AMERICAN OYSTERCATCHER (*Haematopus palliatus*) MONITORING AT CAPE LOOKOUT NATIONAL SEASHORE

2013 SUMMARY REPORT

Old Drum Inlet April 2013. NPS PHOTO.

NATIONAL PARK SERVICE
CAPE LOOKOUT NATIONAL SEASHORE
131 CHARLES STREET
HARKERS ISLAND, NC 28531

Abstract

There were 63 American Oystercatcher pairs nesting throughout the ocean beach habitat of the seashore in 2013. North Core Banks had 30 pairs, South Core Banks had 27 pairs, and Shackleford Banks had 6 pairs. Egg-laying was initiated on April 11th and a total of 104 nests were documented. Twenty five chicks fledged: 13 from North Core Banks and 12 from South Core Banks. South Core Banks was the most productive with a fledge success rate of 0.44, while North Core Bank's fledge success was 0.43, and Shackleford Banks continues to be the least productive with a fledge success rate of 0.00. Overall for the entire seashore, the fledge success rate was 0.40 per nesting pair.

Introduction

American Oystercatchers are common nesters throughout the park, primarily on the ocean beach. They are listed as a 'Bird of Special Concern' in North Carolina by the North Carolina Wildlife Resource Commission. Their choice of nesting habitat makes them particularly vulnerable to disturbance by park visitors and off-road vehicles.

Monitoring of American Oystercatcher nesting at Cape Lookout National Seashore (CALO) began in 1995. A researcher from Duke University studied nesting on South Core Banks and found low reproductive success (Novick 1996). She also documented chick mortality caused by off-road vehicles. Since 1997 researchers from North Carolina State University (NCSU) and park staff have conducted censuses, monitored nesting success, and banded oystercatchers in the park. Data in this summary report is presented from the last ten breeding seasons when all of the seashore was monitored regularly, 2004 to 2013.

Site Description

Cape Lookout National Seashore is located in the southern Outer Banks of North Carolina between Ocracoke and Beaufort Inlets. The seashore was divided into four barrier islands during the 2013 breeding season. The northernmost island, North Core Banks (NCB), is currently 18 miles long, extending from Ocracoke Inlet to Old Drum Inlet. Middle Core Bank (MCB) extends from Old Drum Inlet to Ophelia Inlet at four miles in length. For reporting purposes MCB is treated as part of NCB, representing breeding pairs from Ocracoke Inlet to Ophelia Inlet, mile 0 to mile 22.7. South Core Banks (SCB) extends southward from Ophelia Inlet almost 24 miles to Barden Inlet. The Core Banks have a northeast to southwest orientation and exhibit a low profile landscape. The forth island, Shackleford Banks (SB), is 9 miles long and has an east-west orientation with a higher dune system and larger areas of vegetation. All islands in the park are subject to constant and dramatic change by the actions of wind and waves.

Methods

The Interim Protected Species Management Plan/ Environmental Assessment (IPSMP/EA) 2006 contains guidelines of the management and monitoring protocols (National Park Service 2006). Park service staff conducted surveys of Shackleford Banks nesting birds twice a week beginning in April. Weekly surveys of nesting habitat on North and South Core Banks also began in April and breeding monitoring was continued seven days per week until the end of the nesting season. In 2013, NCSU research staff conducted focused monitoring of American Oystercatchers on North and South Core Banks allowing park staff to closely monitor other protected species. Park staff still performed management actions for Oystercatchers and assisted in monitoring.

Management actions for oystercatchers included closing the area around the a nest with "Bird Sanctuary" signs if the nest was in danger of being run over by off-road vehicles or stepped on by pedestrians. Generally, nests found in the dunes were not posted. There is some concern that predators might learn to associate posts with nests. Small posted areas may also unnecessarily attract curious park visitors and cause disturbance.

In addition to the closure around the nest, a 600-foot buffer was established around each nest. This buffer allowed vehicle and pedestrian traffic to pass by on the lower beach by the ocean shoreline, but prevented stopping, parking, or camping near the nest. The buffer zone was defined by two sets of 18" X 18" yellow signs placed on each side of a nest.

The locations of the nests were recorded using a GPS unit and the park's mile marker system. Nest locations were marked inconspicuously with either a stake or objects like sticks or shells to facilitate follow-up checks. Information about the habitat type was also noted. If one or both adults were banded, that information was recorded on the nest data sheet.

Nests were checked regularly, every 1 to 3 days, to monitor the status of incubation and document losses. One day before the expected time of hatch, the ocean beach in that area was closed to vehicles with traffic routed to the backroad, a sand trail behind the primary dunes. In areas where there is no backroad, signs were placed on the beach warning of the presence of flightless chicks and reducing the speed limit to 15mph. Chicks were monitored daily until they fledged or were lost. Since 2010, chicks were considered fledged at 35 days old for productivity records. For management purposes, the chicks are considered fledged when strong flight is actually observed.

Results

Sixty three pairs of American Oystercatchers nested at CALO (Table 1). Counts were for pairs on or near the ocean beach and did not include marsh islands.

Table 1. American Oystercatcher Nesting Pairs- 2013.

North Core Banks	30 pairs
South Core Banks	27 pairs
Shackleford Banks	6 pairs

Nesting pairs were spread throughout most of the ocean beach habitat in the park (Figures 1 & 2). The birds did not use areas adjacent to buildings and concentrations of people. The Middle Core Bank section is considered part of the North Core Banks for reporting purposes, mile 0 to mile 22.7

Hatch and Fledge Success

One hundred four nests were found of which 32 hatched at least one egg. Twenty-five chicks were known to survive 35 days to fledge (Table 2). Of the nests that failed, 46 nests failed due to unknown causes, 21 were lost to predation, three were lost to weather events, one was lost to human disturbance, and one was abandoned (Table 3). Raccoons (9), cat (2) and fox (1) were found to be predators of oystercatcher eggs. There were nine nest predated by undetermined predators. Table 4 summarizes the reproductive success over the last 10 years. The fledgling success is calculated using the known nesting pairs. This allowed for cross-year comparisons with variable monitoring efforts and other unknowns. Chart 1 illustrates the reproductive success over the last 10 years. In 2013, sixty-three known nesting pairs produced twenty-five fledglings for a fledge success rate of 0.40. Individual nest data are found in Appendix 1. Tables 5, 6, 7, and 8 summarize the reproductive success by island with known and comparable data.

Table 2. Oystercatcher Nesting by Island 2013.

Island	**#pairs**	**#Nests**	**#Nests Hatched**	**#Chicks Fledged**
North Core Banks	30	50	12 (24%)	13
South Core Banks	27	46	19 (41%)	12
Shackleford Banks	6	8	1 (12%)	0
CALO Total	63	104	32 (31%)	25

Table 3. 2013 Causes of Nest Failure.

Island	Predation	Flooding/ Storms	Human Disturbance	Abandoned	Unknown
North Core Banks	9	0	1	0	28
South Core Banks	11	3	0	1	12
Shackleford Banks	1	0	0	0	6
CALO total	21	3	1	1	46

Table 4. Summary of Seashore Oystercatcher Reproductive Success Data, 2004-2013.

Year	Island	#Nests	#Nests Hatched	#Pairs (nesting)	#Chicks fledged
2004	Cape Lookout N.S.	71	38 (54%)	52	45 (0.86)
2005	Cape Lookout N.S.	66	26 (39%)	54	18 (0.33)
2006	Cape Lookout N.S.	70	23 (33%)	52	26 (0.50)
2007	Cape Lookout N.S.	99	21(21%)	61	31 (0.51)
2008	Cape Lookout N.S.	91	17 (19%)	57	15 (0.26)
2009	Cape Lookout N.S.	83	20(24%)	61	21 (0.34)
2010	Cape Lookout N.S.	113	28 (25%)	62	34 (0.55)
2011	Cape Lookout N.S	114	29 (25%)	62	37 (0.60)
2012	Cape Lookout N.S.	99	31 (31%)	58	42 (0.72)
2013	Cape Lookout N.S.	104	32 (31%)	63	25 (0.40)

Chart 1. The Number of Seashore Oystercatcher Nesting Pairs and Chicks Fledged by Year with Simple Linear Regression Lines, 2004 to 2013.

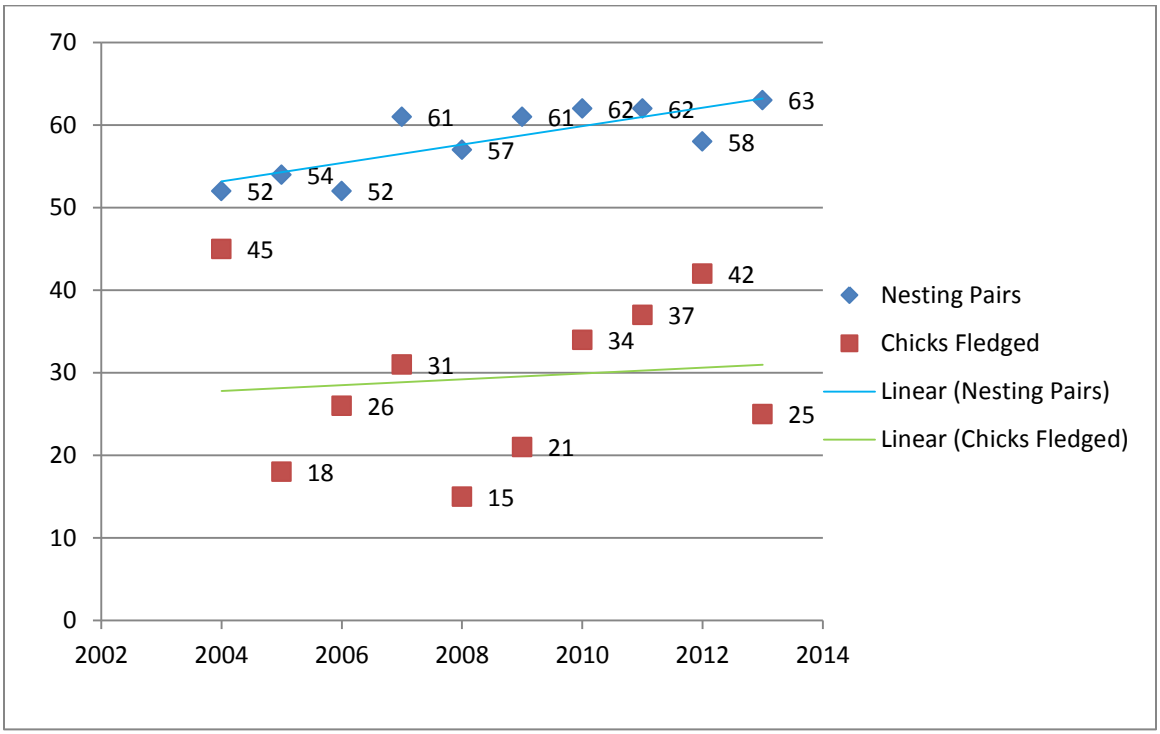


Table 5. Summary of North Core Banks, Ocracoke Inlet Mile 0 to Ophelia Inlet mile 22.7 Oystercatcher Reproductive Success Data, 2004-2013.

Year	Island	#Nests	#Nests Hatched	#Pairs (nesting)	#Chicks fledged
2004	North Core Banks	30	24 (80%)	26	38 (1.46)
2005	North Core Banks	29	16 (64%)	23	15 (0.65)
2006	North Core Banks	28	16 (57%)	24	15 (0.62)
2007	North Core Banks	46	17 (37%)	30	27 (0.90)
2008	North Core Banks	30	9 (30%)	22	10 (0.45)
2009	North Core Banks	40	7 (18%)	29	8 (0.28)
2010	North Core Banks	58	15 (26%)	31	15 (0.48)
2011	North Core Banks	54	18 (33%)	32	24 (0.75)
2012	North Core Banks	45	16 (36%)	28	26 (0.93)
2013	North Core Banks	50	12 (24%)	30	13 (0.43)

Table 6. Summary of Middle Core Bank Section of NCB, Old Drum Inlet Mile 19 to Mile 22.7 Ophelia Inlet, Oystercatcher Reproductive Success Data from 2004 to 2013.

Year	Island	#Nests	#Nests Hatched	#Pairs (nesting)	#Chicks fledged
2004	Middle Core Banks	5	4 (80%)	5	7 (1.40)
2005	Middle Core Banks	9	5 (55%)	7	9 (1.28)
2006	Middle Core Banks	10	8 (80%)	10	10 (1.00)
2007	Middle Core Banks	14	9 (64%)	13	13 (1.00)
2008	Middle Core Banks	8	5 (62%)	8	7 (0.88)
2009	Middle Core Banks	13	3 (23%)	10	1 (0.10)
2010	Middle Core Banks	24	4 (17%)	13	2 (0.15)
2011	Middle Core Banks	23	8 (35%)	14	12 (0.86)
2012	Middle Core Banks	19	7 (37%)	13	12 (0.92)
2013	Middle Core Banks	17	7 (39%)	13	9 (0.69)

Table 7. Summary of South Core Banks Oystercatcher Reproductive Success Data from 2004 to 2013.

Year	Island	#Nests	#Nests Hatched	#Pairs (nesting)	#Chicks fledged
2004	South Core Banks	33	13 (39%)	20	6 (0.30)
2005	South Core Banks	27	9 (33%)	22	3 (0.14)
2006	South Core Banks	31	6(19%)	19	10 (0.53)
2007	South Core Banks	41	4(21%)	21	4 (0.19)
2008	South Core Banks	44	5 (11%)	24	5 (0.21)
2009	South Core Banks	30	11(37%)	22	11 (0.50)
2010	South Core Banks	43	11 (25%)	23	17 (0.74)
2011	South Core Banks	51	9 (18%)	24*	12 (0.50)
2012	South Core Banks	41	15 (36%)	22	16 (0.73)
2013	South Core Banks	46	19 (41%)	27	12 (0.44)

*Shackleford and South Core shared a nesting pair

Table 8. Summary of Shackleford Banks Oystercatcher Reproductive Success Data from 2004 to 2013.

Year	Island	#Nests	#Nests Hatched	# Pairs (nesting)	#Chicks fledged
2004	Shackleford Banks	8	1 (12%)	6	1 (0.17)
2005	Shackleford Banks	10	1 (10%)	9	0 (0.00)
2006	Shackleford Banks	11	1 (9%)	9	1 (0.11)
2007	Shackleford Banks	12	0 (0%)	10	0 (0.00)
2008	Shackleford Banks	17	3 (18%)	11	0 (0.00)
2009	Shackleford Banks	13	2 (15%)	10	2 (0.20)
2010	Shackleford Banks	12	2 (17%)	8	2 (0.25)
2011	Shackleford Banks	9	2 (22%)	7*	1 (0.14)
2012	Shackleford Banks	13	0 (0%)	8	0 (0.00)
2013	Shackleford Banks	8	1 (12%)	6	0 (0.00)

*Shackleford and South Core shared a nesting pair

Banding

Sixteen chicks and two adults were captured and banded in the park by NCSU researchers and park staff. Nine chicks fledged without bands mainly due to inaccessibility of the MCB section. Park staff and researchers recorded band re-sights of individuals and nesting pairs in the seashore throughout the summer. Of the 63 nesting pairs, 41 pairs (65%) had at least one individual of the pair banded, while 22 pairs (35%) were unbanded. NCB had 18 pairs banded and 12 pairs unbanded. SCB had 22 pairs banded and 5 pairs unbanded. SB had one pair banded and five unbanded pairs. There were 50 (40%) individual adults that are banded and 76 (60%) that are unbanded in the nesting population in 2013. See appendix 1 for nesting pair re-sight data and 2013 chick band data. Round two and three letter codes were used this year on all birds. There was no chick mortality due to banding efforts. Details on oystercatcher band combinations can be found at the website: http://www.amoywg.org/banding-re-sighting/.

Discussion

Old Drum Inlet was open in the 2013 nesting season. The last 3.5 miles of NCB were separated by the inlet and inaccessible by vehicle. This section of NCB is known as Middle Core Bank (MCB), from Old Drum Inlet to Ophelia Inlet. We were able to monitor the MCB section one to three times per week. The breeding data from the MCB section is reported as part as the NCB data set in tables 2, 3, and 5. In table 6 the data is separated for the 3.5 mile MCB section. The breeding seasons from 2000 to 2008 on Middle Core Banks experienced little recreational disturbance and reduced predation levels as a 3 mile separate island. Ophelia Island (part of MCB section) was similarly isolated for the three breeding seasons from 2006 to 2008 until New Drum Inlet closed. The hatch rates and fledgling success in this area were the highest in the seashore during those years of isolation, Table 6. Table 6 contains data from 2004 to 2013. Monitoring and data collection were inconsistent from 2000 to 2003 and was excluded. From 2009 to 2011 Old Drum Inlet was closed allowing vehicle access down to Ophelia Inlet. In 2008, seven oystercatcher chicks fledged from mile 19 to mile 22.5 of the seashore, while only one chick in 2009 and two chicks in 2010 fledged from this same area. A backroad vehicle trail behind the dunes was re-established from mile 19 to mile 21 with three access ramps in early 2011. This enabled traffic to be detoured off the ocean beach to the backroad when chicks were present. In 2011 twelve chicks fledged from this area and the productivity and the hatch success increased from 2009 and 2010 levels. In 2012 twelve chicks fledged in this section and the productivity and hatch success was slightly higher, but similar to 2011. In 2013 hatch success and productivity remained higher than 2009 and 2010 levels, but productivity did decline with just 9 fledglings produced.

Hatch rates in 2013 varied throughout the park. Hatch success rates were 24% on North Core Banks, 41% on South Core Banks and 12% on Shackleford Banks. Predators (21), weather events (3), human disturbance (1), and abandonment (1) were the known causes of nest losses. There were 46 unknown nest losses, 28 on NCB, 12 on SCB, and 6 on SB. On NCB predation, feral cat and raccoon, lowered the hatch success, but the majority were unknown nest losses. There was one human disturbance related nest failure on NCB. A staff member found nest 38 in the morning of July 2nd and planned to return to post it. Upon returning in the afternoon the egg was gone and there were human and dog footprints at the nest. Fox or coyote predation was recorded for one nest on SB. There is evidence of fox activity dating back to 2007 and coyotes since 2012. This could explain the low hatch success and productivity on SB since records have been kept. There were nest losses on SCB that were attributed to an unknown mammal predator. Fox tracks and/ or coyote tracks were recorded on SCB in the summer.

Fledging success in the park was 0.40 chicks per nesting pair with a large variance by island. Fledgling success rates were 0.43 on NCB, 0.44 on SCB, and 0.0 on SB. Fledge success on NCB was more successful in the MCB section (0.69) and Shackleford Banks continues to have low fledge success (Table 6 & 8). Six broods were lost after hatching on SCB and thus reducing fledge success. Though the causes of these chick failures are unknown the presence of a canine predator on SCB is suspect. A range-wide productivity standard was established defining fledging at 35 days old. This standard provides consistency throughout the nesting range. A total of 25 chicks reached 35 days

old and were considered fledged: this is reflected in the seashore-wide 0.40 productivity rate. However, we know that most chicks cannot actually fly at day 35. The average age of chicks fledging in 2013 from 13 broods was 40 days from the hatch date. This calculation excludes 7 broods with unknown exact fledge dates. The range of fledging age, determined from the 13 broods, was from 35 to 45 days (Appendix 1). Chicks are monitored and managed until they exhibited strong flight greater than 150 feet. There were no chicks lost to motor vehicles this year.

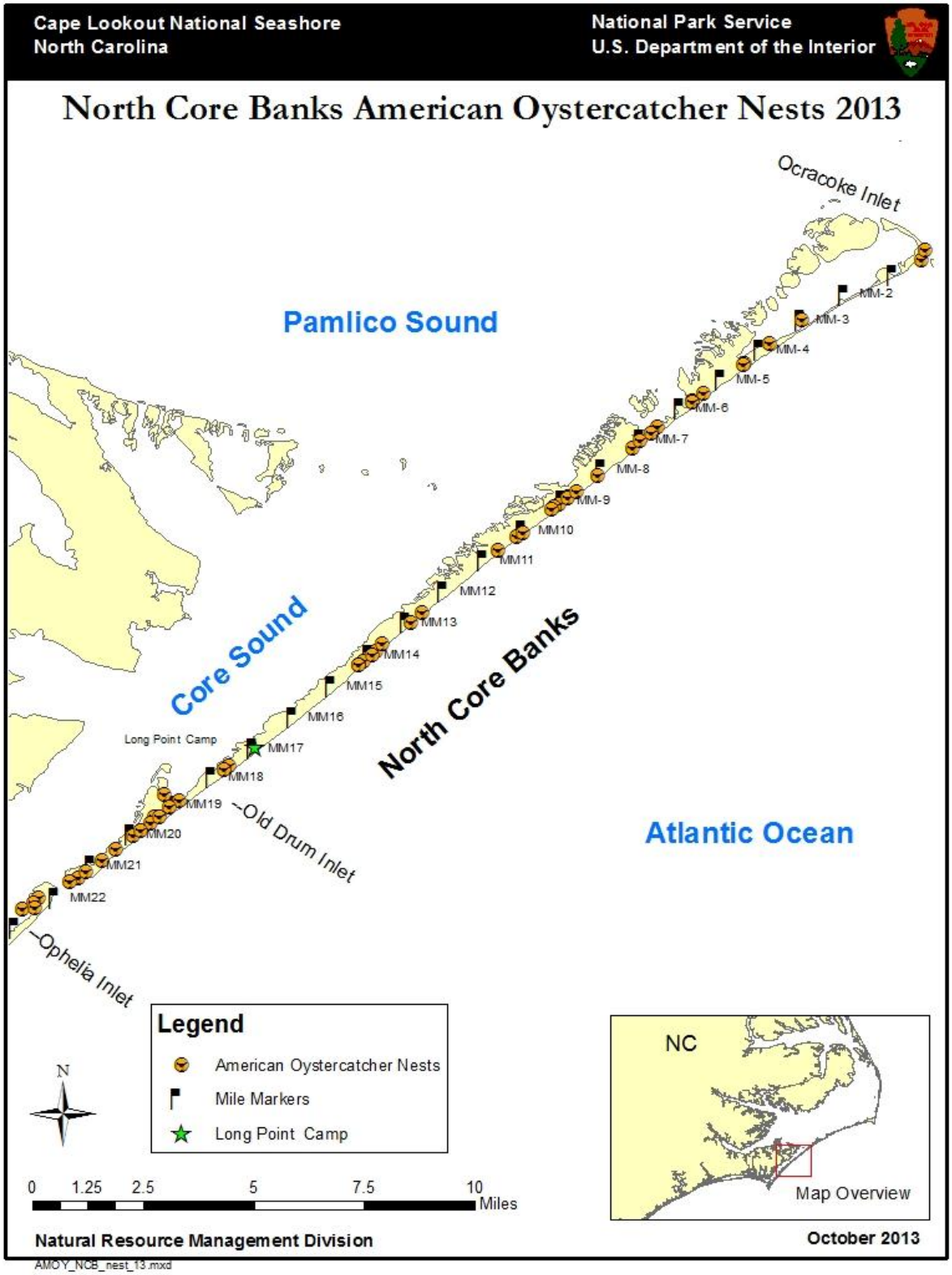
Nesting pairs increased from 58 pairs in 2012 to 63 pairs in 2013. Part of this change can be explained with the addition of new pairs. There were seven new pairs identified by their unique leg bands. Dark green NF, CP, JC, TC, UL, TE, CY and red 4L were new nesters to the seashore. All the dark green bands were fledglings from CALO from 2009 and 2010. The long term banding and monitoring program at the seashore can also tell us about pairs that persist and produce fledglings over the years. Dark green 16 has been nesting at Cape Point on SCB since 2003 when it was first tagged and has produced seven fledglings.

Literature Cited

National Park Service. 2006. Interim Protected Species Management Plan/ Environmental Assessment. Cape Lookout National Seashore, North Carolina.

Novick, J.S. 1996. An analysis of human recreational impacts on the reproductive success of American oystercatchers (Haematopus palliates): Cape Lookout National Seashore, North Carolina. M.S. Thesis. Duke University. 36pp.

Figure 1.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U.S. Department of the Interior
North Core Banks American Oystercatcher Nests 2013
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Map Overview
Natural Resource Management Division
October 2013
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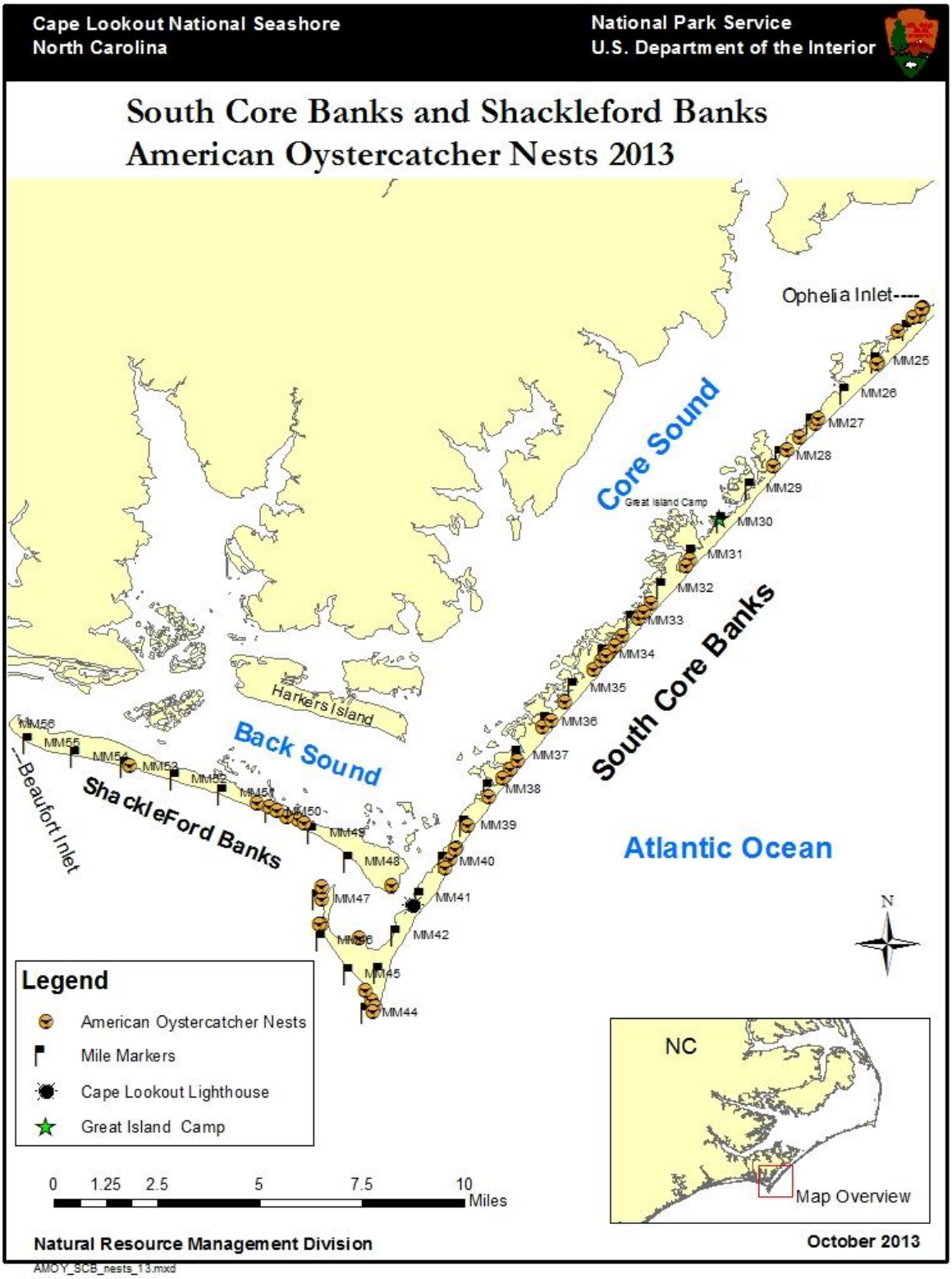
Figure 2.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Natural Resource Management Division
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APPENDIX 1A AMERICAN OYSTERCATCHER NESTS- NORTH CORE BANKS-2013

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	DG (73), UNB	9.19	upper beach	14-Apr	2	600' buffer	Failed 4/16, 0 eggs, unknown
2	2	DG (CE), UNB	17.62	open shell flat	20-Apr	3	600' buffer	nest lost 5/19, blood and shell fragments in nest cup, feline tracks
3	3	UNB, UNB	8.9	on dunelet	20-Apr	3	600' buffer	Failed 5/9, 0 eggs, unknown - possible depredation, feline tracks nearby
4	4	UNK, UNK	14.23	base of dune	23-Apr	2	600' buffer	Failed 4/25, 0 eggs, unknown
5	5	UNB, UNB	20.86	in dunelet area	24-Apr	2	no	Failed 5/19,last-check-4-28, 0 eggs, unknown
6	6	LL-B/X, UNB	20.49	in dunelet area	24-Apr	3	no	7/14 two fledges seen, unbanded
7	7	UNK, UNK	18.91	shell bed	26-Apr	1	no	last-check-4/26, 0 eggs, unknown
8	8	red band, UNB	12.99	front of dunes	26-Apr	3	600' buffer	Failed 5/20, 0 eggs, depredated - raccoon tracks in area
9	9	UNB, UNK	19.48	interdunal shell flat	26-Apr	3	no	last-check-4/28, 0 eggs, unknown
10	10	DG (CY), UNB	7.29	foredunes	27-Apr	3	600' buffer	Failed 5/11, 0 eggs, unknown
11	11	DG (W5), UNB	13.92	between dunes	27-Apr	1	600' buffer	Failed 4/29, 0 eggs, depredated - some raccoon tracks
12	12	UNK, UNK	4.49	center of shell flat	27-Apr	3	600' buffer	Failed nest on 5/22, No chicks ever seen
13	1	DG (73), UNB	9.28	shell flat in dunes	27-Apr	3	600' buffer	Failed 4/30, 0 eggs, mammalian predator tracks
14	13	DG (K2), UNB	21.44	shell flat	28-Apr	3	no	Failed 5/22, 0 eggs, unknown
15	4	DG (E0), UNB	14.36	base on dunes	2-May	1	600' buffer	Failed 5/4, 0 eggs, unknown
16	14	DG (T6), UNB	10.25	edge of dune line	5-May	3	600' buffer	Failed 5/10, 0 eggs, depredated - raccoon tracks at nest
17	15	UNB, UNK	0.25	shelly area	7-May	1	600' buffer	Failed 5/9, 0 eggs, unknown- possible raccoon predation
18	16	DG (AN), UNB	22.73	high shell hump	10-May	3	interior	Failed 5/22, 0 eggs, unknown- no predator tracks
19	4	DG (E0), UNB	14.35	base of dunes	14-May	2	600' buffer	1 chick banded DG(CF9) , 1 fledge at day 42 on 7/16
20	17	DG (C1), DG (F3)	5.75	in front of dune	16-May	3	interior+600' buffer	Failed 5/20, 0 eggs, unknown - no predator tracks seen
21	15	UNB, UNB	0.1	top of small dunelet	16-May	2	interior+600' buffer	Failed 5/18, 0 eggs, unknown
22	11	DG (W5), UNB	13.7	behind dunes	17-May	1	600' buffer	Failed 5/24, 0 eggs, unknown
23	3	UNB, UNB	8.89	shell flats	19-May	1	600' buffer	Failed 5/21, 0 eggs. Unknown - no predator tracks seen
24	1	DG (73), UNB	9.37	in front of dunes	21-May	1	600' buffer	Failed 5/23, 0 eggs, unknown

25	18	UNB, DG (CFX)	3.86	small dunelets	21-May	3	interior+600' buffer	Failed 6/9, 0 eggs, depredated, One adult banded DG (CFX) and a GPS was attached to the bird
26	19	UNK, UNK	10.7	on face of dune	22-May	1	no	Failed 5/24, 0 eggs, unknown
27	20	DG (P5), UNB	22.2	soundside shell flat	22-May	2	no	Failed 5/25, 0 eggs, depredated - mammal tracks
28	21	UNK, UNK	21.62	shell-flat	25-May	2	no	Failed 5/31, 0 eggs, unknown
29	22	UNB, UNB	22.5	soundside	25-May	unk	interior	missed nest, chicks present at several observations but never seen, chicks failed
30	23	DG (74), DG (M0)	19.11	shell flat mid island	27-May	2	no	Failed 5/31, 0 eggs, unknown
31	24	DG (M8), UNB	19.61	shell flat in dunes	27-May	2	no	missed nest, 2 fledges unbanded, day 35
32	9	DG (R2), UNB	19.41	ocean front dune	27-May	2	no	1 chick fledged, day 35
33	3	UNB, UNB	8.66	in front of dunes	28-May	1	600' buffer	Failed 6/10, unknown
34	25	R (4L), UNB	8.13	in front of dunes	28-May	1	600' buffer	Failed 6/4, 0 eggs, unknown
35	17	DG (C1), DG (F3)	5.5	washout	31-May	3	interior	Failed 6/10, 0 eggs, depredated - busted egg in area
36	8	red band, UNB	12.7	base of dune	31-May	2	600' buffer	Day 37- 8/5, 2 fledge, DG (CHF, CHH)
37	26	UNB, UNB	20.05	face of dunes	1-Jun	2	no	Failed nest, last-check-6-15,
38	2	DG (CE), UNB	17.7	small dunelet	2-Jun	1	no	nest found in AM of 6/2,failed in PM 6/2, 0 eggs, multiple human tracks, dog, cat, nutria. Lots of AMOY tracks covering possible pred. tracks. Was going to be posted at 17:10. Human or dog suspected of depredation due to the eggs was taken whole with no yolk or egg fragments evident.
39	27	UNB, UNB	3.02	shell flat	5-Jun	1	interior	Failed 6/8, 0 eggs, unknown, probably due to TS Andrea
40	12	UNB, UNB	4.53	open beach	5-Jun	3	600' buffer	Hatch 7/1, chicks-failed 7/9,unknown
41	28	UNB, UNK	6.65	shell flat	5-Jun	2	interior	Failed 6/13, 0 eggs, unknown
42	10	DG (CY), UNB	7.12	small dunelet	5-Jun	2	600' buffer	1 fledge DG (CFO) on 8/5 at day 42, fledge-dead-8-25
43	16	DG (AN), UNB	22.51	base of dunes	9-Jun	3	interior	1 fledge unbanded, day 35
44	29	UNB, UNB	6.85	open beach	10-Jun	2	interior	chicks-failed 7/4,unknown
45	11	DG (W5), UNB	14.01	in front of dunes	14-Jun	2	600' buffer	Failed 6/25, 0 eggs, unknown
46	13	DG (K2), UNB	21.24	shell flat	15-Jun	2	interior	Failed nest by 6/23
47	14	DG (T6), UNB	10.1	open beach	15-Jun	2	600' buffer	Failed 6/20, 0 eggs, unknown
48	17	DG (C1), DG (F3)	5.8	shell bed	25-Jun	2	interior+600' buffer	Failed 7/13, 0 eggs, unknown
49	7	DG (UT), DG (CER)	18	on flats	3-Jul	unk	unk	missed nest, 1 fledge at day 35
50	30	UNB, UNB	19.92	unknown	5-Jul	unk	no	missed nest, 2 fledge at day 35

30 nesting pairs, 50 nests, 12 nests hatched, 13 chicks fledged

APPENDIX 1B AMERICAN OYSTERCATCHER NESTS- SOUTH CORE BANKS-2013

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	DG(16), UNB	44.32	shelly area	11-Apr	3	Interior	Chick last seen 5/17 Unknown cause of failure
2	2	DG(L2), UNB	39.64	top of dune	15-Apr	3	600' Buffer	Nest failed 4/26 due to windy weather
3	3	DG(AR),DG(AP)	33.95	duneline	16-Apr	3	600' Buffer	Nest failed 5/5 due to windy weather
4	4	UNB, UNB	46.65	shell flat	17-Apr	3	None	Nest failed 4/28 possibly to predation
5	5	DG(UR), DG(UP)GPS	39.94	toe of dune	17-Apr	3	600' Buffer	Chick last seen 5/19, unknown cause of failure
6	6	DG(R8), O, W:O, -	38.21	near duneline	17-Apr	2	600' Buffer	DG (YO) banded 6/17, 1 fledged on 6/27 day 42
7	7	DG(UY), UNB	23.45	on dunelets	18-Apr	3	None	Nest failed 5/6 to predation
8	8	DG(33), UNB	25.08	Low dune	19-Apr	2	600' Buffer	Nest failed 4/24 to possible predation
9	9	UNB, UNB	47.05	duneline	23-Apr	2	None	Nest failed 5/16 to predation, raccoon tracks
10	10	DG(NF), UNB	33.48	toe of dune	25-Apr	3	600' Buffer	banded DG (YT) 6/20, 1 fledged on 6/30 day 37
11	11	DG(J3), DG(P4)	24.25	shelly flat	25-Apr	3	None	Chicks last seen 5/22, adults territorial back in marsh area
12	12	-,-:R, -, UNB	36.22	shelly flat	25-Apr	3	None	Nest failed 5/6to unknown predation
13	13	UNB, UNB	31.17	dune area	26-Apr	3	600' Buffer	Eggs hatching on 5/19, unknown cause of failure on5/19
14	14	DG(KO), UNB	32.49	toe of dunes	26-Apr	3	600' Buffer	DG (CL) banded 6/20, 1 fledged on 6/30 day 40
15	15	DG(T8), UNB	33.07	side of dune	26-Apr	3	600'	Nest failed 5/2 to raccoon predation
16	16	DG(CP), UNB	46.41	top of dune	26-Apr	2	600' Buffer	Nest failed 5/9 to possible raccoon predation
17	17	DG(CF7)GPS, UNB	27.47	middle dune area	27-Apr	3	600' Buffer	Nest failed 5/6to predation, possibly from ghost crab
18	18	DG(J6)*GPS, UNB	34.47	open beach	27-Apr	3	600' Buffer	Nest failed 4/29 to raccoon predation
19	19	UNB, UNB	39.02	dune area	27-Apr	3	600' buffer	Chicks last seen 5/27, unknown cause of failure
20	20	DG(J9), UNB	37.41	base of dunes	27-Apr	3	600' Buffer	Nest failed 5/5 due to windy weather
21	8	DG(33), UNB	25.12	west back road	5-May	3	600' Buffer	DG (CF8 & CHK) banded 7/3, 2 fledged 7/9 day 38
22	21	DG(JC), DG(TC)	27.86	east of back road	5-May	3	600' Buffer	DG (F9) banded 6/28, 1 fledged 7/9 day 40
23	22	DG(UL), UNB	43.83	cape point flats	6-May	2	Interior	DG (YR) banded 6/24, 1f ledged 7/9 day 45
24	23	UNB, UNB	47.31	back of low dune	7-May	3	Interior	DG (CHL) banded 7/3, 1 fledged 7/10 day 41
25	18	DG(J6)*GPS,UNB	34.19	interdunal flat	10-May	2	600' Buffer	Nest failed 5/25 to unknown cause

26	24	DG(M1),DG(J0)	35.45	edge of dunes	11-May	3	600' Buffer	DG (CA) banded 6/20, 1 fledged 6/29 day 42
27	15	DG(T8), UNB	32.75	base of dunes	14-May	2	600' Buffer	Chick last seen 6/14, unknown cause of failure
28	3	DG(AR),DG(AP)	33.95	interdunal flat	16-May	3	600' Buffer	Nest failed 5/25, possible predation
29	17	DG(CF7)GPS, UNB	27.02	side of dune	19-May	3	600' Buffer	Nest failed 5/26to raccoon predation
30	25	DG(AL), UNB	23.66	shell flat area	19-May	2	Interior	Nest failed 6/4 to unknown cause
31	12	-,-:R, -, UNB	35.98	base of dunes	20-May	2	600' Buffer	DG (CHJ) fledged 7/19 day 35, Parents and chick moved outside of closure and chick fledged
32	20	DG(J9), UNB	37.69	front of dune	20-May	3	600' Buffer	Nest failed 5/24 to unknown cause
33	2	DG(L2), UNB	39.67	side of dune	22-May	2	600' Buffer	Failed to unknown cause, chick last seen 7/3
34	7	DG(UY), UNB	23.43	low dunes	24-May	3	Interior	Nest failed 6/5 to possible predation, raccoon track in area
35	16	DG(CP), UNB	46.42	shell flat	30-May	2	600' Buffer	unknown cause, chick last seen 6/20
36	5	DG(UR), DG(UP)GPS	40.16	edge of dunes	2-Jun	2	600' Buffer	Nest failed 6/18 to unknown cause
37	13	UNB, UNB	31.34	edge of dunes	2-Jun	1	600' Buffer	Nest was abandoned 6/5
38	1	DG(16), UNB	44.54	shelly area	4-Jun	2	Interior	Nest failed 6/6 to unknown cause
39	20	DG(J9), UNB	37.15	edge of dune	5-Jun	2	600' Buffer	Nest thought to have failed, rediscovered a week later and hatched after a day, chick dead7-9
40	18	DG(J6)*GPS, UNB	34	unknown	6-Jun	2	Interior	Nest failed 6/16 to unknown cause
41	17	DG(CF7)GPS, UNB	26.88	behind dunes	9-Jun	3	600' Buffer	Nest failed 6/11 to unknown cause
42	3	DG(AR),DG(AP)	33.75	open sand	10-Jun	2	600' Buffer	DG (CHC) banded 8/2 , 1 fledged on 8/8 day 39
43	26	DG(TE), UNB	28.24	behind dunes	13-Jun	2	600' Buffer	Nest failed 6/22 to unknown cause
44	27	Y, M: Y, -, UNB	23.74	soundside flat	19-Jun	3	Interior	DG (CHA) banded 7/22, 1 fledged on 7/28
45	1	DG(16), UNB	44	shelly area	24-Jun	1	Interior	Nest failed 6/28 due to flooding
46	7	DG(UY), UNB	23.47	flat area, soundside	2-Jul	3	Interior	Nest failed 7/4 to unknown cause

27 nesting pairs, 46 nests, 19 nests hatched, 12 chicks fledged

APPENDIX 1C AMERICAN OYSTERCATCHER NESTS- SHACKLEFORD BANKS-2013

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	UNB &UNB	47	Barden Inlet shoreline	20-Apr	3	none	nest failure 5/21, unknown
2	2	UNB &UNB	53.03	dune cliff	23-Apr	3	none	canine predation 5/24
3	3	DG (E9) &UNB	50.15	shell flat	23-Apr	3	none	nest failure 5/16, unknown
4	4	UNB &UNB	50.42	shell flat	1-May	3	none	nest failure 5/15, unknown
5	5	UNB &UNB	49.52	back of overwash	1-May	3	none	nest failure 5/15, unknown
6	6	UNB &UNB	49.75	low dune	15-May	1	none	nest failure 5/24, unknown
7	3	DG (E9) &UNB	50	overwash fan in dunes	29-May	3	none	chick failure 7/8, unknown. Adults took chick to soundside mudflat, chick last seen at 12 days old on 6/27
8	5	UNB &UNB	49.36	shell flat	6-Jun	1	none	nest failure 6/21, unknown

6 nesting pairs, 8 nests, 1 nests hatched, 0 chick fledge