

FINAL PERFORMANCE REPORT
South Carolina State Wildlife Grant T-48-R
October 1, 2009– September 30, 2010

TITLE: Effects of Predation on Seabird Nests in Cape Romain

GRANT OBJECTIVES

The goal of this project is to monitor seabird nesting on Cape Island, Lighthouse Island and Raccoon Key to document reproductive success and help identify causes of colony abandonment and nest loss.

ACTIVITY OVERVIEW:

Activities associated with the grant are described below, according to the original tasks and subtasks in the Project Statement for this grant.

Tasks

I. Nest monitoring of beach-nesting birds in Cape Romain NWR during 2010.

Activity: Nest monitoring began during the first week of May 2010 at Raccoon Key, Lighthouse Island, Middle White Banks, and Cape Island. Each island was checked every 2-7 days depending upon weather and logistical constraints. We randomly selected 162 Least Tern and 182 Black Skimmer nests across all four study sites. Nests were marked by wooden stakes 0.5m from the nest scrape. Eggs were floated to estimate initiation date. At each visit we recorded number and condition of eggs or young and when possible, determined cause of failure by visual observation.

Nesting chronology for Least Terns and Black Skimmers were determined at Lighthouse Island, Middle White Banks and Cape Island (Fig 1 and Fig 2). Peak nesting for Least Terns occurred in Mid-May at Middle White Banks and Cape Island and in Mid-June at Lighthouse Island. Peak nesting for Black Skimmers occurred in Mid-June across all sites.

Significant deviations: Gull-billed Terns were not monitored due to logistical constraints.

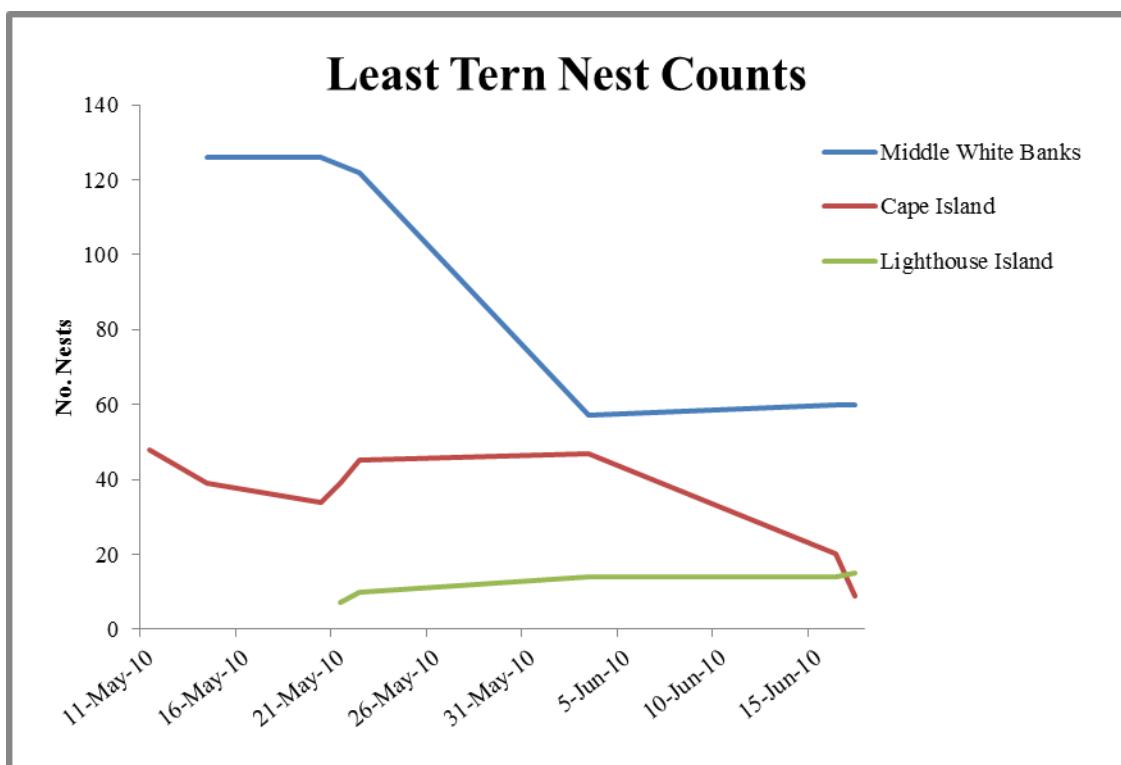


Figure 1. Number of Least Tern nests at Middle White Banks, Cape Island, and Lighthouse Island, Cape Romain National Wildlife Refuge, SC, May – June 2010.

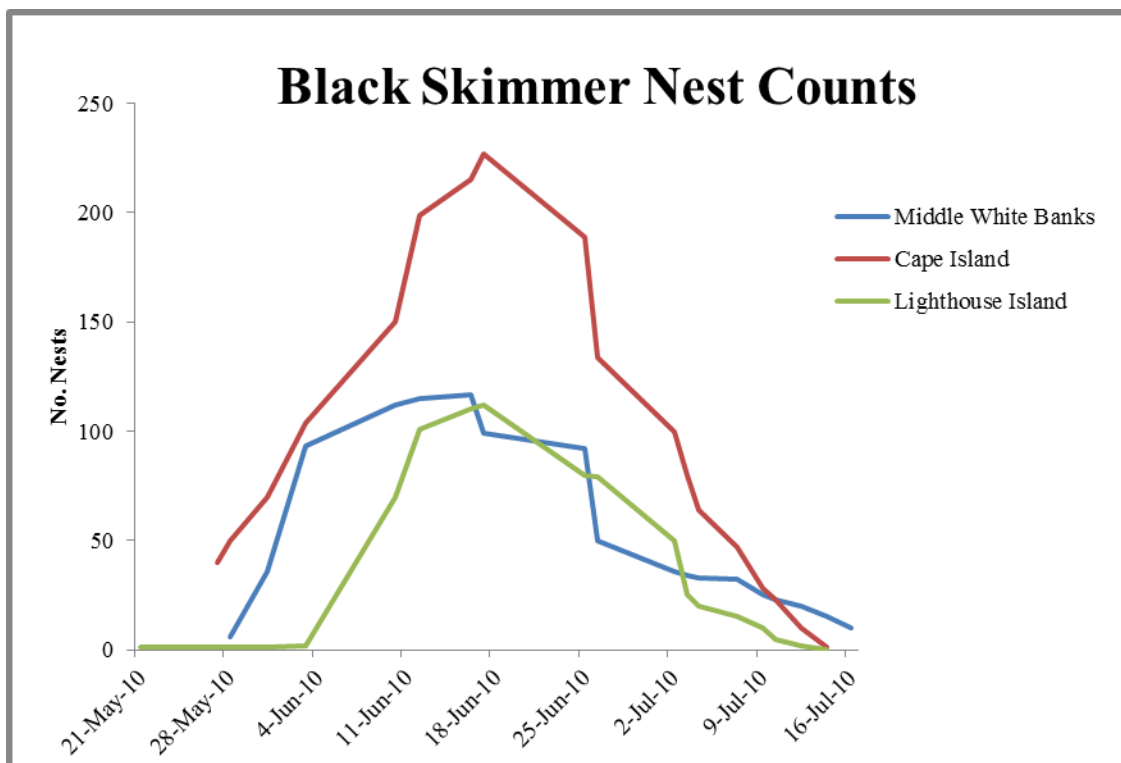


Figure 2. Number of Black Skimmer nests at Middle White Banks, Cape Island, and Lighthouse Island, Cape Romain National Wildlife Refuge, SC, May-June 2010.

II. Estimate nest survival and chick survival, with a focus on overwash and predation.

Activity: Nests were visited every 2-7 days until nest fate was determined. At each visit we recorded number and condition of eggs or young and when possible, determined cause of failure by visual observation. Nest survival (egg-laying to hatch, ≥ 1 egg hatch = survival) for Least Terns and Black Skimmers was calculated by using the Mayfield Method (Table 1).

Table 1. Rates of nest survival for Least Terns and Black Skimmers, Cape Romain NWR, South Carolina, May – July 2010.

Species/Colony Site	No. nests	Exposure days	Number of failures	Daily survival rate (%)	Nestling period survival rate (%)
Least Tern					
Middle White Banks	59	935	1	99	98
Raccoon Key*	5	8	5	--	--
Lighthouse Island	19	142	15	89	9.5
Cape Island	42	536	30	94	30
Black Skimmer					
Middle White Banks	70	974	27	97	48
Lighthouse Island	43	749	8	99	76
Cape Island*	30	386	30	--	--

* Complete failure occurred

Where possible we determined causes of nest failure (Table 2). Predation and overwash appeared to be the primary cause of nest failure across both species based on visual cues at or near the nest. Video cameras installed at colonies documented disturbance to colonies by Black Vulture, American Mink, and Great Horned Owl.

Table 2. Causes of nest loss of Least Terns and Black Skimmers in Cape Romain National Wildlife Refuge, SC, May-July 2010.

Site/Species	Nest losses (n)	Cause of loss (n)(%)					
		Abandonment	Overwash	Predation	Possible Predation	Other	Unk
Middle White Banks							
Least Tern	1	0(0.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	1(0.00)
Black Skimmer	26	2(0.08)	13(0.50)	0(0.00)	0(0.00)	1(0.04)	10(0.38)
Raccoon Key							
Least Tern	5	0(0.00)	0(0.00)	5(1.00)	0(0.00)	0(0.00)	0(0.00)
Lighthouse Island							
Least Tern	15	3(0.20)	5(0.33)	2(0.14)	0(0.00)	0(0.00)	5(0.33)
Black Skimmer	8	2(0.25)	0(0.00)	0(0.00)	6(0.75)	0(0.00)	0(0.00)
Cape Island							
Least Tern	30	1(0.03)	5(0.17)	12(0.40)	11(0.37)	0(0.00)	1(0.03)
Black Skimmer	28	4(0.14)	1(0.04)	2(0.07)	9(0.32)	0(0.00)	12(0.43)
Total losses	113	12(0.11)	24(0.21)	21(0.19)	26(0.23)	1(0.01)	29(0.26)

Chick survival was only conducted at Middle White Banks due to environmental and logistical constraints. To determine survival of Least Tern chicks, 60 chicks, 1-2 days old were given a unique, 2-color leg band combination. We conducted re-sighting surveys every 2-4 days until no Least Tern fledglings were observed. Of the 60 chicks monitored, 13 (22%) were re-sighted at ≥ 17 days post hatch. To determine survival of Black Skimmer chicks, 52 7-10 day old chicks were given a unique, 2-color leg band combination. An island-wide fledgling count was then conducted at the end of season to estimate the minimal survival rate for Black Skimmers. Of the 52 chicks monitored, 22 (42%) were re-sighted at ≥ 28 days post hatch.

Significant deviations: We did not conduct any mammal track surveys because of personnel and logistical constraints.

Estimated Federal Cost (grant level): 17,834.81

Recommendations: continue the grant to the proposed end date and funding level.