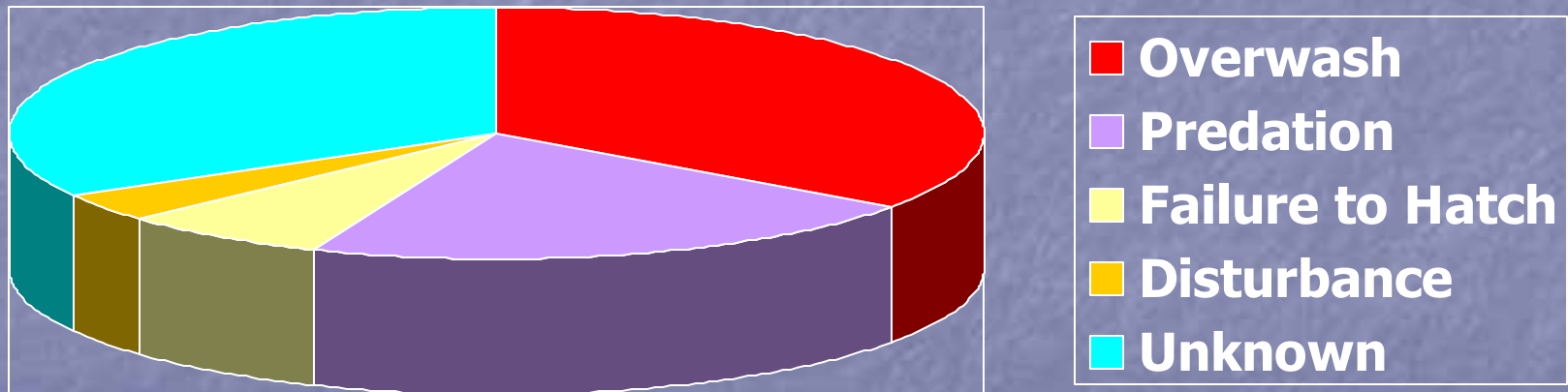
Sabine et al. 2006



# ICW Nest Loss

## 71 Nest Attempts

- 20 Overwash
- 12 Predation
- 2 Human disturbance
- 4 Failure to Hatch/Abandoned
- 19 Unknown



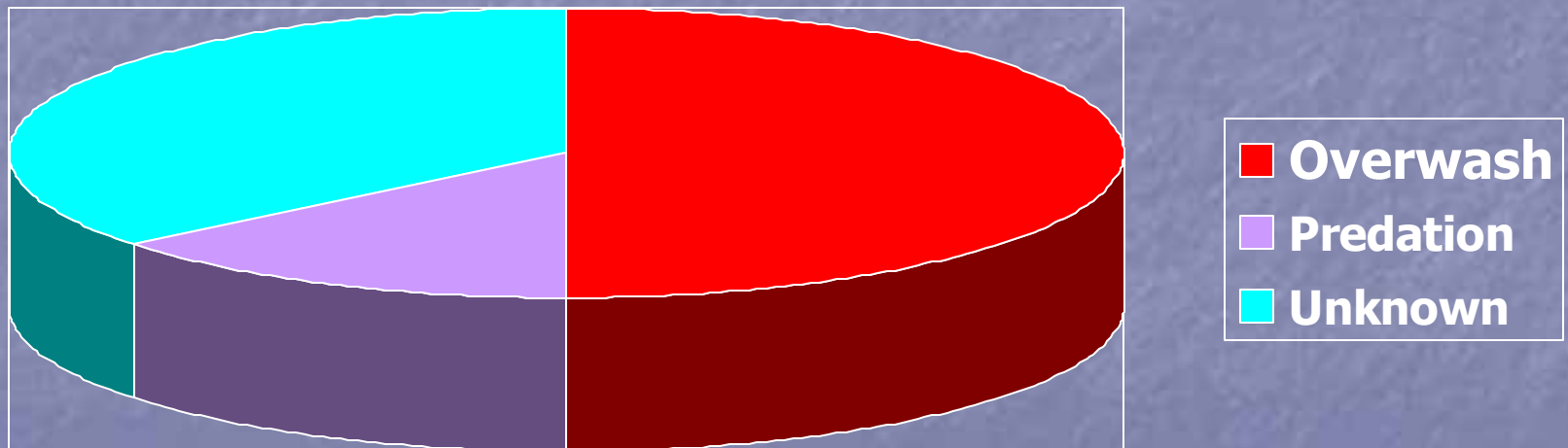
# Bulls Bay Nest Loss

## 24 Nest Attempts

7 Overwash

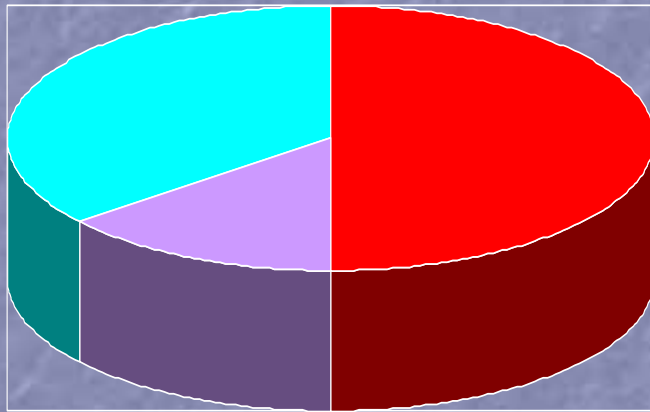
2 Predation

5 Unknown



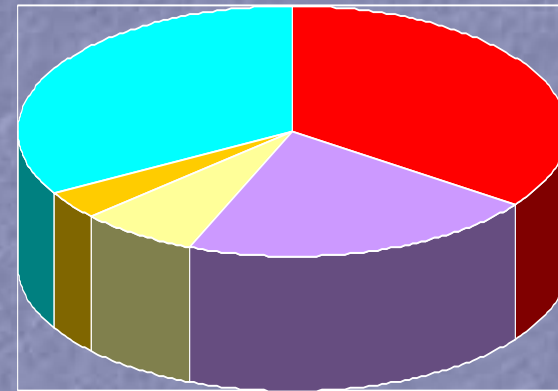


# Bulls Bay



■ Overwash  
■ Predation  
■ Unknown

# ICW



■ Overwash  
■ Predation  
■ Failure to Hatch  
■ Disturbance  
■ Unknown





# Chick Loss



- 5 incidents along ICW
  - (1-2 week old chicks)
- 3 incidents in Bulls Bay
  - (20 days or older)

# Re-Nesting

- 24 pair re-nested along ICW
  - 13 pair re-nested once,
  - 10 pair re-nested twice,
  - 1 pair re-nested 3 times
- 5 pair re-nested in Bulls Bay
  - 4 pair re-nested once,
  - 1 pair re-nested twice



# Other Items of Interest

- Territory Loss
  - Dead Adult Found 4/28
  - New pair nested 5/8
- Mate Never Re-nested
  - Transmitter found on juvenile rooting rake



# Other Items of Interest

- Pairs Foraging Off Territory
  - Pairs that lost nests & never re-nested
  - Foraging in tidal creeks together













# Conclusions

- 28 Chicks Fledged in the Two Study Areas
- Hatch Success & Productivity Appear to be Higher in Bulls Bay Compared to ICW

# Conclusions

- Occurrence of Nest Loss and Re-nesting Higher Along ICW (suggests plentiful resources to invest in multiple attempts?)
- Over-wash Major Cause of Nest Loss in Both Habitats



# Project Support

## **FUNDING AND SUPPORT PROVIDED BY:**

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South Carolina Dept Natural Resources

Clemson University Department of Forestry and Natural Resources

USFWS Cape Romain NWR



## **FIELD AND LOGISTICAL SUPPORT**

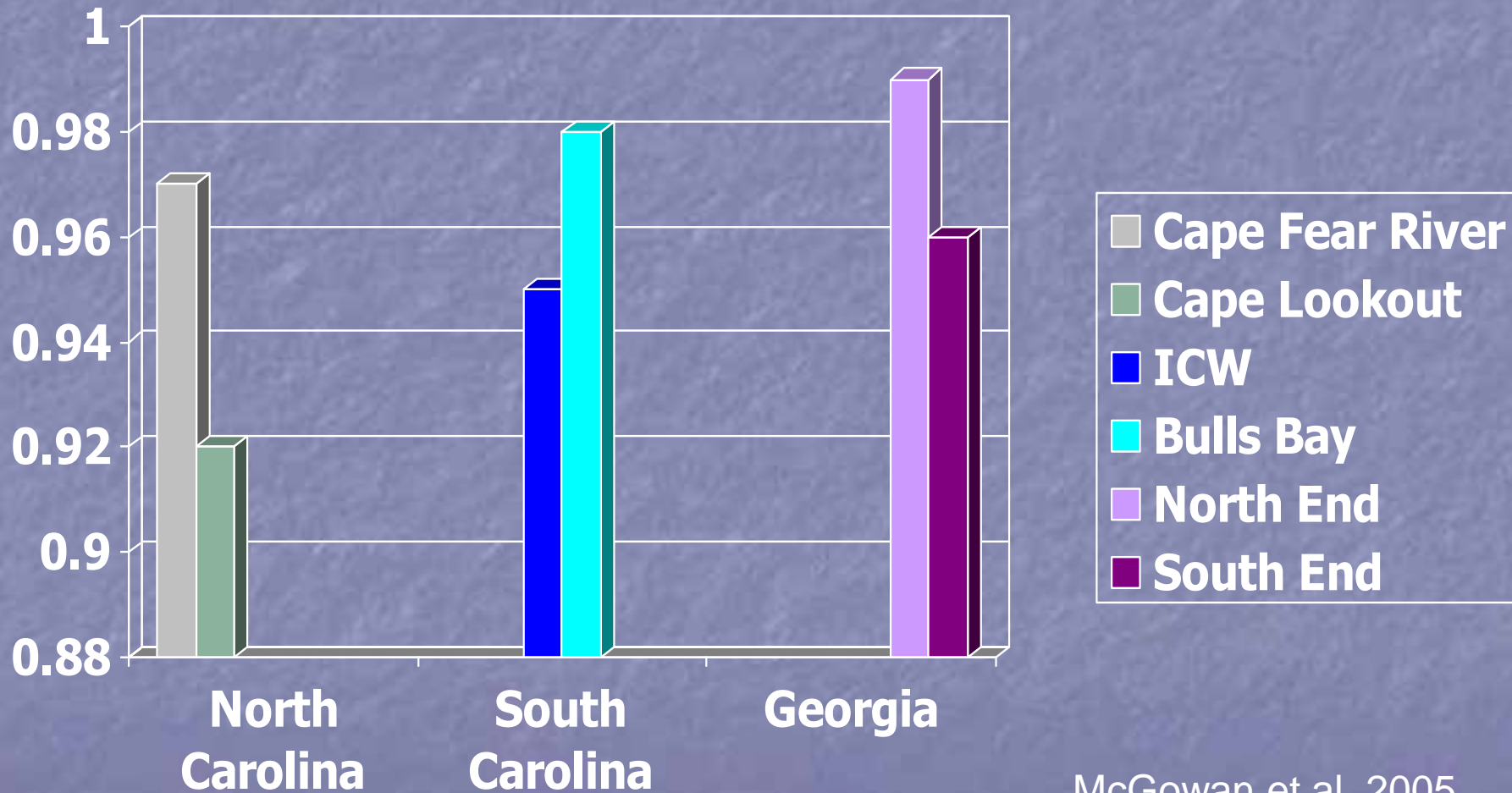
Felicia Sanders, Mark Spinks, Matt Connolly, Sarah Dawsey, Ben Harris

A photograph of a small, lush tropical island in the middle of a body of water. The island is covered with dense green vegetation, including several tall palm trees with distinctive fan-shaped fronds. The water in the foreground is calm, creating a clear reflection of the island and the sky. The sky is a pale, overcast blue. The overall scene is peaceful and scenic.

QUESTIONS?



# Nest Survival Estimates



McGowan et al. 2005  
Sabine et al. 2006