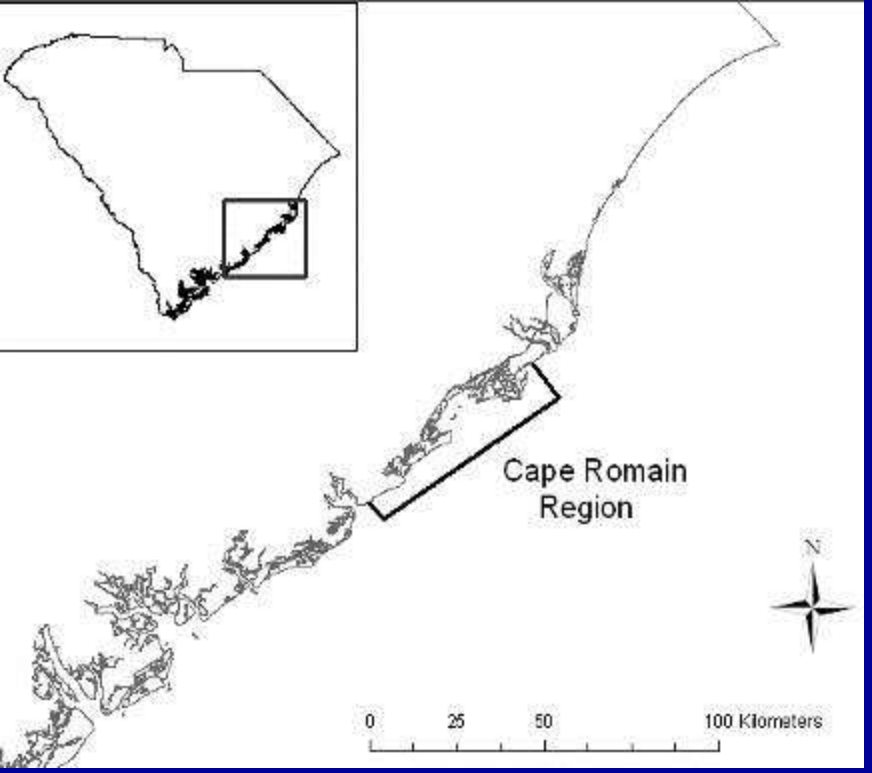
South Carolina Oystercatchers: Nesting & Feeding

Janet Thibault
Patrick Jodice
Department of Forestry and Natural Resources
and
USGS SC Cooperative Fish & Wildlife Research Unit
Clemson University

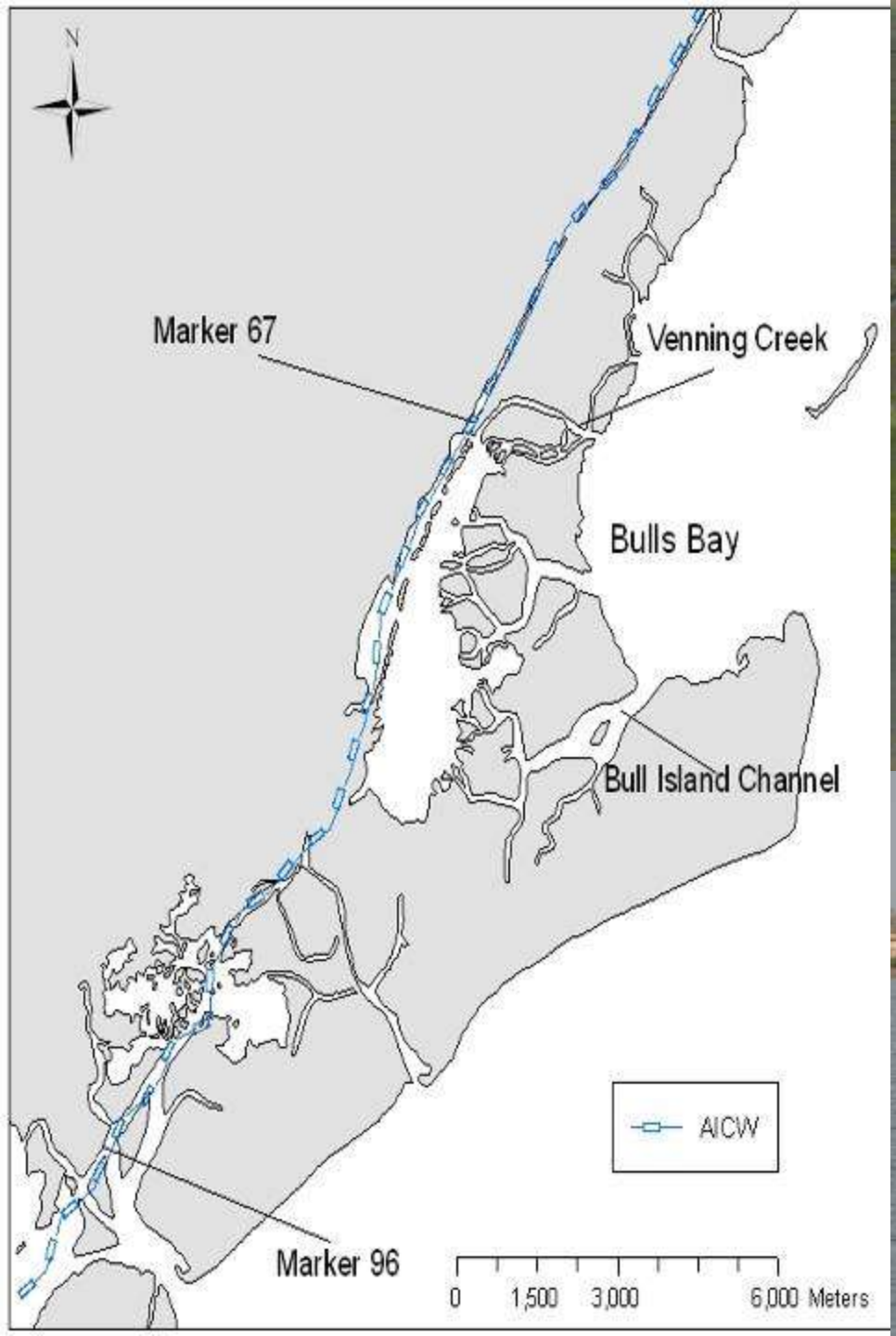
Felicia Sanders
South Carolina Department of Natural Resources



- 395 Pair Nest in SC
  - 294 Pair in Cape Romain Region

- 27% Barrier Beaches
- 26% Estuarine Islands
- 47% Shell Rakes

SC DNR 2003


N
Marker 67
Venning Creek
Bulls Bay
Bull Island Channel
AICW
Marker 96
0
1,500
3,000
6,000 Meters

Nesting Success Objective

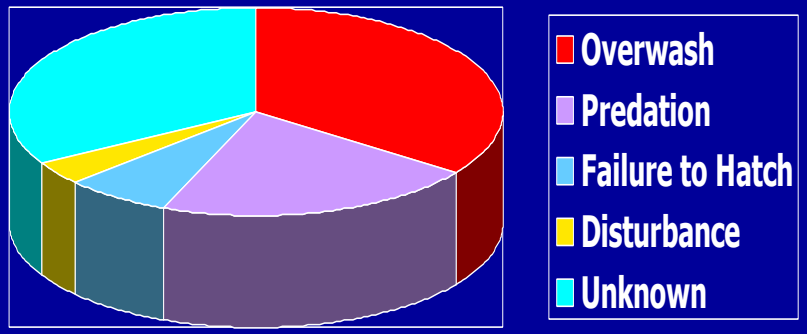
- Measure Productivity
  - ICW
  - Bulls Bay
- Assess Reasons and Timing of Failure

Summary Results

	2006		2007	
	ICW (35 pair)	**Bulls Bay** (18 pair)	**ICW** (30 pair)	**Bulls Bay** (16 pair)
Hatch Success	20%	42%	6 %	5%
	71 Attempts	24 Attempts	67 Attempts	38 Attempts
Fledge Success	9 Chicks	14 Chicks	2 Chicks	0 Chicks
Productivity	0.23 Chicks/Pair	0.77 Chicks/Pair	0.066 Chicks/Pair	0 Chicks/Pair

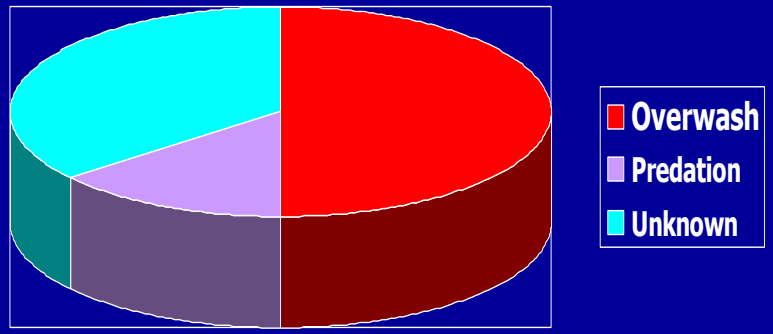
2006 Nest Loss

ICW



71 Nest Attempts
47 Nest Failures
- 20 Overwash
- 12 Predation
- 2 Human disturbance
- 4 Failure to Hatch/Abandoned
- 19 Unknown

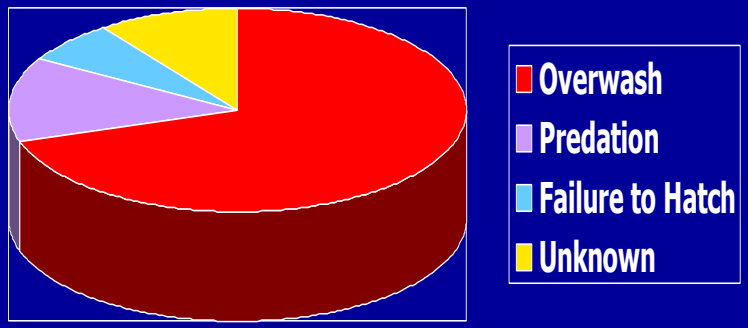
Bulls Bay



24 Nest Attempts
14 Nest Failures
- 7 Overwash
- 2 Predation
- 5 Unknown

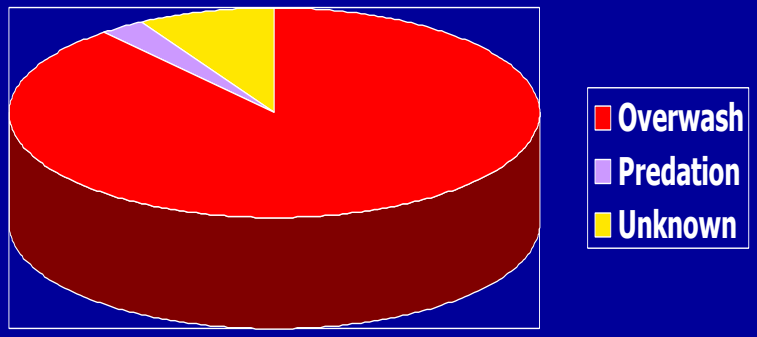
2007 Nest Loss

ICW

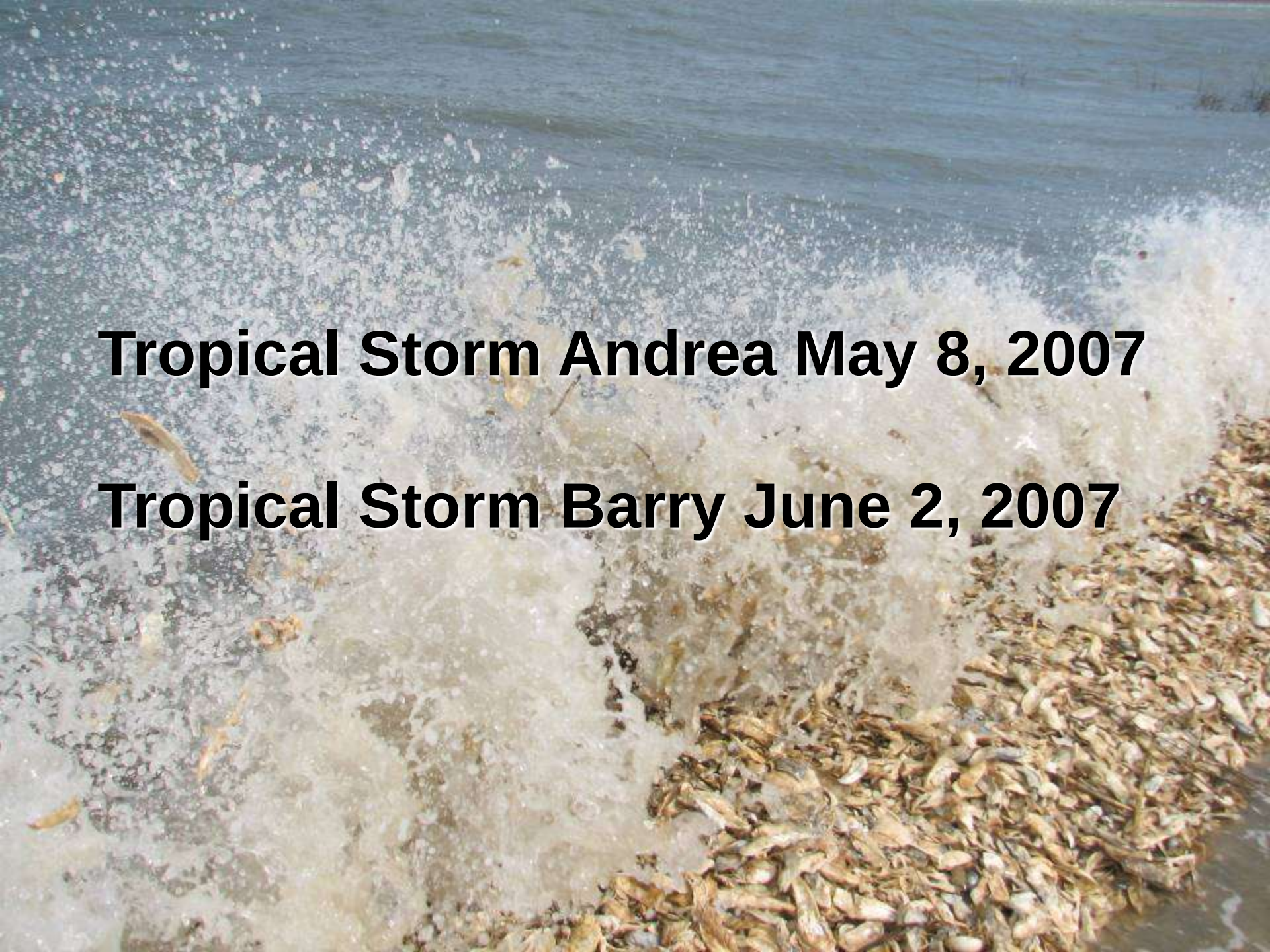


67 Nest Attempts
63 Nest Failures
- 42 Overwash
- 8 Predation
- 7 Failure to Hatch/Abandoned
- 6 Unknown

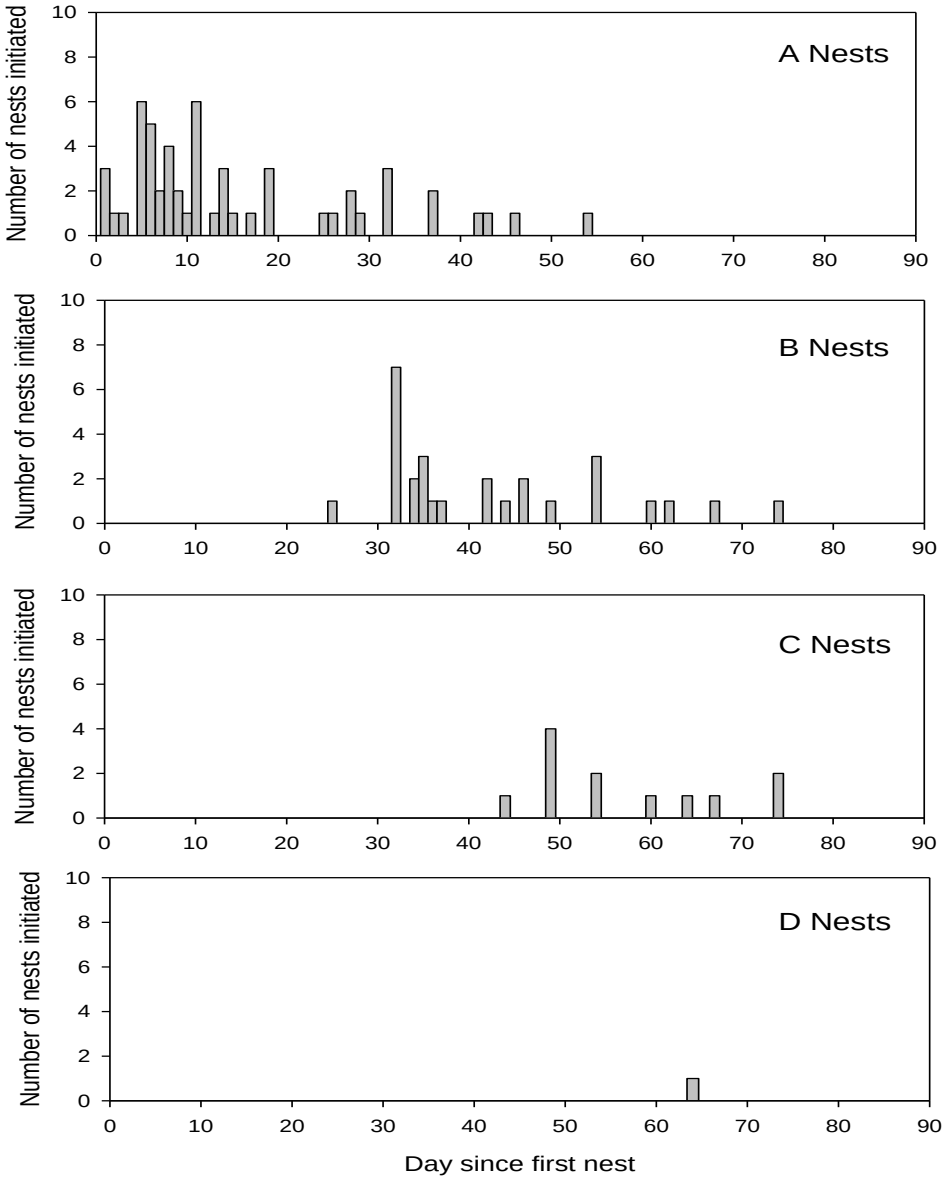
Bulls Bay



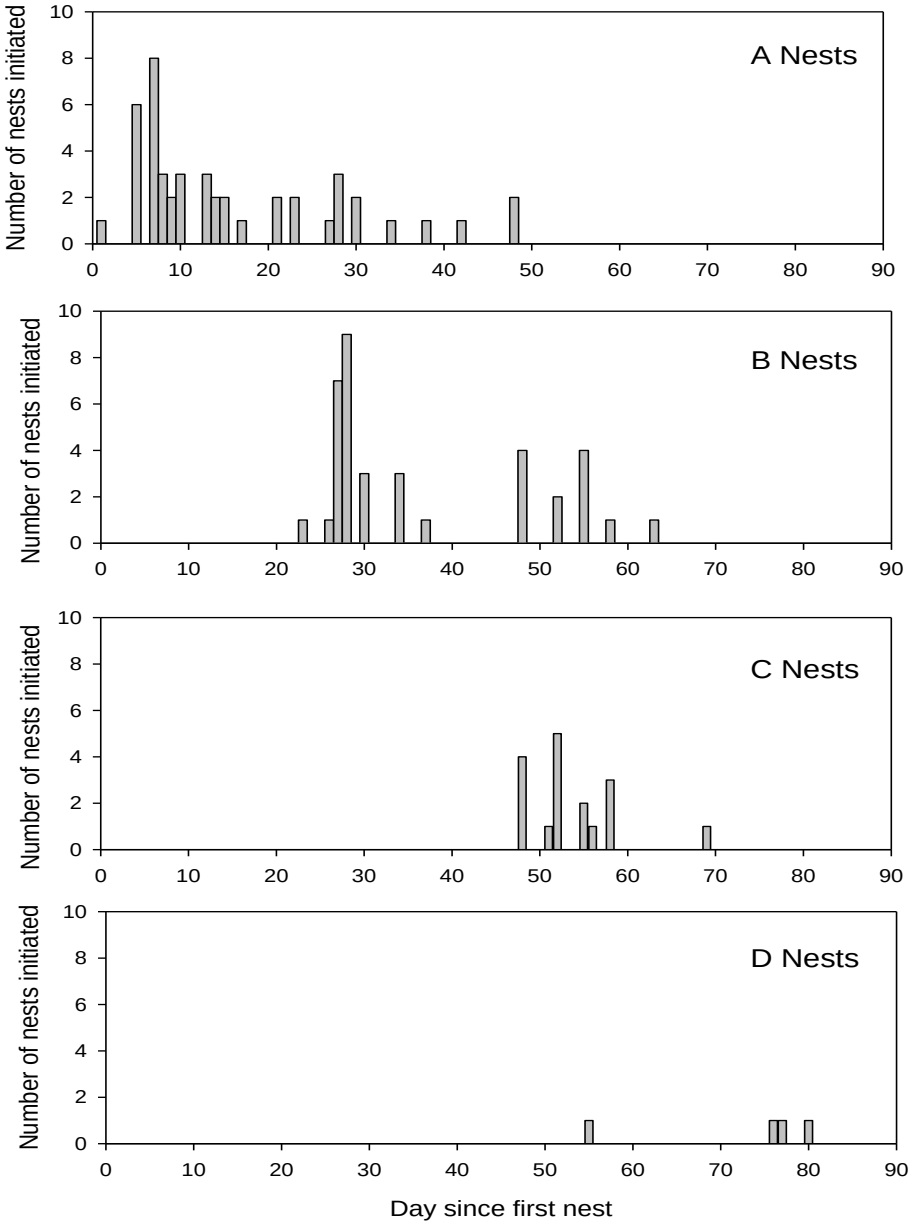
38 Nest Attempts
36 Nest Failures
- 32 Overwash
- 1 Predation
- 3 Unknown


Tropical Storm Andrea May 8, 2007
Tropical Storm Barry June 2, 2007

2006 Nesting Cycle



2007 Nesting Cycle



Elapsed Time Between Nest Attempts

	2006					2007					
	ICW			Bulls Bay		ICW			Bulls Bay		
Interval	AB	BC	CD	AB	BC	AB	BC	CD	AB	BC	CD
Range	7-42 days	10–29 days	10 days	9-17 days	10 days	7-39 days	10-16 days	18 days	6-41 days	10-17 days	11-18 days
Mean	21 days	14 days	10 days	12 days	10 days	16 days	12 days	18 days	13 days	13 days	15 days
n	(24)	(11)	(1)	(5)	(1)	(24)	(12)	(1)	(12)	(5)	(3)

Analysis

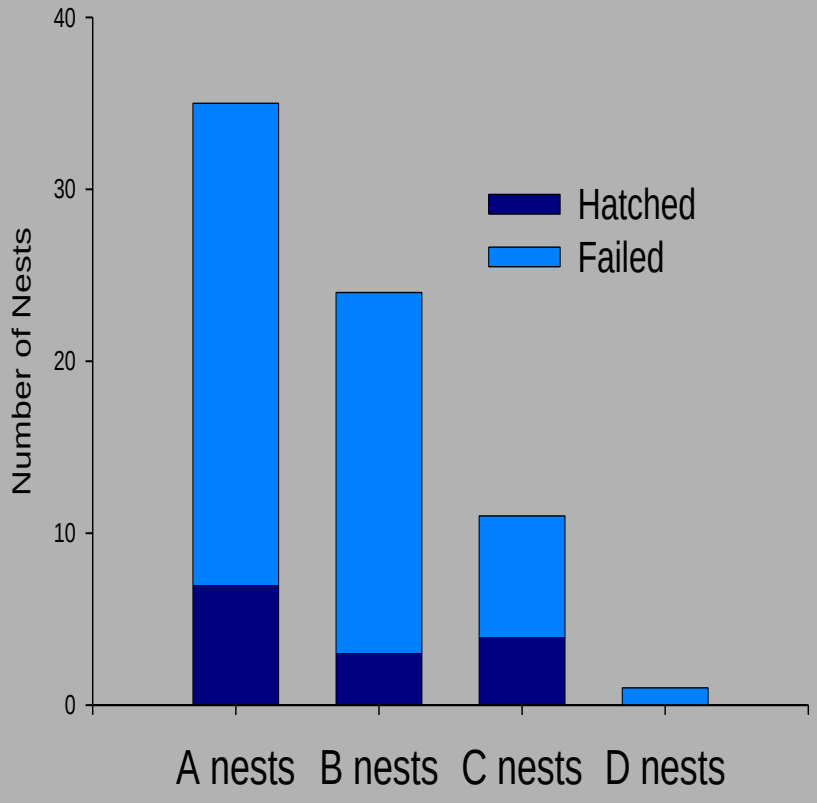
- Compare the number of days between nesting attempts
- Variables
  - interval (i.e. 1st & 2nd attempt, 2nd & 3rd attempt)
  - location
  - fate
  - year
  - location * interval
  - location * year

Days Between Attempts Results

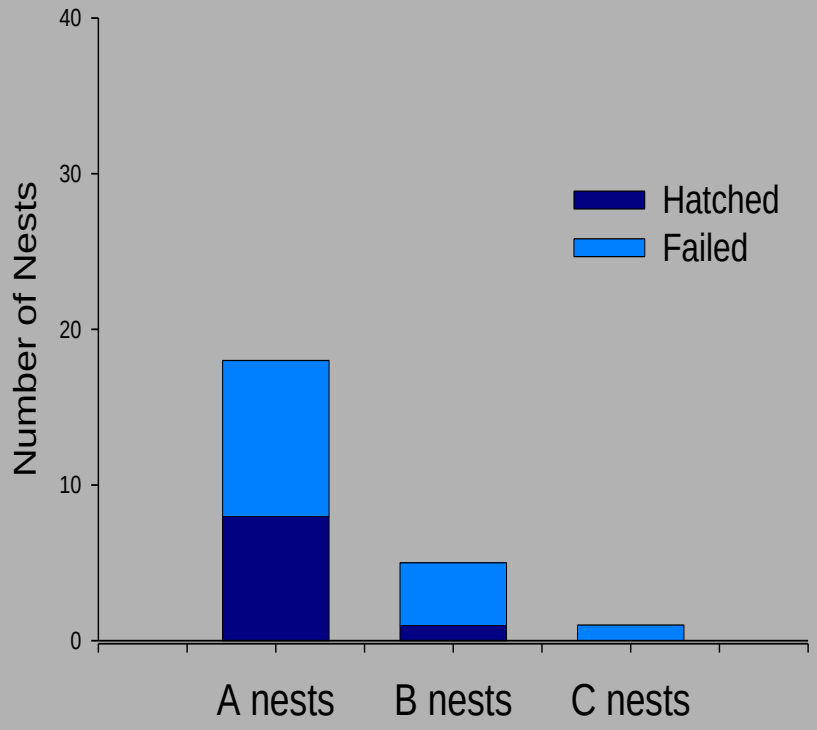
- Model with interval, year, & location significant (p=.03)
- Interval
  - AB (mean = 16 days) > BC (mean= 13 days) (p=0.03)
- Location
  - ICW (mean =16 days) > Bulls Bay (mean =12 days) (p=0.05)
- Year
  - 2006 (mean =17 days) > 2007 (mean =13 days) (p=0.07)

2006 Re-Nesting

2006 ICW

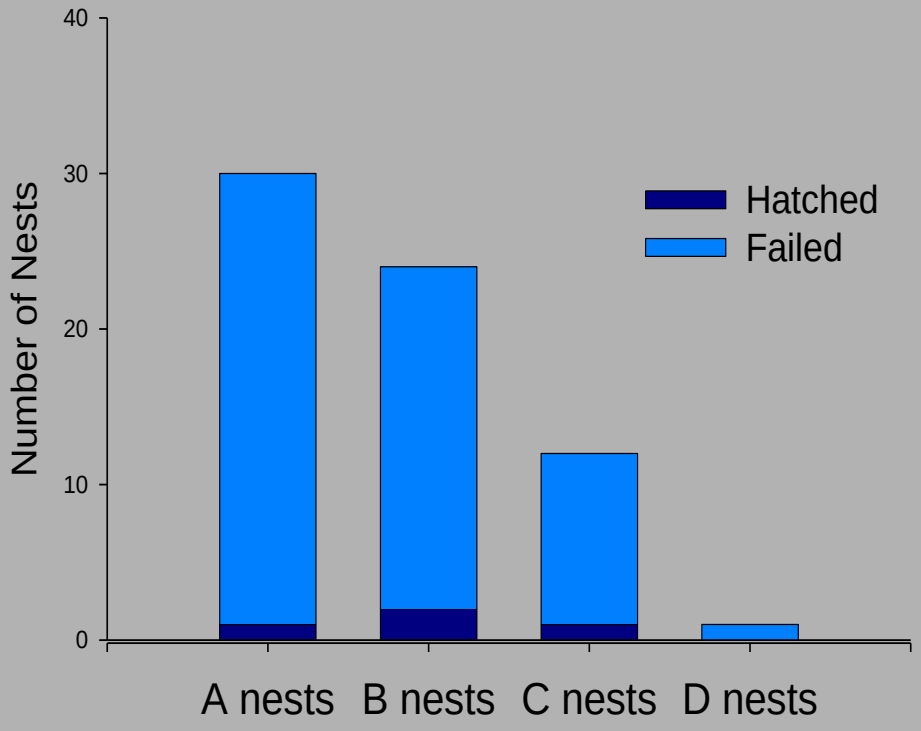


2006 Bulls Bay

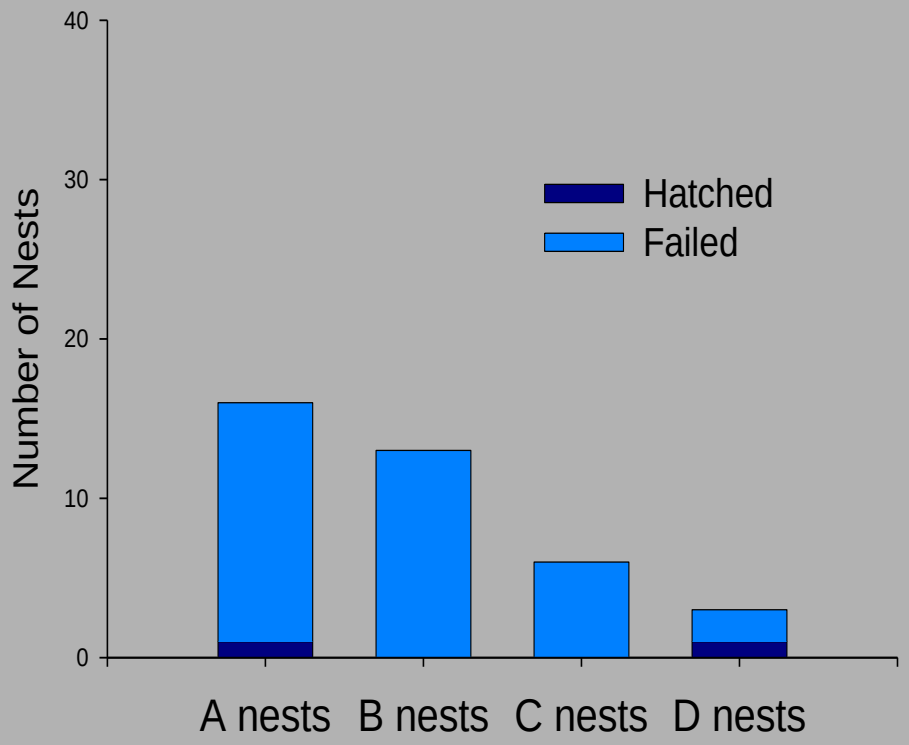


2007 Re-Nesting

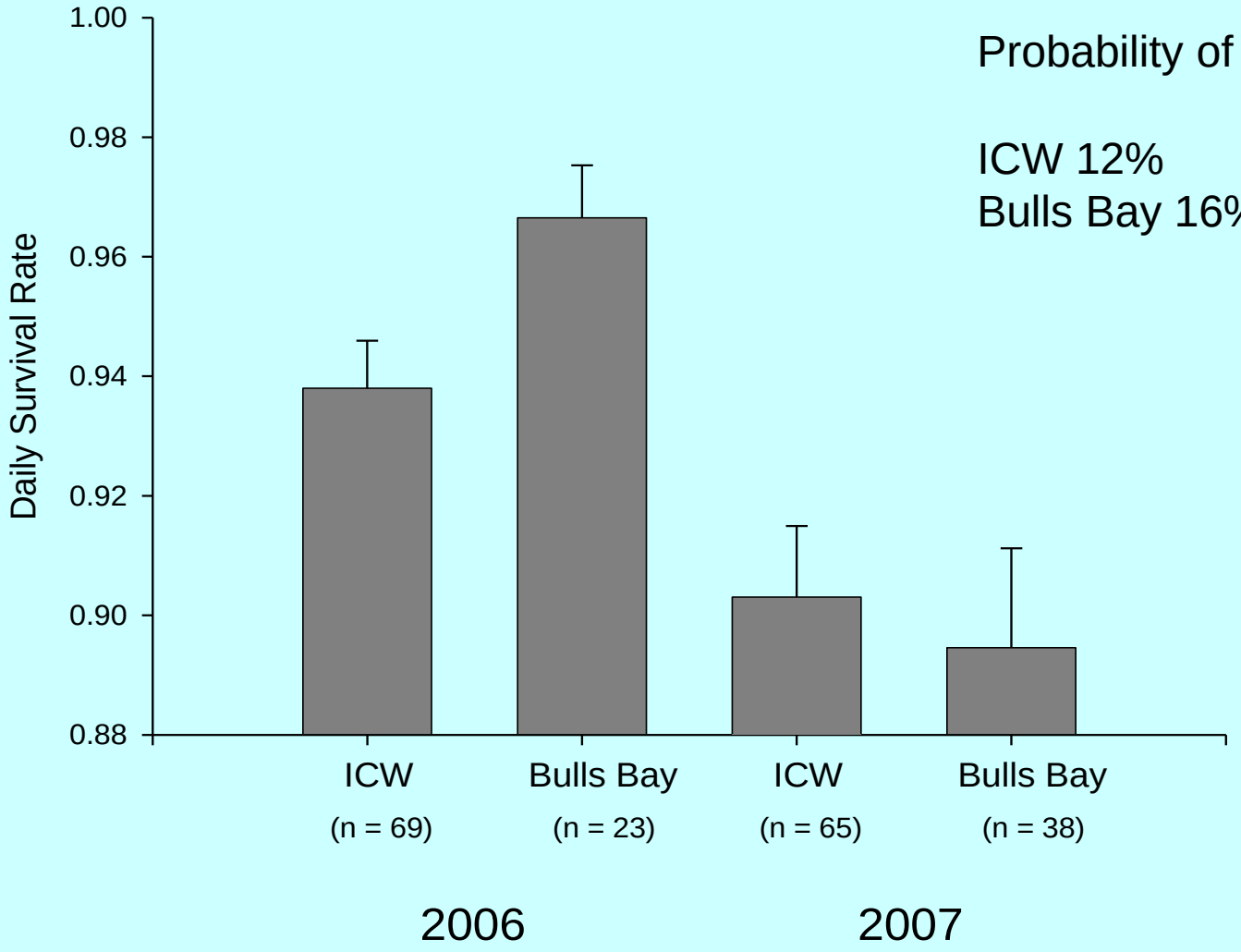
2007 ICW



2007 Bulls Bay



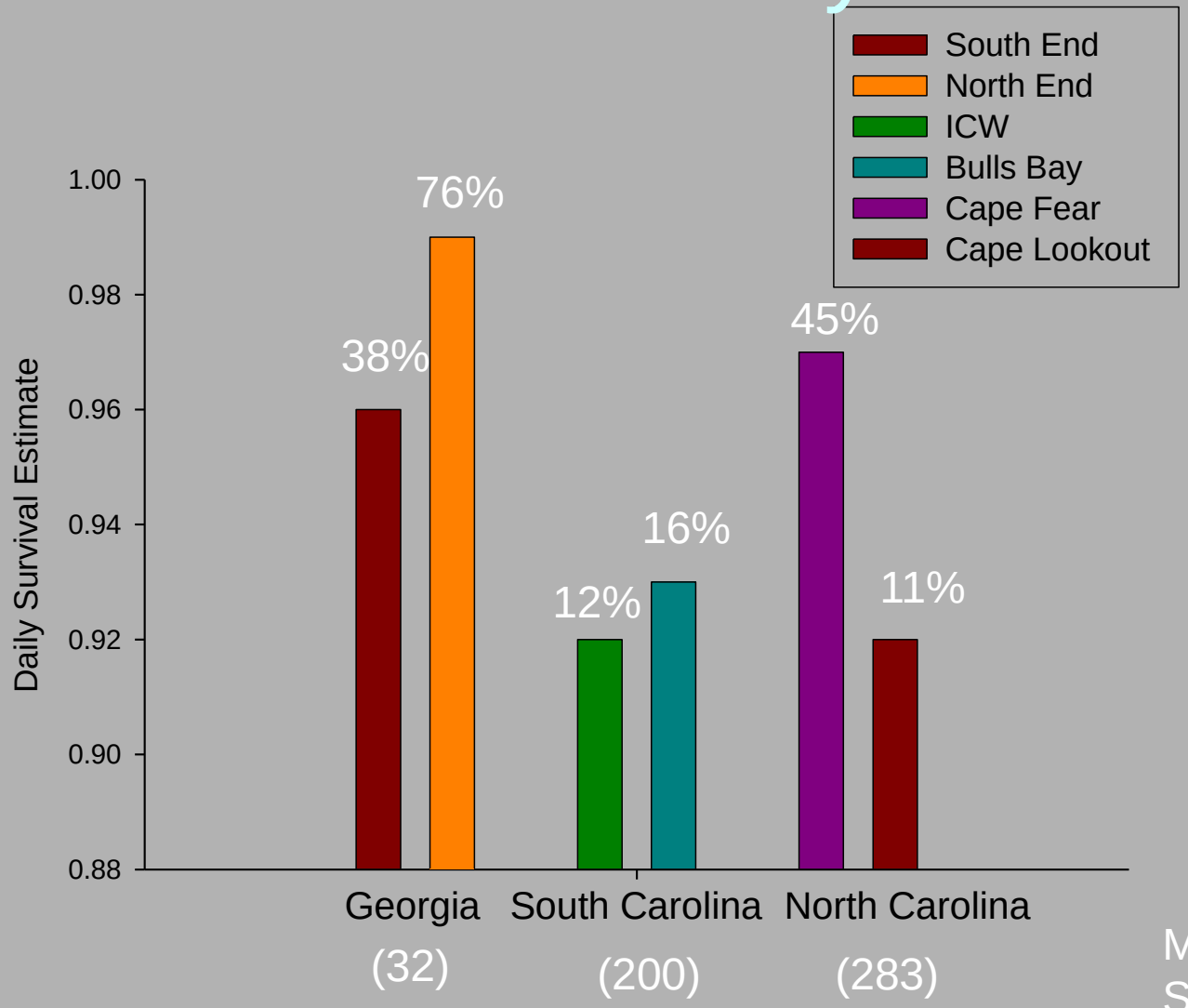
Mayfield Estimates



Probability of Success

ICW 12%
Bulls Bay 16%

Southern State Mayfield Estimates

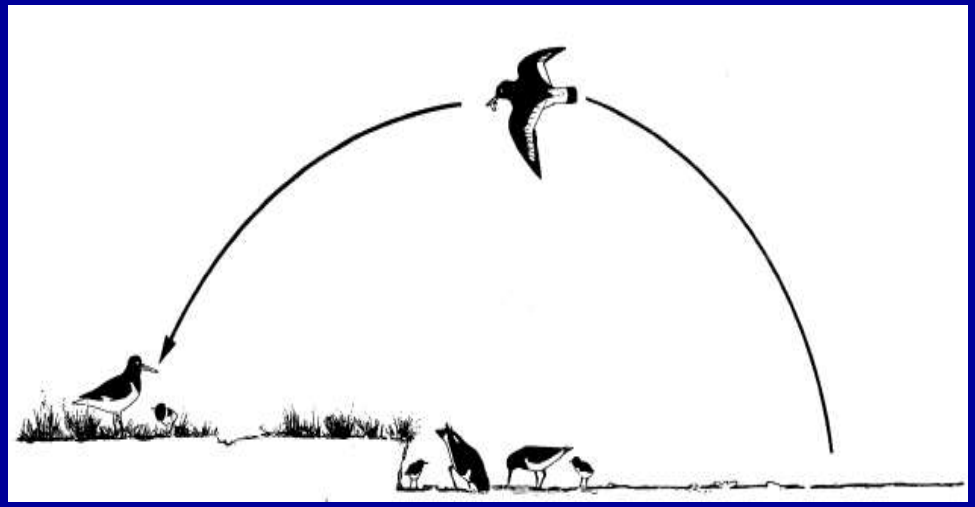


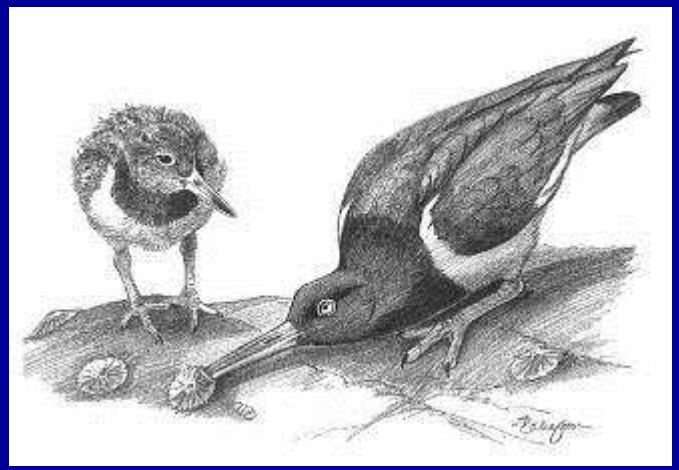
McGowan et al. 2005
Sabine et al. 2006

Conclusions

- Nest success variable
  - Higher In Bulls Bay vs. ICW 2006
  - Poor in both locations 2007
- Major Loss due to overwash
- Plentiful Resources
  - Multiple Nesting Attempts
  - Re-nesting Intervals
  - Length of Nesting Season

Foraging Ecology





- Differences in territory quality
- Leapfrog vs. Resident
- Residents raised more chicks than Leapfroggers
- Leapfrogs failed to transport enough food to chicks

Ens et al. 1992

ICW = Leapfrog?
Bulls Bay = Resident?

Objective & Methods

Determine amount of time parents were absent from territory

Determine differences in attendance between parents

Low Tide Observations

Time Budget of adults and chicks

Analysis

- Percent of Time parents were present
- Differences of Time between parents
- Variables
  - **brood size** **--attempt number**
  - **chick age** **--fledge success**
  - **chick age * brood size**

Results

Analyzed Location Separately

- ICW
  - 16 obs. 6 nests
- Fledging Success most significant variable (p=0.02)
  - Attendance was lower at nests that successfully fledged
- No significant variables in differences between adults
  - Brood size (p=0.17) of note
  - 2 & 3 chick broods had 1 adult gone more than the other than did single chick broods

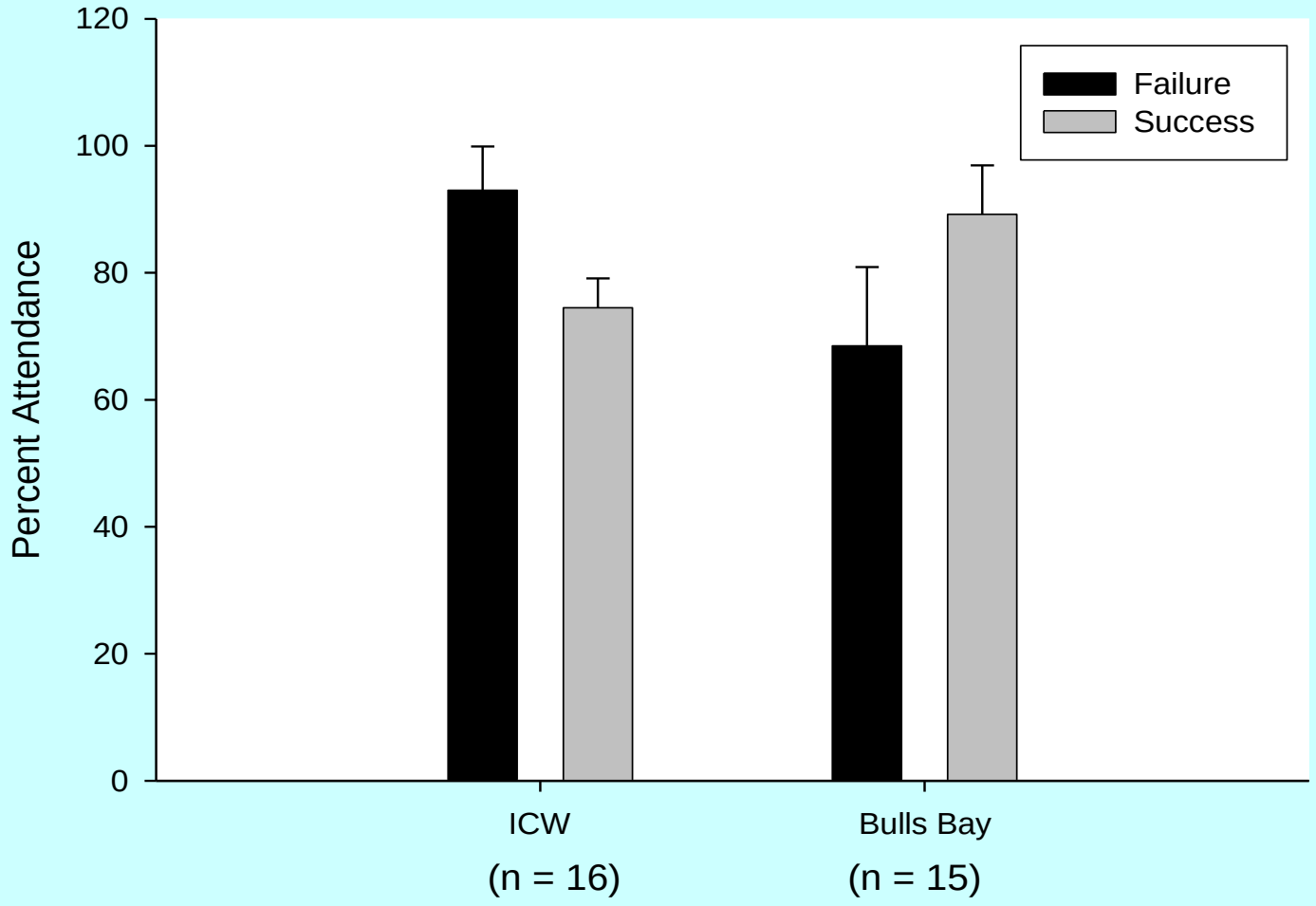
Results

Analyzed Location Separately

- ICW
  - 16 obs. 6 nests
- Fledging Success most significant variable (p=0.02)
  - Attendance was lower at nests that successfully fledged
- No significant variables fro differences between adults
  - Brood size (p=0.17) slightly significant in difference between adults
  - 2 & 3 chick broods had 1 adult gone more than the other than did single chick broods

- Bulls Bay
  - 15 obs. 7 nests
- Fledging Success (p=0.06) & brood size* chick age (p=0.07) most significant variables
  - Attendance was higher at nests that successfully fledged
  - Negative interaction chick age* brood size in 3 chick broods
- No significant variables for differences between adults

Results


120
100
80
60
40
20
0
Percent Attendance
Failure
Success
ICW
(n = 16)
Bulls Bay
(n = 15)

Preliminary Conclusions

- ICW
  - Parents had to leave territory to forage & bring back prey to successfully fledge chicks
  - Suggests parents that remained on nest site may not have delivered enough prey to raise their young
  - In larger broods, parents have a greater difference in attendance; 1 parent is foraging off territory a greater percentage to feed multiple chicks than parents with single chicks
- Bulls Bay
  - Parents fed at the nest territory and were able to raise chicks
  - Parents spend less time on territory with older chicks in larger broods
  - Both parents remained at the territory

Project Support

- **FUNDING AND SUPPORT PROVIDED BY**:

- National Fish & Wildlife Foundation, Savannah Santee PeeDee Restoration Fund
- US Geological Survey Cooperative Research Units
- 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, Donny Browning, Matt Connolly, Sarah Dawsey, Ben Harris, Kate Goodenough


Questions?