CAPE HATTERAS NATIONAL SEASHORE
AMERICAN OYSTERCATCHER (*HAEMATOPUS PALLIATUS*) MONITORING
2013 ANNUAL REPORT

National Park Service
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ABSTRACT

In 2013, 27 pairs of American oystercatchers (AMOY) nested at Cape Hatteras National Seashore (CAHA). A total of 42 nests were identified in the park which includes re-nests from pairs with failed nest attempts. Of these nests, 19 hatched and produced a total of 35 chicks. Ten pairs of AMOY were successful in fledging 15 chicks which represents a 0.55 fledge rate per pair.

INTRODUCTION

The AMOY is a ground-nesting shorebird native to North Carolina. As with many shorebirds, oystercatcher numbers have been in sharp decline over the past 20 years. The AMOY is designated as a Species of Special Concern by the U.S. Fish and Wildlife Service (USFWS) and North Carolina. Habitat loss and fragmentation due to beach development has resulted in nesting attempts in marginal habitat. Nesting attempts in marginal habitat is thought to lead to an increased number of unsuccessful breeding attempts. Off-road-vehicle (ORV) use on the beach can lead to direct mortality of chicks and eggs and pedestrian disturbance can indirectly cause loss of nests or chicks. The main cause of direct mortality of chicks and eggs is believed to be mammalian predators. Studies suggest that there is also an interaction between human presence and predation events by mammals. (McGowan 2004) (McGowan and Simons 2006).

ORV Management Plan

On February 15, 2012 the Cape Hatteras National Seashore Off-Road Vehicle Management Plan and Special Regulation (2012, ORVMP) was enacted at CAHA. It was developed from 2007-2012 and was accompanied by a special regulation detailing requirements for off-road vehicle (ORV) use at CAHA. A copy of the ORVMP and other related documents are available electronically at http://parkplanning.nps.gov/caha. The ORVMP includes establishment of pre-nesting closures and buffer requirements for nesting birds and chicks as well as the requirement for an ORV permit to drive on CAHA beaches. This was the second year the ORVMP guided the management of protected species at CAHA.

METHODS

CAHA employs a number of methods in the monitoring and protection of breeding AMOY. These include protection of back-shore habitat; installing pre-nesting closures for birds exhibiting territorial behavior; monitoring of breeding pairs, nests and chicks; banding of juvenile AMOY; removing predators; and adaptively moving closure boundaries to comply with the required buffers of the ORVMP for nests and chicks. Chick movements were monitored daily to ensure they were adequately protected by the established buffers. Breeding behavior is defined as territorial displays, courtship, mating, scraping or other nest-building activities by birds setting up in new or previously established territories. AMOY breeding behavior, nests and scrapes received 150 meter buffers to reduce possible disturbance to courting or incubating adults. Once the nests hatched, 200 meter buffers were maintained around the chicks. Larger buffers were used if individual birds were observed to be disturbed at these distances.

Closures
Pre-nesting closures for AMOY were installed in areas where the habitat was suitable for nesting and where nesting has occurred in more than one of the past five years. As per the ORVMP, AMOY required a 150-meter buffer for breeding behavior, scrapes and nests and a 200-meter buffer for unfledged chicks. When multiple species were present, the greatest applicable buffer distance was used. In 2013, 25 AMOY breeding pairs held territories within the pre-nesting closures and 39 of the 42 AMOY nesting attempts occurred inside the pre-nesting closures (Appendix A; Maps 1-6).

Monitoring
Breeding pairs of AMOY were located by surveying potential habitat including all ocean-side beaches and sound-side beaches. The presence of birds that were observed near the same location on a regular basis, or birds giving any kind of territorial or breeding display were monitored closely to determine if they were nesting. If nests or scrapes were found, observers marked the location with a handheld GPS unit. Closures were installed (or modified) as necessary to maintain the required buffer distance(s).

Incubating pairs with nests were monitored daily and observed even more closely near expected hatch dates. Expected hatch dates were calculated from an average nest incubation period for AMOY as 27 days from first egg laid or 24 days from last egg laid (Baicich and Harrison 1997). If an incubating bird was not observed on the nest, the nest scrape was checked for the presence of eggs and, if the eggs were missing, the area was inspected for signs of predators. Once chicks hatched, staff attempted to observe each chick daily barring severe weather.

Chick Movement
After hatching, staff installed a minimum buffer of 200 meters around AMOY chicks. Chicks have been observed to move as much as 100 meters on the first day after hatching and up to 500 meters or more within the first week after hatching. As the chicks commenced their movement away from the nest sites the closures were expanded when necessary to ensure adequate buffers.

Predator Control
Because mammalian predation is a major factor in AMOY nest loss and chick mortality (McGowan 2004), predator control by trapping was conducted to target predators near nests and chicks in 2013. Trapping was conducted in all districts. When technicians surveyed areas they documented and reported any signs (prints, scat, etc.) of predators they observed. If predator sign was found in a closure, trapping efforts were increased in that area with the intent of targeting the specific predator in that area.

Banding
In addition to carrying out actions required by the ORVMP, resource management staff banded AMOY chicks under North Carolina State University's (NCSU) banding permit. Banding aids in tracking survival of individuals, determining breeding success of individual pairs, documenting movement of young birds to other areas, and aids in determining breeding site fidelity. Being able to identify individual birds has also allowed NCSU and CAHA staff to coordinate data with scientists from other states to examine genetics, migration patterns, and long-term survival rates of the AMOY population.

RESULTS

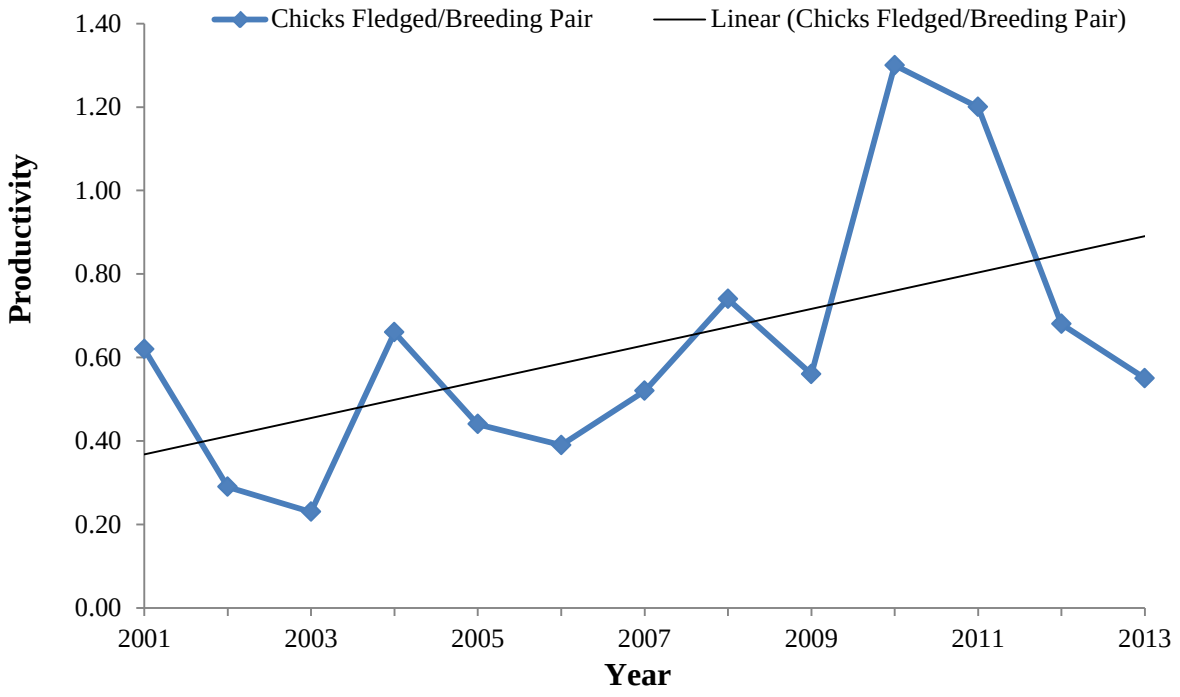
In 2013, 27[1] pairs of AMOY nested at CAHA. Two pairs were found on Bodie Island, 14 were found on Hatteras, eight were found on Ocracoke, and three were found on Green Island. Altogether, these pairs produced a total of 42 nests of which 19 nests hatched.
Ten pairs were successful in fledging 15 chicks which represents a 0.55 fledge rate per pair (Table 1). Although the chicks fledged per breeding pair at CAHA appears to be cyclical, there is generally an increasing trend in productivity when looked at over multiple years (Figure 1).

Table 1. Summary of AMOY Reproductive Success 2008 – 2013.

Year	Breeding Pairs	Total Nests	Nests Hatched	Successful Pairs (at least 1 chick fledged)	Number of Chicks Fledged	Fledge Rate
2008	23	32	13	10	17	0.74
2009	23	31	15	8	13	0.56
2010	23	28	21	15	30	1.3
2011	23	26	22	17	28	1.2
2012	22	30	18	11	15	0.68
2013	27[1]	42	19	10	15	0.55

[1] Could also be calculated as 26 pairs. One male AMOY nested twice, each time with a different female.

Figure 1. Fledge Rate and Trend for AMOY Breeding at CAHA from 2001-2013.



The first nest of the season was found on April 10, 2013 and the last nest was found on June 21, 2013. The average time to hatch for the 36 nests with known incubation was 31.2 days. The average time to fledge for the 10 broods that fledged was 41.6 days. This average does not include separate dates for individuals within a brood but is based on the date of the first chick to fledge from all of the broods.

Nest Failures and Chick Mortality

Twenty-three nests were lost in 2013 breeding season. One nest was lost to storm over wash, 17 nests were lost to predation, and five nests were abandoned. Mammalian, ghost crab and avian predators are believed to be responsible for the 17 nests lost to predation. It is difficult to attribute nest loss to the exact species if the predation is not directly observed.

Determining cause of chick loss is even more difficult than determining cause of nest loss. In the 2013 season there were nine complete brood failures and four partial brood failures. Environmental conditions surrounding the nest site may obscure evidence of predation. Chicks can move large distances and it is sometimes difficult to locate them. Searches for missing chicks may be intentionally delayed since many different types of disturbances may cause the chicks to hide out of view from the observers.

Human Disturbance

Human disturbance, direct or indirect, can lead to the abandonment of nests or loss of chicks. Throughout the season, resource management staff documented 81 pedestrian, five ORV, and seven dog, boat or horse intrusions in the pre-nesting closures. The numbers are conservative since sites are not monitored continuously, weather erases tracks, and staff did not disturb an incubating pair or young in order to document disturbance. These numbers indicate violations to closures specifically containing nesting AMOYs or habitat protected for AMOYs. It is important to note that most of the closures contained multiple species, including AMOY, colonial waterbirds, and piping plovers. Most illegal entries were not witnessed, but documented based on vehicle, pedestrian, or dog tracks left in the sand. Pedestrian entry most often required visitors to lift or stoop under the string that connected all posted signs, while vehicular entry required visitors to drive through or around a sign boundary. Visitors' unleashed dogs are also a threat to protected species and continue to be a problem.

Banding and Banded AMOY

A total of 201 AMOY have been banded at CAHA since 2002 consisting of 48 adults and 153 chicks. As the result of this long term cooperative banding project with NCSU, CAHA has begun to document recruitment as banded chicks survive to adulthood and join the breeding population. Banded birds enabled staff to identify breeding pairs and unpaired individuals with confidence. In 2013, CAHA RM staff banded eight chicks with uniquely identifiable bands.

DISCUSSION

In 2013, four new AMOY pairs and two new individuals joined the CAHA breeding population for a total of 27 AMOY pairs, the highest number of breeding pairs since 2004. These pairs produced 42 nests, the highest number of nests since 2002. Despite an elevated number of pairs and nests the fledge rate of 0.55 is slightly lower than previous years.

Increased mammalian predations attributed to low hatch and fledge rates. The high number of predation incidents could also be responsible for the increased number of nests. Of the 24 pairs with known nesting dates ten pairs re-nested at least once after their nest was depredated.

During the 2013 breeding season (March to June) lone birds and pairs of birds, both unbanded and banded, unassociated with nests were observed at CAHA. The age of many of the banded birds is known and some were of age to nest in 2013, but did not, either due to their inability to find, establish and hold a territory, or inability to find a mate of breeding age. Other observed birds will first come into breeding age in 2014.

Field staff is trained to identify breeding behaviors associated with territory establishment to allow for the immediate protection of these areas. Adequate protection from disturbance and a continuation of the predator control program should result in a continued increase in population and successful AMOY pairs at CAHA over time.

REFERENCES

Baicich, P.J. and C.J.O. Harrison. A Guide to the Nests, Eggs, and Nestlings of North American Birds (Second edition). Natural World Academic Press, New York. 1997.

McGowan, C.P., 2004. Factors affecting nesting success of American Oystercatchers (Haematopus palliatus) in North Carolina. Unpublished M. Sc. Thesis, North Carolina State Universtiy, Raleigh, North Carolina.

McGowan, C.P., T.R. Simons, 2006. Effects of human recreation on the incubation behavior of American Oystercatchers. The Wilson Journal of Ornithology 118:485-493.

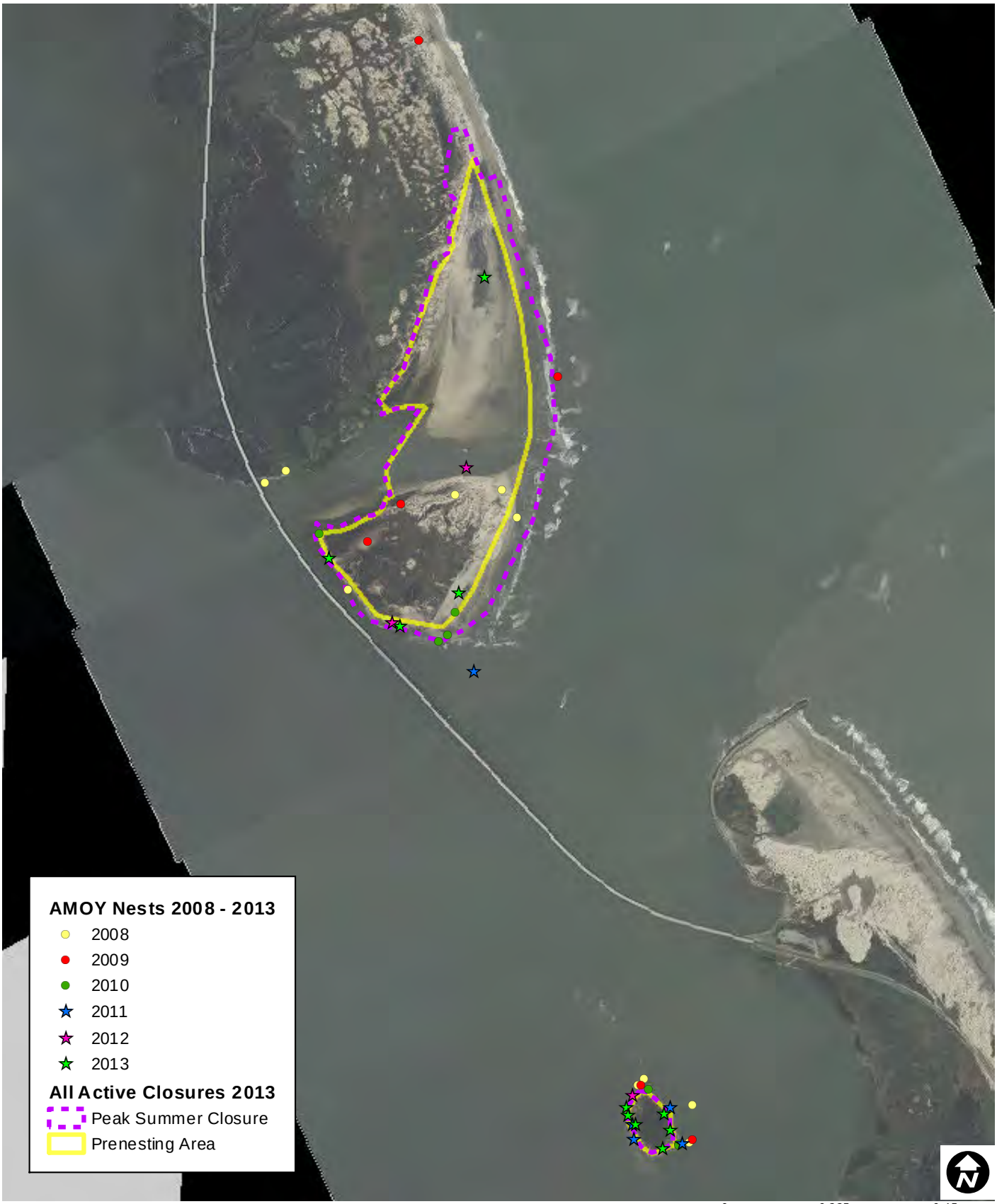
United States. Dept of Interior. National Park Service. 2010. Cape Hatteras National Seashore Off-Road Vehicle Management Plan and Special Regulation." 36 CFR 7. 2012. Print.

APPENDICES

APPENDIX A: MAPS

Map 1: Bodie Island and Green Island AMOY Nesting Activity 2008-2013
Map 2: Bodie/Hatteras AMOY Nesting Activity 2008-2013
Map 3: North Hatteras AMOY Nesting Activity 2008-2013
Map 4: Southeast Hatteras AMOY Nesting Activity 2008-2013
Map 5: Southwest Hatteras AMOY Nesting Activity 2008-2013
Map 6: Ocracoke Island AMOY Nesting Activity 2008-2013

Map 1: Bodie Island & Green Island AMOY Nesting Activity, 2008 - 2013



Map 2: Bodie Hatteras AMOY Nesting Activity, 2008 - 2013

NAD 83 UTM Zone 18N

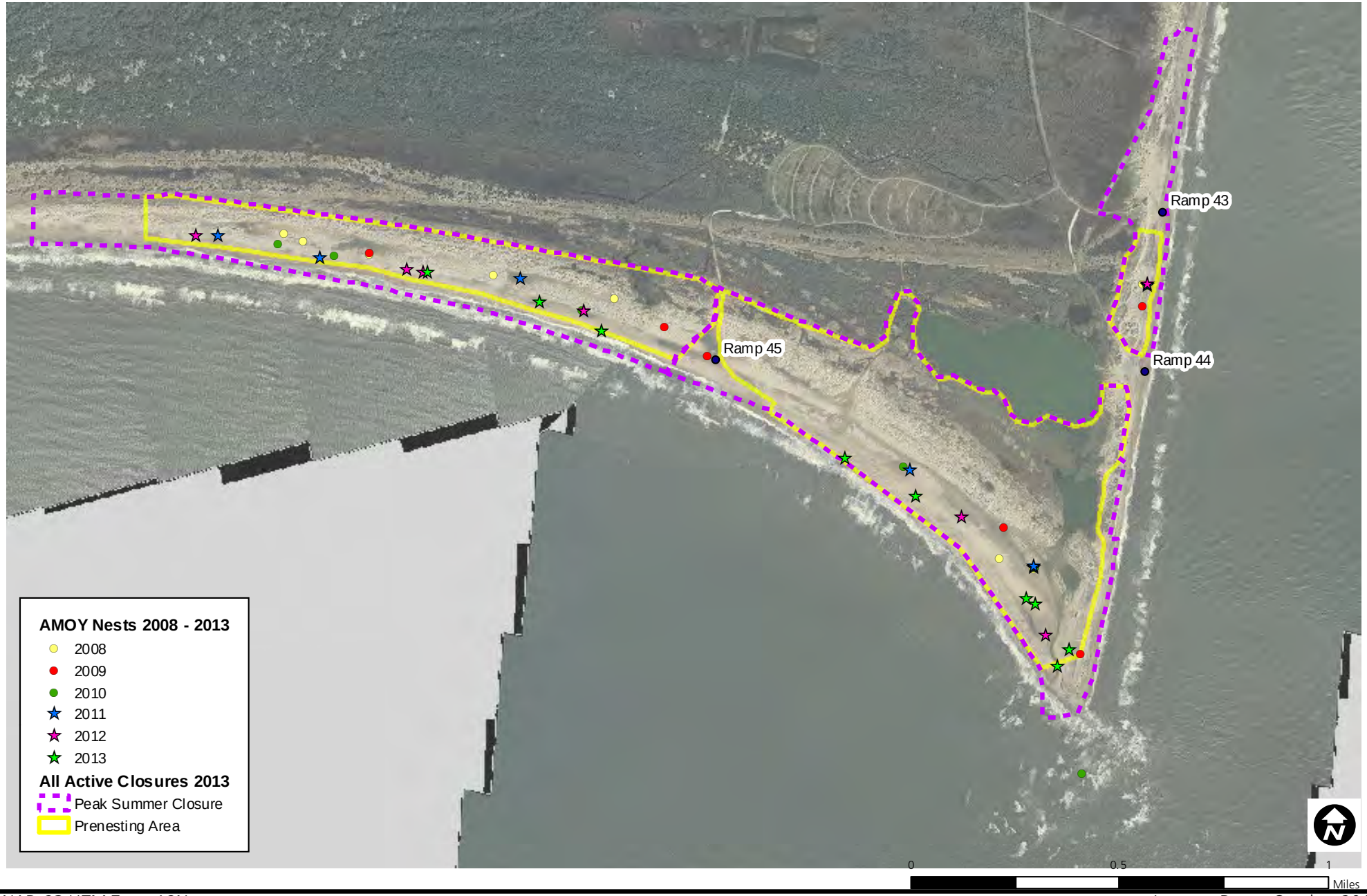
Imagery: October 2013

Map 3: North Hatteras AMOY Nesting Activity, 2008 - 2013

NAD 83 UTM Zone 18N

Imagery: October 2013

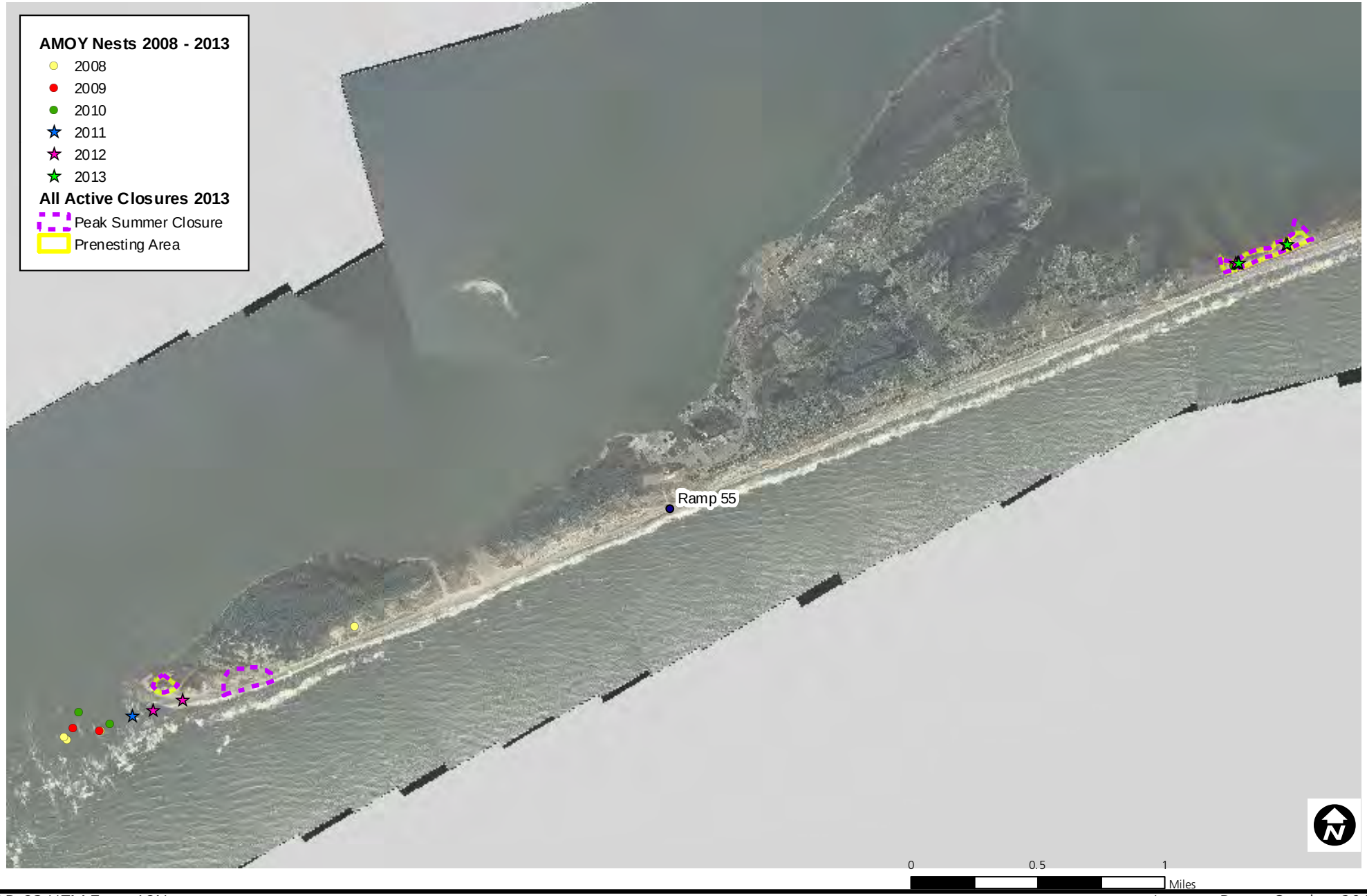
Map 4: Southeast Hatteras AMOY Nesting Activity, 2008 - 2013



NAD 83 UTM Zone 18N

Imagery Date: October 2012

Map 5: Southwest Hatteras AMOY Nesting Activity, 2008 - 2013



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Imagery Date: October 2012

Map 6: Ocracoke Island AMOY Nesting Activity, 2008 - 2013