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

2012 SUMMARY REPORT

A winter roosting flock of American Oystercatchers at Bottle Run Point. NPS PHOTO.

NATIONAL PARK SERVICE
CAPE LOOKOUT NATIONAL SEASHORE
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Abstract

There were 58 American Oystercatcher pairs nesting throughout the ocean beach habitat of the seashore in 2012. North Core Banks had 28 pairs, South Core Banks had 22 pairs, and Shackleford Banks had 8 pairs. Egg-laying was initiated on April 4th and a total of 99 nests were documented. Forty two chicks fledged: 26 from North Core Banks and 16 from South Core Banks. North Core Banks was the most productive with a fledge success rate of 0.93, while South Core Bank's fledge success was 0.73, 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 0.72 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, 2003 to 2012.

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 2012 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 22.5. South Core Banks (SCB) extends southward from Ophelia Inlet almost 25 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 2012, NCSU researchers 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. 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 purposes. For management purposes, the chicks are considered fledged when strong flight is actually observed.

Results

Fifty eight 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- 2012

North Core Banks	28 pairs
South Core Banks	22 pairs
Shackleford Banks	8 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 22.5

Hatch and Fledge Success

Ninty nine nests were found of which 31 hatched at least one egg. Forty-two chicks were known to survive 35 days to fledge (Table 2). Of the nests that failed, 32 nests failed due to unknown causes, 26 were lost to predation, six were abandoned, three were lost to weather events, and one was lost to human disturbance (Table 3). Raccoons (8), mink (3), fox (2), fish crow (2), cat (1), and undetermined mammalian (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 2012, fifty-eight known nesting pairs produced forty-two fledglings for a fledge success rate of 0.72. 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 2012

Island	**# pairs**	**#Nests**	**# Nests Hatched**	**# Chicks Fledged**
North Core Banks	28	45	16 (36%)	26
South Core Banks	22	41	15 (36%)	16
Shackleford Banks	8	13	0 (0%)	0
CALO Total	58	99	31 (31%)	42

Table 3. 2012 Causes of Nest Failure

Island	**Predation**	**Flooding/ Storms**	**Human Disturbance**	**Abandoned**	**Unknown**
North Core Banks	13	1	0	3	13
South Core Banks	11	0	0	3	12
Shackleford Banks	2	2	1	0	8
CALO total	26	3	1	6	32

Table 4. Summary of Seashore Oystercatcher Reproductive Success Data, 2003-2012.

Year	Island	#Nests	#Nests Hatched	# Pairs (nesting)	#Chicks fledged
2003	Cape Lookout N.S.	105	17 (16%)	54	8 (0.15)
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)

Chart 1. The number of seashore Oystercatcher nesting pairs and chicks fledged by year with simple linear regression lines, 2003 to 2012.

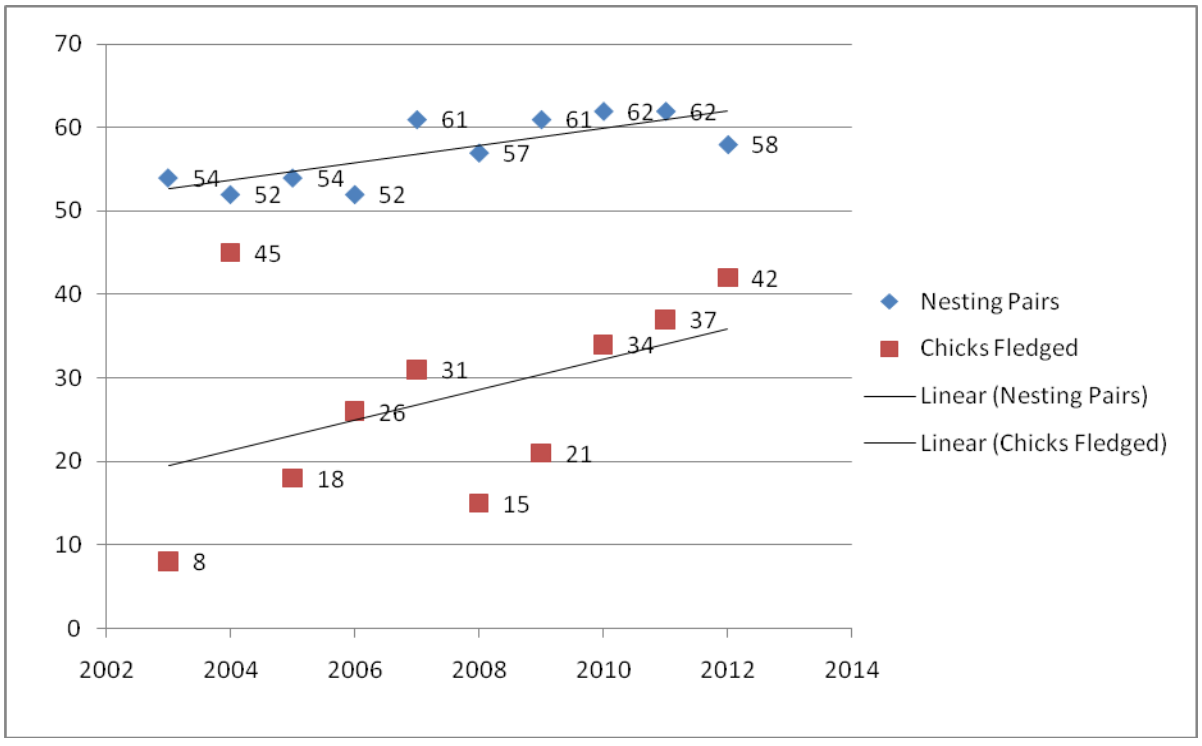


Table 5. Summary of North Core Banks, Ocracoke Inlet Mile 0 to Ophelia Inlet mile 22.5 Oystercatcher Reproductive Success Data, 2003-2012.

Year	Island	#Nests	#Nests Hatched	# Pairs (nesting)	#Chicks fledged
2003*	North Core Banks	36	7 (19%)	20	2 (0.10)
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)

* Excludes Middle Core Banks (mile 19 to mile 22.5) section due to no productivity monitoring

Table 6. Summary of Middle Core Bank section, Old Drum Inlet Mile 19 to Mile 22.5 Ophelia Inlet, Oystercatcher Reproductive Success Data from 2004 to 2012.

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)

Table 7. Summary of South Core Banks Oystercatcher Reproductive Success Data from 2003 to 2012.

Year	Island	#Nests	#Nests Hatched	# Pairs (nesting)	#Chicks fledged
2003	South Core Banks	59	9(15%)	27	6 (0.22)
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)

*Shackleford and South Core shared a nesting pair

Table 8. Summary of Shackleford Banks Oystercatcher Reproductive Success Data from 2003 to 2012.

Year	Island	#Nests	#Nests Hatched	# Pairs (nesting)	#Chicks fledged
2003	Shackleford Banks	10	1 (10%)	7	0 (0.00)
2004	Shackleford Banks	8	1 (14%)	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)

*Shackleford and South Core shared a nesting pair

Banding

Twenty-nine chicks and four adults were captured and banded in the park by NCSU researchers and park staff. Thirteen chicks fledged without bands mainly due to inaccessibility of Middle Core Bank section. Park staff and researchers recorded band re-sights of individuals and nesting pairs in the seashore throughout the summer. Of the 58 nesting pairs, 36 pairs (62%) had at least one individual of the pair banded, while 22 pairs (38%) were unbanded. NCB had 18 pairs banded and 10 pairs unbanded. SCB had 16 pairs banded and 6 pairs unbanded. SB had two pairs banded and six unbanded pairs. There are 48 (41%) individual adults that are banded and 68 (59%) that are unbanded in the nesting population in 2012. See appendix 1 for nesting pair re-sight data and 2012 chick band data. Green flags with 3 letter codes were used this year on all birds except one. There was one chick mortality due to banding efforts. On SCB a chick from nest 29 jumped into the Core sound to escape capture. The current pushed the chick south and when the chick swam back to shore a greater black-backed gull killed the chick. 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 2012 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 2012. 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 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. This suggests that intensive management of beach driving can produce similar results as no beach driving for American oystercatchers given this limited comparison.

There were two incidents in 2012 where traffic and young oystercatchers ran into trouble. On NCB, on the backroad between ramp 17a and 17b, an oystercatcher fledgling was found dead on the backroad at 7:45a.m. The fledgling was 42 days old from nest 22. A

Biological Science Technician found the bird buried in the sand with just the wing tips sticking up from the tire rut. It appeared the bird was struck by a vehicle the previous night or early that morning. At 9:30 p.m. on 6/22/12, a fledgling from SCB nest 8 flew into the headlights of a Park Ranger ATV, was struck and fatally wounded. That section of ocean beach had been reopened on 6/21/12. The ATV was traveling at 22-24 mph. The juvenile oystercatcher was 46 days old and just learning to fly.

Hatch rates in 2012 varied throughout the park. Hatch success rates were 36% on North Core Banks, 36% on South Core Banks and 0% on Shackleford Banks. Predators, flooding, and human disturbance were the known causes of some nest losses. Research video cameras were not used on nests in 2012. The number of unknown nest losses on NCB increased to 13 in 2012 from 3 in 2011 when video cameras were used. Fox predation was suspected for two nests on SB. Coyote tracks were also suspected in late summer. A coyote was photographed in November on SB. Evidence of fox den activity dating back to 2007 was also discovered. This could explain the low hatch success and productivity on SB since records have been kept. There was one nest loss on SCB that was attributed to an unknown canine predator. Fox tracks and/ or coyote were recorded on SCB in summer. There was one human disturbance related nest failure on SB, identified as such by heavy footprints around the nest on Memorial Day weekend. Park Rangers issued citations for people violating the resource closure around the nest on the shoreline near Beaufort Inlet. The adults abandoned the nest.

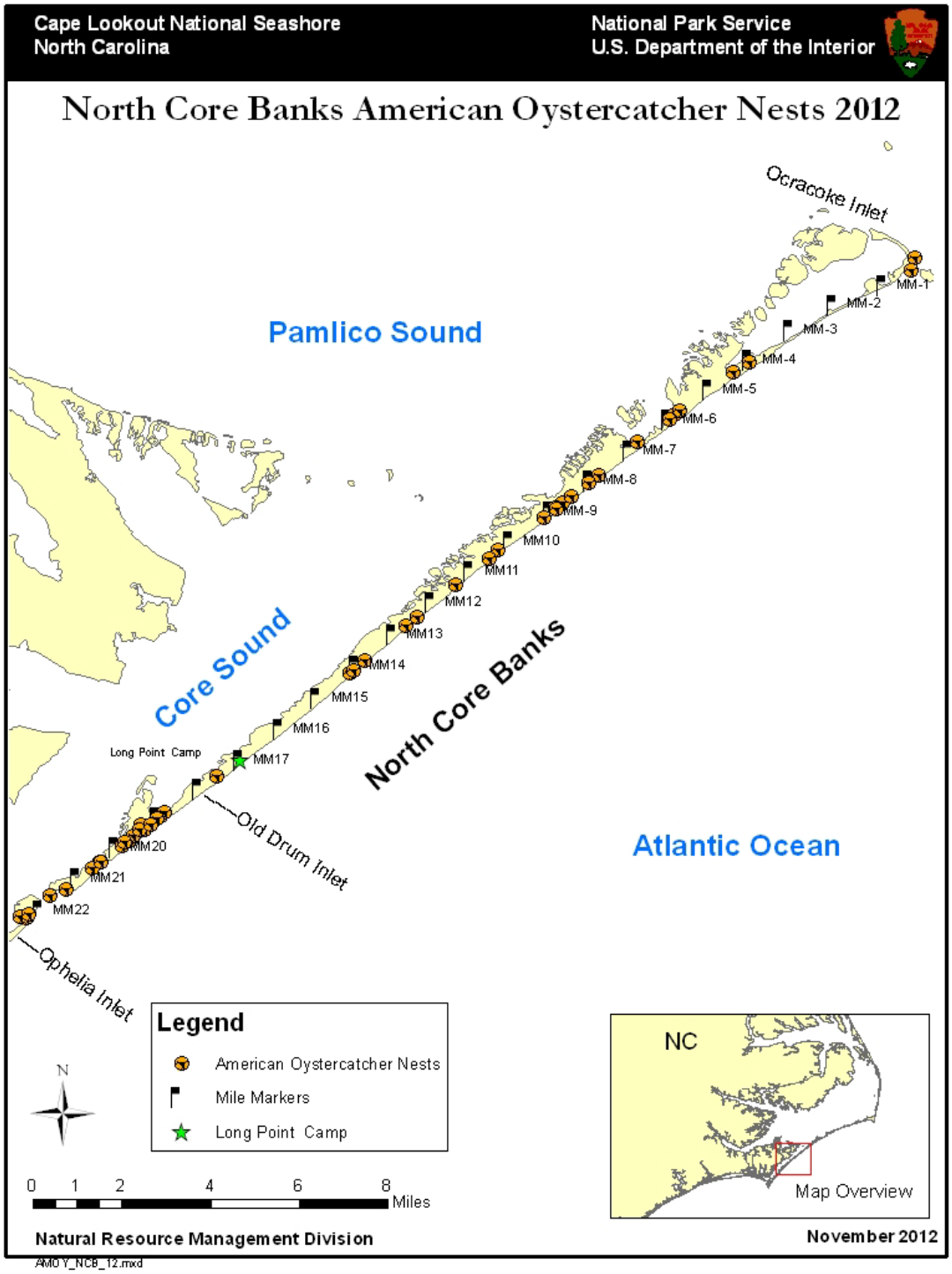
Fledging success in the park was 0.72 chicks per nesting pair with a large variance by island. Fledgling success rates were 0.93 on NCB, 0.73 on SCB, and 0.0 on SB. Fledge success on NCB was the second highest on record and Shackleford Banks continues to have low fledge success (Table 5 & 8). A range-wide productivity standard was established defining fledging at 35 days old. This standard provides consistency throughout the nesting range. A total of 42 chicks reached 35 days old and were considered fledged: this is reflected in the 0.72 productivity rate. However, we know that not all chicks can actually fly at day 35. The average age of chicks fledging in 2012 from 14 broods was 44 days from the hatch date. This calculation excludes 11 broods with unknown exact fledge dates. The range of fledging age, determined from the 14 broods, was from 38 to 52 days (Appendix 1). Six fledglings disappeared after considered fledged. Chicks are monitored and managed until they exhibited strong flight greater than 150 feet. Chicks are monitored and managed until they exhibited strong flight greater than 150 feet. Two of these birds were struck by vehicles as mentioned above. The other four disappeared by unknown causes while their parents remained on the beach on SCB.

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.


Cape Lookout National Seashore
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National Park Service
U.S. Department of the Interior
North Core Banks American Oystercatcher Nests 2012
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Long Point Camp
Old Drum Inlet
Atlantic Ocean
Ophelia Inlet
Legend
American Oystercatcher Nests
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Map Overview
Natural Resource Management Division
November 2012
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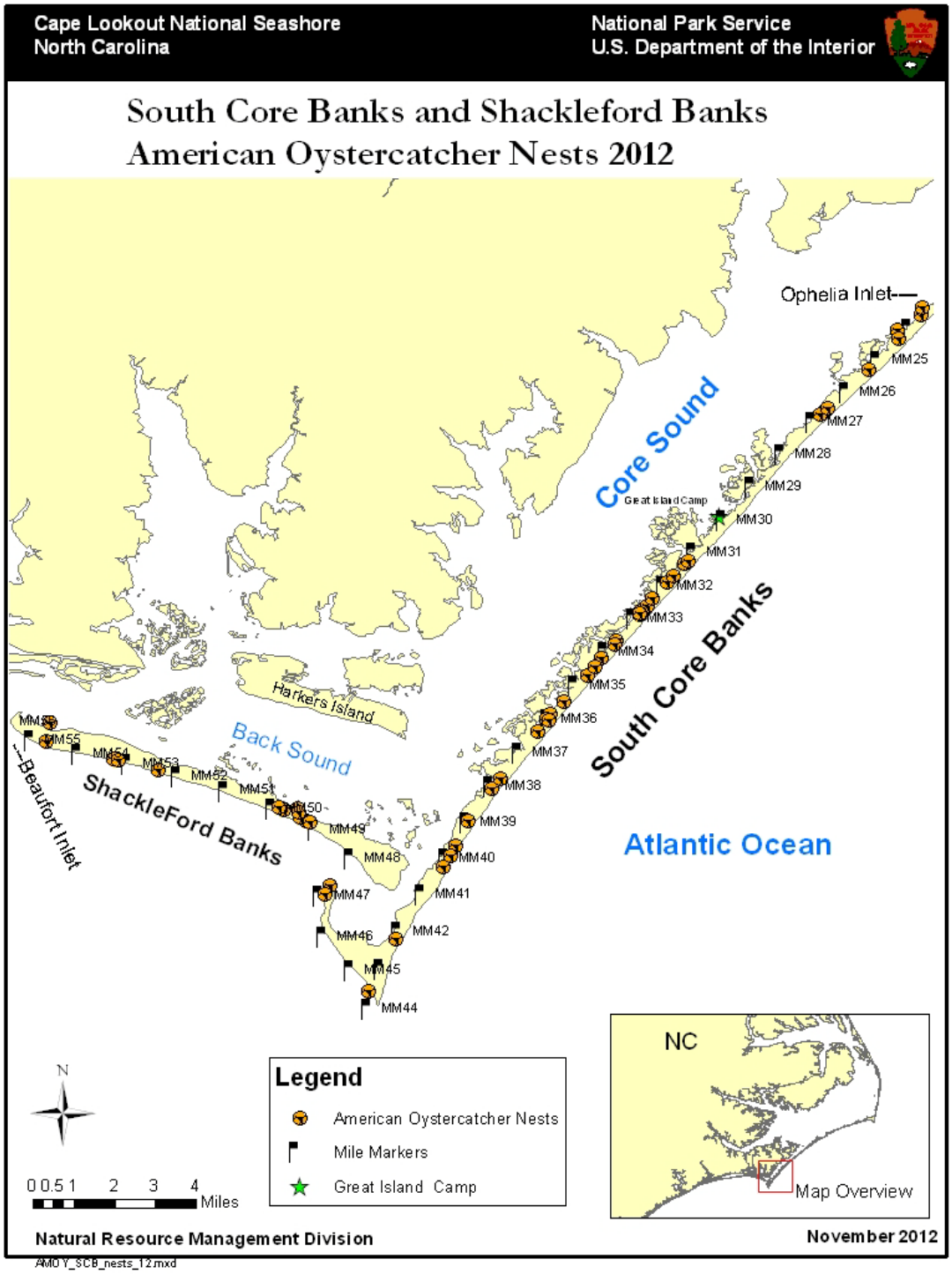
Figure 2.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APPENDIX 1A AMERICAN OYSTERCATCHER NESTS- NORTH CORE BANKS-2012

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	GR (73), UNB	9.24	open beach	8-Apr	2	600' Buffer	GR (CAT & CFE) fledge at day 41 on 6/17
2	2	UNB,UNB	8.84	base of dune	10-Apr	1	600' Buffer	Nest failed 4/12, UNK
2a	2	UNB,UNB	8.77	base of dune	12-Apr	1	600' Buffer	Nest failed 4/14, UNK, clutch continuation nest 2
3	3	UNB, UNB	6.82	sand hummock	16-Apr	3	Interior	2 fledge at day 41 on 6/24, GR (CAR) fledge
4	4	GR (C1), GR (F3)	5.78	small dune	16-Apr	3	600' Buffer	Nest failed 5/9, UNK
5	5	UNB, UNB	4.46	dune blowout	20-Apr	3	600' Buffer	1 fledge GR (CAX)
6	6	GR (T6), UNB	10.35	behind dunes	20-Apr	3	No	brood failed 5/22, UNK
7	7	GR(AO),GR (CE3)	5.89	sand hummock	21-Apr	2	600' Buffer	Nest failed 5/20, UNK, adult banded GR (CE3)
8	8	GR(CER), UNB	18.98	shell bed	25-Apr	3	Interior	Nest failed 5/13 UNK predation 1 dead adult on 5/8
9	9	GR(MO),GR(74)	19.40	shell bed	25-Apr	1	No	Nest failed 4/25, predation UNK
10	10	UNB, UNB	19.78	open beach	25-Apr	3	No	Nest failed 5/8, abandoned
11	11	UNB, UNB	19.95	behind dunes	25-Apr	3	No	2 fledge on 6/23 at day 46
12	12	UNB, UNB	20.51	behind dunes	25-Apr	3	No	Nest failed between 5/14 and 5/17, UNK
13	13	UNB, UNB	20.71	sand hummock	25-Apr	3	No	2 fledge on 6/23, unbanded
14	14	UNB, UNB	22.35	low dunes	25-Apr	3	Interior	2 fledge on 7/4, unbanded
15	2	UNB, UNB	8.57	base of dune	25-Apr	3	600' Buffer	Nest failed 5/4, predation raccoon
16	15	GR(CE1),GR(CE2)	11.45	base of dune	27-Apr	2	600' Buffer	Adults banded GR(CE1) & GR(CE2) nest failed 5/2
17	16	GR(EO),UNB	14.23	base of dune	28-Apr	3	600' Buffer	GR (CAY & CFR) fledge at day 45 on7/10
18	17	_:R,X, UNB	12.76	base of dune	28-Apr	3	600' Buffer	Nest failed 5/6, predation- raccoon
19	18	GR (F1), UNB	4.10	sand flat	30-Apr	3	600' Buffer	2 fledged on 7/18/12, 53 days, GR (CFN)
20	19	UNB, UNK	21.71	soundside flat	30-Apr	1	Interior	Nest failed 5/8 predation, UNK
21	20	UNB,UNB	0.19	base of dune	1-May	2	600' Buffer	Nest failed 5/10, UNK
22	21	GR(CE), UNB	17.61	dune blowout	2-May	3	600' Buffer	7/9 dead chick GR(CFJ)on back rd, CE9 & CAK
23	22	GR(EL), UNB	8.05	base of dune	2-May	1	600' Buffer	Nest failed 5/2, predation-crow
24	23	GR(W5), UNB	13.81	behind dunes	6-May	3	600' Buffer	Nest failed 5/17, UNK predation
25	9	GR(74), GR(MO)	19.40	pond shellflat	8-May	2	Interior	Nest failed 5/15, predation- raccoon
26	8	GR(CER), UNB	18.88	shell bed	8-May	1	Interior	Nest failed 5/13, abandoned
27	24	GR(AN), UNB	22.46	shell flat	10-May	3	Interior	3 fledge on 7/4--over 35 days old, unbanded
28	22	GR(EL), UNB	7.82	behind dunes	11-May	2	No	Nest failed 5/16, predation- raccoon

29	25	GR(M8), UNB	19.60	dune blowout	13-May	3	No	1 fledge on 7/2, 35+ days old
30	9	GR(74), GR(MO)	19.48	shell bed	13-May	1	No	Nest failed 5/21, predation- raccoon
31	2	UNB, UNB	8.96	shell flat	14-May	3	No	Nest failed 5/22, predation- raccoon
32	26	GR(K2), GR(UK)	21.37	low dunes	14-May	3	Interior	1 fledge on 7/4/12, 35+ days
33	27	GR(P5), UNB	22.30	shell flat	14-May	3	Interior	1 fledge on 7/4/12, 35+ days
34	17	_:R,X, UNB	12.47	base of dune	20-May	2	600' Buffer	Failed 6/9, UNK
35	20	UNB,UNB	0.44	low dunes	21-May	3	600' Buffer	Failed 6/3, most likely overwash
36	15	GR(CE1),GR(CE2)	10.56	base of dune	22-May	1	600' Buffer	Nest failed 6/11, UNK
37	4	GR (C1), GR (F3)	5.78	sand hummock	25-May	3	600' Buffer	Nest failed 5/31, UNK
38	22	GR(EL), UNB	8.10	sand hummock	1-Jun	1	600' Buffer	Nest failed 6/3, UNK-possibly crow
39	23	GR(W5), UNB	14.15	sand flat	2-Jun	2	600' Buffer	GR (CFA &CFT), fledge at day 43 on 8/8
40	10	UNB, UNB	19.86	behind dunes	2-Jun	2	No	Nest f ailed 6/18, UNK
41	7	GR(AO),GR (CE3)	6.02	low dunes	3-Jun	2	600' Buffer	Nest failed 6/20, predation- cat
42	8	GR(CER), UNB	19.07	sand flat	9-Jun	2	Interior	One adult banded GR (CER) nest failed 6/21, UNK
43	9	GR(MO), GR(74)	19.26	shell flat	9-Jun	1	No	Nest failed 6/18, UNK
44	2	UNB,UNB	8.98	open beach	10-Jun	2	600' Buffer	Nest failed 7/21, UNK
45	28	_,BX:_, UNB	20.50	dune blowout	23-Jun	2	No	Nest failed

28 nesting pairs, 45 nests, 16 nests hatched, 26 chicks fledged

APPENDIX 1B AMERICAN OYSTERCATCHER NESTS- SOUTH CORE BANKS-2012

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	GR(16), UNB	44.43	high shell flat	4-Apr	3	Interior	GR(CA8) & GR(CAF) fledge at day 52 and 39(last seen)
2	2	GR(J6), UNB	34.22	toe of dune	7-Apr	2	600' Buffer	Nest failed 4/22- unknown predation
3	3	GR(L2), X, -:-,-	39.67	top of dune	8-Apr	3	600' Buffer	GR (CAN) fledge at day 42- 6/17, last seen 6/21
4	4	GR(R8), OR,X:OR,-	38.09	between dunes	8-Apr	2	600' Buffer	GR(CAP) last seen on 6/13/12 at 41 days.
5	5	UNB, UNB	47.33	dune	8-Apr	3	Interior	Brood failed 5/19, UNK
6	6	Y,X:W,-, UNB	23.82	soundside	10-Apr	3	Interior	GR (CFM,CFK, CAO) 3 fledged on 6/24 by 47 days
7	7	GR(AR), GR(AP)	33.7	behind dunes	12-Apr	1	600' Buffer	Nest failed 4/13, mink tracks in dunes in front of nest
8	8	GR(UR), GR(UP)	39.91	base of dunes	12-Apr	3	600' Buffer	GR(CFF), fledged at 42 days, reported dead on 6/22
9	9	GR(AK), GR(AL)	23.63	shell flat area	13-Apr	3	600' Buffer	GR(CE4), GR(CE5) chicks fledge by 46 & 52 days
10	10	GR(M1), GR(J0)	35.5	base of dunes	14-Apr	3	600' Buffer	GR(YN) fledge, GR (CA6 or CE8) fledge , 41 days
11	11	GR(K0), UNB	32.71	base of dunes	14-Apr	3	600' Buffer	Nest failed 4/21, raccoon tracks at nest
12	12	,-:R,-, UNB	35.92	behind backroad	16-Apr	3	no	Nest failed 5/2, UNK
13	13	UNB, UNB	31.36	shell flat	20-Apr	3	600' Buffer	Nest empty 5/17, failed UNK
14	7	GR(AR), GR(AP)	33.78	base of dunes	20-Apr	2	600' Buffer	Unbanded fledge on 6/26 day 38
15	14	GR(J9), UNB	37.78	base of dunes	20-Apr	3	600' Buffer	Brood failed 6/18/2012. Cause of chick loss unknown
16	15	UNB, UNB	26.68	shell flat area	21-Apr	3	600' Buffer	nest predated 5/10,canine tracks at nest
17	16	UNB, UNB	47.09	in dunes	24-Apr	3	Interior	GR(CE6) last seen on 7/1 at 46 days, no flight
18	17	GR(P4), GR(J3)	24.3	shell flat area	24-Apr	3	Interior	Nest failure on 5/21, UNK
19	18	GR(T8), UNB	32.89	base of dunes	1-May	3	600' Buffer	Nest failed 5/5 raccoon tracks found at nest
20	11	GR(K0), UNB	31.9	behind dunes	4-May	3	600' Buffer	Nest failed 5/7, UNK
21	2	GR(J6), UNB	34.71	base of dunes	4-May	2	600' Buffer	Nest failed 5/10- mink tracks
22	19	UNB, UNB	39	behind dunes	9-May	1	no	GR(CAL), fledge on 6/18, last seen 6/19,adults in area.
23	20	UNB, UNB	42.24	low dunes	14-May	1	600' Buffer	Nest failed 5/19/12, adults did not remain in territory
24	12	,-:R,-, UNB	36.05	behind backroad	17-May	3	no	Nest failed 5/23, UNK
25	18	GR(T8), UNB?	32.79	behind backroad	17-May	2	600' Buffer	Nest failed 5/18, UNK
26	21	GR(33), UNB	25.36	low dunes	17-May	2	600' Buffer	GR (CE7) fledge at day 50 on 8/2
27	11	GR(KO), UNB	32.63	high beach	20-May	3	600' Buffer	Nest failed 5/24, UNK
28	2	GR(J6), UNB	34.46	high beach	16-Jun	2	600' Buffer	Brood failed 6/26, chicks last seen 6/25, UNK
29	22	GR(UY), UNB	23.47	soundside	22-May	3	Interior	chick 3 killed by gull during capture attempt on 6/26

30	15	UNB, UNB	26.8	shell flat	22-May	2	600' Buffer	Nest failed 5/25, UNK
31	13	UNB, UNB	31.28	low dunes	28-May	1	600' Buffer	Nest failed 5/30,UNK
32	18	GR(T8), UNB	32.88	high beach	28-May	1	600' Buffer	Nest failed 6/3, Abandoned
33	12	,-:R,-, UNB	36.4	behind backroad	3-Jun	2	no	Nest failed 6/11, UNK predation
34	13	UNB, UNB	31.75	low dunes	3-Jun	1	600' Buffer	Nest failed 6/4, UNK
35	15	UNB, UNB	26.59	shell flat	4-Jun	3	600' Buffer	Nest failed 6/25, UNK predation
36	11	GR(K0), UNB	32.43	dune	6-Jun	2	600' Buffer	Nest failed 6/12, mink predation
37	17	GR(P4), GR(J3)	24.3	shell flat	9-Jun	1	600' Buffer	Nest failed 6/17, UNK
38	20	UNB, UNB	40.27	dune	12-Jun	1	600' Buffer	Nest failed 6/18, UNK
39	18	GR(T8), UNB	32.86	dune	13-Jun	1	600' Buffer	Nest failed 6/16, Abandoned
40	12	,-:R,-, UNB	36.07	dune	24-Jun	2	600' Buffer	Nest failed 7/11, UNK
41	17	GR(P4), GR(J3)	24.35	shell flat	30-Jun	1	Interior	Nest failed 7/4, Abandoned

22 nesting pairs, 41 nests, 15 nests hatched, 16 chicks fledged

APPENDIX 1C AMERICAN OYSTERCATCHER NESTS- SHACKLEFORD BANKS-2012

Nest #	Pair #	Adult BANDS	MILE	LOCATION	FOUND	EGGS	Closure	COMMENTS (abbreviated)
1	1	UNB, UNB	53.31	on dune	4/9/2012	3	no	nest failed by 4/23, unknown loss
2	2	UNB,UNB	49.66	on soundside	27-Apr	3	no	nest flooded on 5/7
3	1	UNB,UNB	53.4	upper beach	7-May	3	no	nest predated 5/29, fox tracks right to nest
4	3	UNB,UNB	52.48	upper beach	7-May	1	no	nest failed by 5/25, unknown.
5	4	UNB,UNB	49.35	washover fan	9-May	1	no	nest failed by 5/14, unknown
6	5	G (E9), UNB	49.87	shell flat	9-May	3	no	nest failed by 5/14, unknown
7	6	R (1J), UNB	54.8	washover fan	14-May	1	no	incubated 1 egg until 6/18, egg missing on 6/22-UNK
8	7	UNB,UNB	54	soundside shoreline	21-May	2	Small	posted on 5/25-nest active, ranger reported multiple violations of bird area including people sitting in chairs in bird area, 5/29-1 egg, nest abandoned-multiple footprints, sand castles in closure near nest
9	5	G (E9), UNB	49.96	shell flat	25-May	3	no	nest failed by 6/15, unknown
10	4	UNB, UNB	49.47	behind dunes	25-May	1	no	nest failed 6/7, fox tracks at nest
11	2	UNB,UNB	49.59	soundside shoreline	1-Jun	1	no	nest failed by 6/7-flooded and tent at nest
12	8	unknown	49.27	washover fan	1-Jun	1	no	nest failed by 6/4-unknown, but human footprints through nest site
13	1	UNB,UNB	53.3	upper beach	8-Jun	2	no	nest failed by 6/25

8 nesting pairs, 13 nests, 0 nests hatched, 0 chick fledge