2017

TOWN OF ORLEANS - HABITAT CONSERVATION PLAN ANNUAL REPORT ON PIPING PLOVERS AND SPECIES OF SPECIAL STATUS

"FIRST FLIGHT" Photo courtesy: Terry Bull, Orleans Shorebird Monitor 2017

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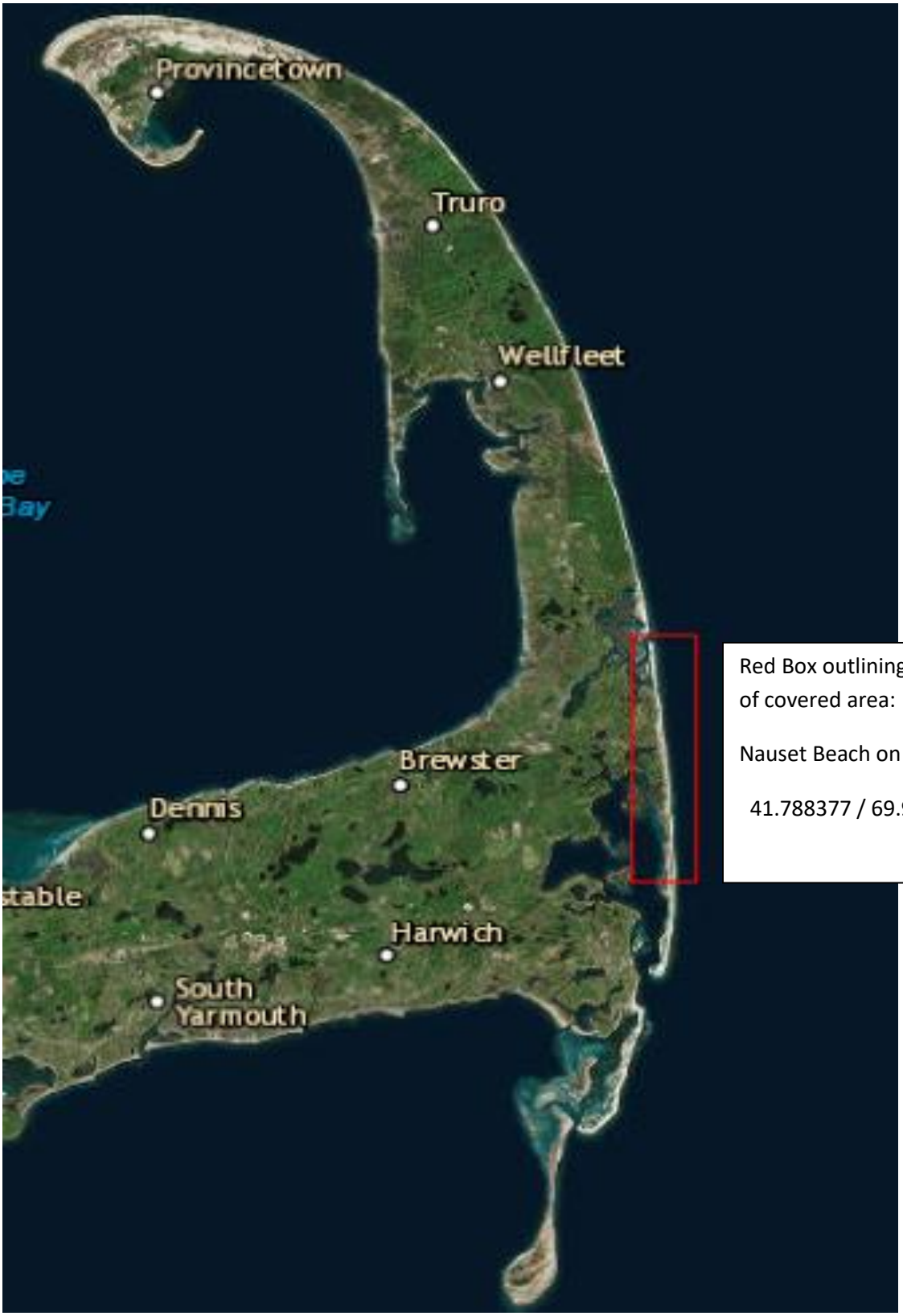


CHAPTER 1 INTRODUCTION

1.1 Introduction to 2017 Town of Orleans Statewide HCP

On July 8, 2016, the Massachusetts Division of Fisheries & Wildlife (MADFW) and the U.S. Fish & Wildlife Service (USFWS) issued a three-year Certificate of Inclusion (COI) to the Town of Orleans under the Statewide Habitat Conservation Plan (HCP). In 2017 (year two), similarly to 2016 (year one), under the Permit standard, Orleans was eligible for 2 takes based on the number of productive nesting Piping plover pairs from the previous season.

The Over-Sand Vehicle (OSV) Trail on Nauset Beach South closed at 6:00 am on June 6th to all OSV due to the presence of unfledged Piping plover chicks within the vicinity of the OSV corridor. By July 11, all of the unfledged chicks in the vicinity of the OSV corridor had fledged except for the (N-N2A) brood which consisted of three chicks. At this time, it was forecasted that a 3-day "nor'easter" weather system was due to make direct contact with Nauset Beach. Considering the forecasted weather, we decided it best to delay the implementation of the HCP until the effects of storm driven overwash leading to possible re-nests could be assessed. On July 13, MADFW was contacted by the Town of Orleans with a request for one take exposure issued under the covered activity *Over-sand Vehicle Use in the Vicinity of Unfledged Chicks.* At 8:00 am on Saturday July 15, the Town of Orleans Statewide HCP was implemented.

The HCP brood (N-N2A) consisted of two adult Piping plovers and three chicks (9 days old) at the time of implementation. By implementing the Statewide HCP program on July 15, 2017, this allowed OSV to pass through the Pochet Wash area to access the miles of Nauset Beach South that had been closed for 39 days. On August 1, 2017, the three chicks of the (N-N2A) brood were declared fledged; and the 2017 HCP concluded. The HCP was able to open the beach for an additional 18 days which under the standard "Massachusetts Division of Fisheries and Wildlife's (MADFW's) Guidelines for Managing Recreational Use of Beaches to Protect Piping plovers, Terns, and Their Habitats in Massachusetts (MADWF 1993)" would have normally remained closed.

1.2 2017 Town of Orleans Statewide HCP Implementation

Plan Location: Nauset Beach South Trail, Orleans

Covered Activity: Over-Sand Vehicle Use in the Vicinity of Unfledged Chicks

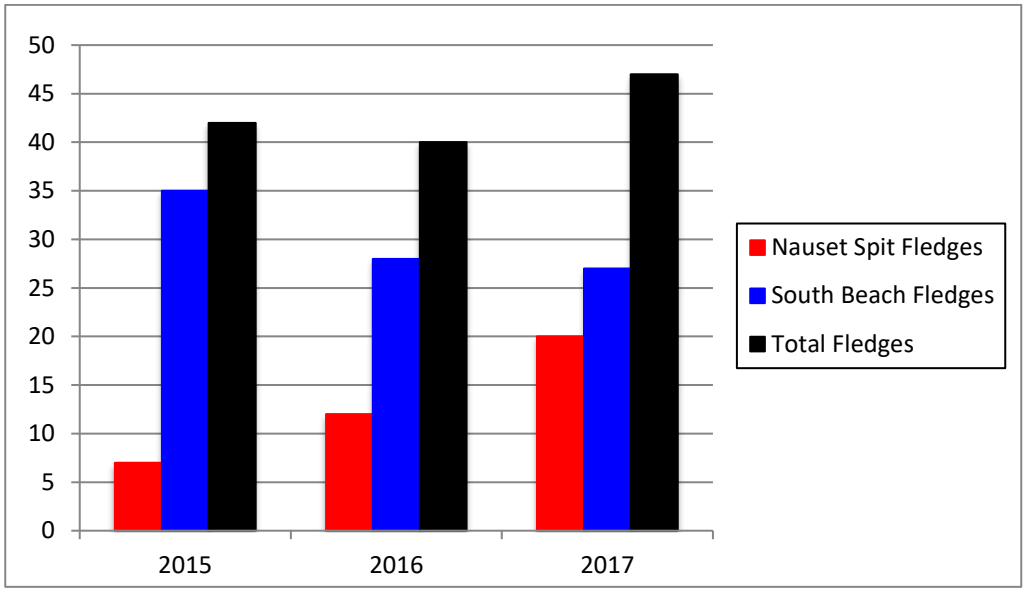
Allowable Take Exposures : 2
Take Exposures Used: 1 (Brood N-N2A)

Start of Implementation: July 15, 2017
End of Implementation: August 1, 2017

Days Brood(s) Exposed to Covered Activity: 18 days
% of Broods Exposed: 6.66% (1 brood out of 15 productive nests)

Age of Chicks When First Exposed: 9 days old (Hatched on 7/6)

Table 1: Fledge Count Piping plovers since HCP Implementation 2015-2017



1.3 Summary of 2017 Shorebird Monitoring Program: Piping plovers

Beginning early February 2017, historic shorebird nesting sites, as well as, potential shorebird nesting habitats, were fenced off with symbolic fencing on both Nauset Spit and Nauset Beach South. By April 1, all fifteen miles of symbolic fencing was properly installed.

While fencing on March 26, the first Piping plover was observed by the Orleans' Natural Resources Officer/Head Shorebird Monitor (NRO) on Nauset Beach South near Little Pochet Wash (LP-S). Daily, dusk and dawn, Piping plover monitoring began March 27. The first nest was found on May 9 (LP-N1) and the last Piping plover brood fledged (SB-T3-N-B) on August 9. Least tern monitoring continued through Sept 24 when the last Least tern chick took flight.

In all, Nauset Beach had 19 nests with 15 productive nests fledging 47 chicks. Within the 15 productive nests, 6 nests did not hatch all of their four laid eggs, leaving 12.76% of laid (potential) eggs unhatched in nests. Five out of six of those nests that produced unhatched eggs were located on Nauset Beach South.

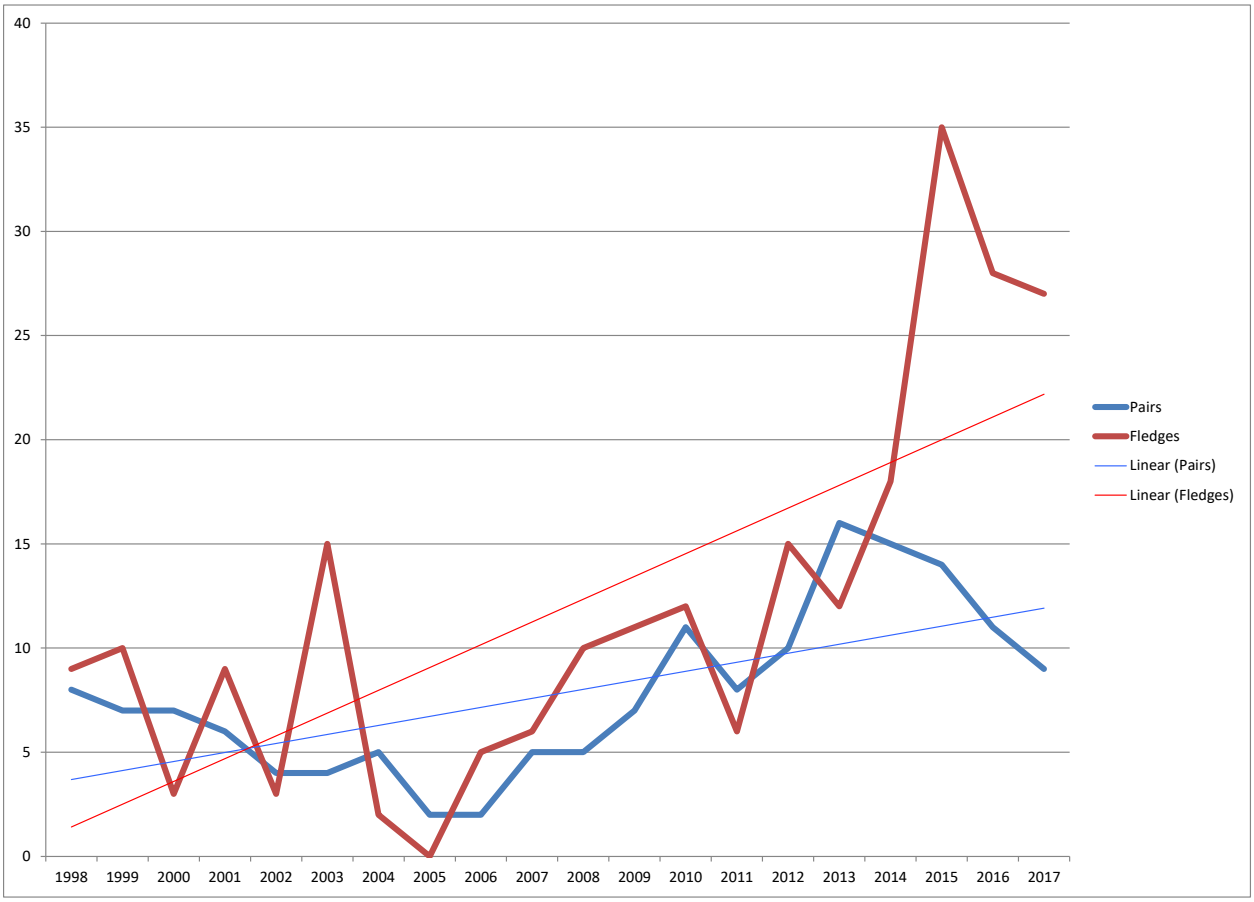
Standard Type "A" exclosures were used. Consistently put up with the same three trained staff, exclosures were erected with an average time of 8.5 minutes. In all cases, the adult Piping plovers resumed incubation immediately <5 minutes after the exclosures were erected.

In March of 2017, the non-lethal predator control program using electrified decoy exclosures was once again initiated. The Town of Orleans' approach to non-lethal predator control focuses on modifying the behavior of two primary "smart" predators on Nauset Beach, the Red fox and Eastern coyote. Three electrified decoy exclosures were strategically placed within identified predator trails on Nauset Spit and the Nauset Beach South. The decoy electrified exclosures were baited regularly with fresh fish racks and

predator activity was assessed through track analysis. Predation and harassment of Piping plovers from Red fox and Eastern coyote has dramatically decreased since 2015. No predation or nest abandonment was observed as caused by fox or coyote in 2017.

Six cases of nest predation occurred prior to clutch completion. Two of the six cases of nest predation occurred after the third egg was laid and before the fourth egg was laid. There were four cases of predation after eggs hatch. Two of the four predated newly hatched chicks were from the same nest (N-W1). We maintain crows accounted for all four cases of predation, predating chicks within 0-2 days of hatching.

Table 2: Pairs Producing Fledges on Nauset Beach South 1998 – 2017



Map 2 – Nauset Spit – Piping plover Nest Locations

Map 3 – Nauset Beach South Piping plover Nest Locations: Pochet Wash

Map 4 – Nauset Beach South Piping plover Nest Locations: Trail 1 – Trail 6

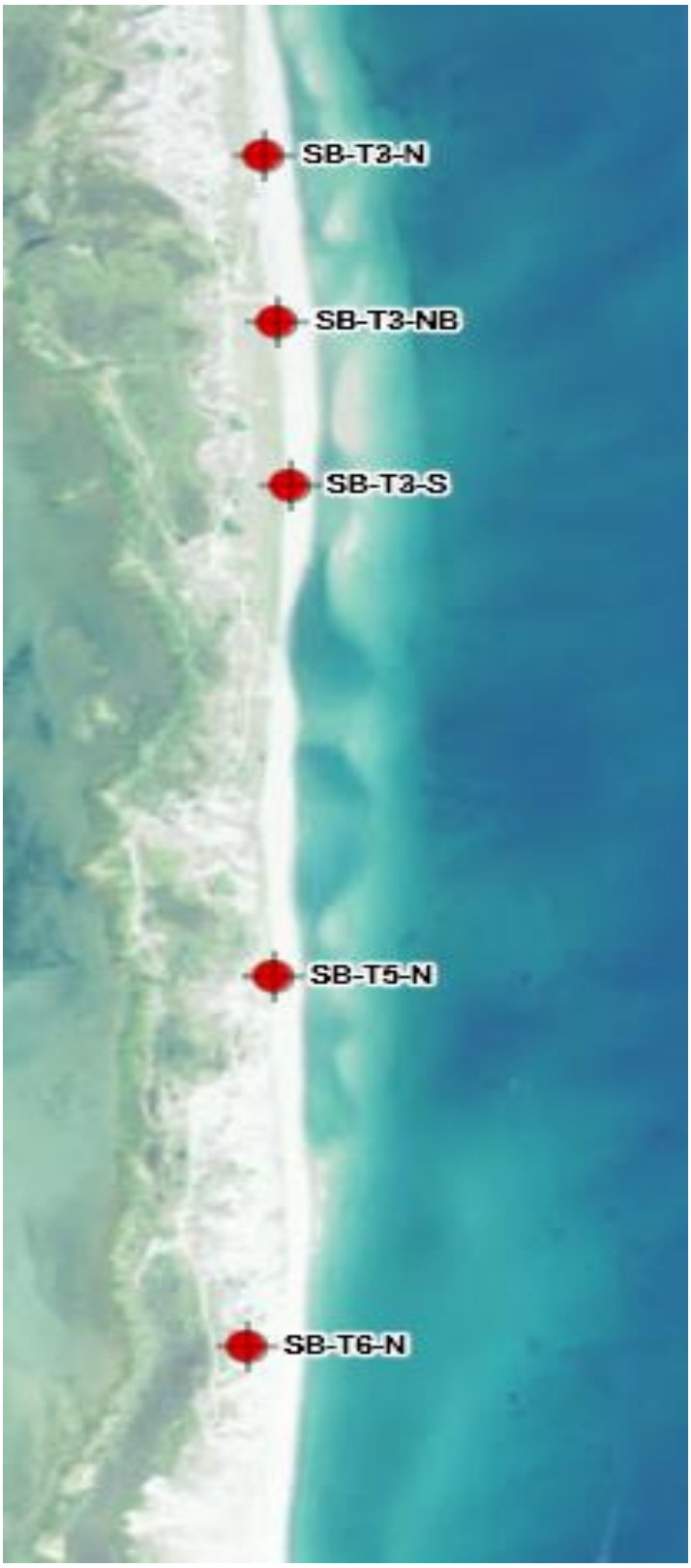


Table 3: 2017 Summary of Piping plover Nest Activity

Pair #No	Nest	Eggs Laid	Hatch Date	Fledge Date	Date Clutch Found	Eggs Found	Date Clutch Complete	Exclosure Placed	Eggs Hatched	Chicks Fledged
LPN-1	A	4	6/9/2017	7/9/2017	5/9/2017	2	5/12/2017	5/12/2017	4	4
LPS-1	A	4	6/9/2017	7/8/2017	5/10/2017	2	5/11/2017	5/11/2017	4	3
SB-Tr3-1	A	4	6/8/2017	7/8/2017	5/10/2017	4	5/8-10/2017	5/11/2017	4	4
NS-EM-1	A	4	6/9/2017	7/9/2017	5/11/2017	4	5/6-10/2017	5/15/2017	4	2
ASP-1	A	4	6/8/2017	7/8/2017	5/12/2017	4	5/7-11/2017	5/12/2017	3	2
NS-CN-N1	A	4	6/17/2017	7/17/2017	5/13/2017	1	5/17/2017	5/21/2017	4	4
N-N1	A	3	x	x	5/16/2017	1	Predated 5/21/2017	x	Failed	x
N-N1	B	4	6/28/2017	7/28/2017	5/22/2017	1	5/31/2017	6/1/2017	4	4
NI-1	A	4	x	x	5/17/2017	4	verwash 5/13-17/2017	x	Failed	x
NI-1	B	3	x	x	6/2/2017	1	Predated 6/6/2017	x	Failed	x
NI-1	C	4	7/14/2017	8/9/2017	6/7/2017	1	6/15/2017	6/16/2017	4	4
N-W1	A	4	6/15/2017	7/15/2017	5/19/2017	4	5/15-19/2017	5/19/2017	3	1
NS-CN-S1	A	3	x	x	5/21/2017	2	Predated 5/22/2017	x	Failed	x
NS-CN-S1	B	1	x	x	5/23/2017	1	Sanded in 5/27/2017	x	Failed	x
NS-ES-1	A	4	6/25/2017	7/25/2017	5/23/2017	1	5/29/2017	6/1/2017	4	4
NS-CN-P1	A	4	6/30/2017	7/30/2017	5/26/2017	1	6/2/2107	x	Failed	x
NS-ETIP-1	A	4	6/28/2017	7/28/2017	5/29/2017	2	verwash 5/26-29/2017	x	Failed	x
NS-EM-2	A	4	x	x	5/29/2017	3	5/31/2017	6/1/2017	Failed	x
NS-EM-2	B	3	x	x	7/6/2017	2	7/8/2017	x	Failed	x
N-N2	A	4	7/8/2017	8/5/2017	6/4/2017	1	6/9/2017	6/9/2017	3	3
SBT3N	A	4	x	x	6/6/2017	1	Predated 6/12/201	x	Failed	x
SBT3N	B	3	7/14/2017	8/9/2017	6/13/2017	2	6/16/2017	6/16/2017	2	2
SBT5	A	4	7/10/2017	8/5/2017	6/7/2017	1	6/12/2017	6/13/2017	3	3
NS-Cross	A	4	7/6/2017	8/1/2017	6/8/2017	2	6/13/2017	6/13/2017	4	4
SBT6	A	3	7/11/2017	8/6/2017	6/13/2017	2	6/14/2017	6/15/2017	3	3

CHAPTER 2 IMPLEMENTATION OF THE COVERED ACTIVITIES

2.1 Covered Lands and Activities

The Covered Lands for the plan area is known as Nauset Beach, including Nauset Beach South and Nauset Spit, where the Town has a history of managing pedestrian and vehicular use in compliance with USFWS's Guideline for Managing Recreational Activities in Piping plover Breeding Habitiat on the U.S. Altantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (USFWS 1994) and the Massachusetts Division of Fisheries and Wildlife's (MADFW's) Guidelines for Managing Recreational Use of Beaches to Protect Piping plovers, Terns, and Their Habitats in Massachusetts (MADWF 1993), and the 1991 and 2014 Town of Orleans Conservation Commission Orders of Conditions (OOC), as required under the Massachusetts Wetlands Protection Act.

The Town of Orleans requested on July 13, 2017 to implement the HCP with one covered activity – *OSV Use in the Vicinity of Unfledged Piping Plover Chicks.* One take exposure was requested for this activity. The area where the monitoring and escorting program for continued OSV use in the presence of unfledged chicks is known as Pochet Wash on Nauset Beach South. This area includes "Little Pochet

Wash" (which is adjacent Pochet Creek) as well as the "Nemo Wash" (which is adjacent to Pochet Island). Geographically the area known as Pochet Wash begins at Trail 1 on Nauset Beach South and runs north .8 miles.

Map 5 – Lotus Map - Nauset Beach South: Pochet Wash area

The covered activity was located towards the south east corner of Pochet Wash, and within the north east corner of Nemo Wash, (as shown in Map 5). The (N-N2A) nest was located on the ocean dune crest, very close to the wrack line. It was located 207 feet east of the OSV self-escort zone.

The one Piping plover brood (N-N2A) hatched three chicks. One egg remained unhatched.

As a result of the HCP, a self-escorting program was put into action on July 15, which allowed up to 180 vehicles per day to have access to drive five miles of beach that was closed to vehicle access due to the presence of the (N-N2A) unfledged plover chicks in the vicinity of the OSV corridor in the Pochet Wash Area.

2.2 Determination of the Self-Escort Zones

The NRO, the Lead Shorebird Monitor, and HCP Monitors observed the foraging habits of the adults and chicks of the (N-N2A) brood prior to the initiation of the HCP. Based upon detailed daily observations, including their foraging range and daily movement, the self-escort zone was established. The specific location of the self-escort zone was intended to be adaptive and variable to reflect the location of the brood. The location of the self-escort zone remained stationary for the first 14 days. On day 15, the self-escort zone was shifted 150 feet to the south along the identified corridor over the last weekend as the chicks began to explore the beach, forage the wrack line, and make attempts to fledge. Additionally, 100 feet on either side of the self-escort zone was maintained as the "safety zone" for the 18 day implementation. The self-escort zone was never moved laterally and was clearly marked at the two end points and had a 15-foot travel width delineated with symbolic fencing.

Map 6 – HCP Brood (N-N2A) Chick Range / Territory Week 1 & 2: July 15 – July 22

Map 7 – HCP Brood (N-N2A) Chick Range / Territory Week 3: July 23 – August 1

2.3 Self-escort Zone Dimensions and Vehicle Numbers during the HCP

The HCP self-escort zone was implemented for 18 days from July 15 – August 1, 2017.

During weeks one and two of the HCP, the self-escort zone was 1050 feet from end to end, and fifteen feet wide.

On day 15 of the HCP, the self-escort zone was adjusted 150 feet to the south in response to the observed mobility of the brood's movement within the wrack line along the beach crest. The self-escort zone was not adjusted north since the location was protected by dunes on both sides of the corridor.

Every OSV participating in the self-escort program was greeted by a trained shorebird monitor who logged the OSV permit number and acquainted the OSV users with the location of the brood before being escorted by a passenger who walked in front of the vehicle, scanning for chicks.

Each time a vehicle passed through the HCP self-escort zone, it counted as one pass. 1,369 total vehicle passes were recorded through the HCP program self-escort zone in 2017.

Table 4: 2017 Vehicle Passes through the HCP Corridor July 15-August 1

Date	OSV*	Self-contained**	Total Passes
July 15	23	5	51
July 16	66	4	136
July 17	20	4	44
July 18	15	1	31
July 19	19	3	41
July 20	21	2	44
July 21	35	4	74
Date	OSV*	Self-contained**	Total Passes
July 22	86	3	175
July 23	46	6	98
July 24	4	0	8 (rain)
July 25	7	0	14 (rain)
July 26	33	0	66
July 27	11	3	25
July 28	34	4	72
Date	OSV*	Self-contained**	Total Passes
July 29	15	7	37
July 30	89	11	189
July 31	57	7	121
Aug 1	70	3	143
		TOTAL PASSES	**1369**
*Roundtrip		**Passes on & off	

2.4 HCP Shorebird Monitor Training and Qualifications

July 1, Day 1- Orientation: The Natural Resource Manager and the NRO met with all HCP Monitors to present an overview of the HCP Program and the HCP Monitors' responsibilities.

All nine HCP monitors were required to be present for the first three days of training. The Natural Resources Officer (NRO) distributed written training materials each day from the Massachusetts Coastal Waterbird Monitoring and Training program. Also included, was the visual aid age classification system for determining the Piping plover chick age and development from 4 days of age to 24 + days and fledge maturity. Training sessions took place for two weeks. The training contained a focused approach on minimizing the disturbance to the broods during monitoring shifts. Monitors were required to demonstrate that they could locate chicks and track their movement from a 100+ feet distance and without interfering with their natural behavior. All HCP monitors were capable of locating and monitoring all age classes of broods and adults. Monitors were also trained in all the HCP Procedures and Conditions so that they were able to effectively provide outreach education and enforcement to all the beach user groups.

Each monitor was required to keep daily observation logs which recorded the activity of the adult and the chicks specific to foraging and territorial behavior, and if broods crossed or approached <100 feet from the OSV corridor. Monitoring also included recording the need for increased signage or fencing to afford greater protection to the HCP broods. The monitoring logs were reviewed daily by the NRO and Assistant Shorebird Monitor and a weekly report was sent by email to MADFW that included the daily vehicle trip count; daily observations; and description of any rules violations and enforcement actions taken.

The duties of a HCP Shorebird Monitors were described as follows:

- Working in assigned habitat areas, must be able to: identify piping plovers, least and common terns, American oystercatchers, and other shorebird species as required; identify and locate shorebird nesting and feeding areas; and map the identified areas.
- Data collection and note taking to document nest establishment, egg laying, hatching, predation of nests, chick rearing, and fledgling activities.
- Set up and maintain signage, symbolic fencing, and protective exclosures such that critical habitat areas are protected from human disturbance.
- Interact with and educate the public to increase awareness of the birds and nesting/feeding areas and ensure compliance with the HCP procedures and conditions.
- Re-route vehicles around protected areas and escort vehicles through protected area as necessary.
- Assist the Lead Shorebird Monitor in field surveys and bird counts.
- Provide clear concise data summaries of nesting activities to the Lead Shorebird Monitor for inclusion in annual reports.
- Performs other duties as assigned and in conjunction with other Town departments and employees.

The HCP Shorebird Monitor were required to have the following minimum qualifications:

- A high school diploma or equivalent.
- Ability to gain a working knowledge of State and Federal Guidelines for the protection of Piping Plovers, Least and Common Terns, and American Oystercatchers on multi-use recreational beaches.
- Good observational skills.
- Ability to perform physical labor associated with the placing of posts, signage, symbolic fencing, and protective exclosures in habitat areas.

- Ability to walk up to 1-3 miles per day within habitat area for survey and protection activities.
- Knowledge and experience, or willingness to obtain, with four wheel drive vehicles, small boat handling, and two-way radio communications.
- Ability to work independently with little direct supervisory oversight.
- Strong people skills, team oriented, and ability to work in a collaborative, problem-solving approach.
- A valid Massachusetts driver's license

. Basic Field Training Subjects:

- Piping plover natural history
- Nesting ecology including nesting courtship behavior, egg laying, egg incubation, hatch dates, fledge dates
- Locating adults, nests, and chicks
- Chick movement and foraging habits, including history of HCP pairs
- Monitoring chicks and adults from appropriate distance
- The range of behavior of adults and chicks
- Field equipment needed, shift change procedures
- Adverse weather conditions on the beach, shelter in place rule
- Violation procedures and radio communications when violations occur
- Medical Emergency procedures
- Radio communication procedures
- Personal items needed daily – water, proper clothing, insect repellent
- Expectations of management with respect to HCP Monitor duties and responsibilities
- Importance of following procedures as outlined in HCP Procedures and Conditions
- Proper field monitoring and movement of chicks and adults with emphasis on importance of allowing chicks to develop their foraging range and to monitor from distance, while insuring that brood maintains safe distance from OSV corridor during HCP windows, stopping traffic, and communicating with HCP users

- How to identify predators and tracks preceding or following a predation event, properly recording the event
- Individual shift procedures and daily assignments and posting locations, monitoring broods, gate monitoring and self-escort zone monitoring
- Each monitor was given extensive field training for observing and locating chicks at various ages with attending adults.
- Equipment and club car responsibilities
- Interaction with general public and contact numbers for supervisors

Monitors were also trained on locating chicks by observing other broods on Nauset Spit and Nauset Beach South. During this time, chick stages of development were from less than 1 week to 3 weeks of age. HCP Monitors assisted in developing the self-escort zone and placement of signage. Prior to initiation of the HCP, each HCP Monitor was required to locate the (N-N2A) chicks prior to 8:00 a.m. A dry-run training session was conducted prior to initiating the HCP on Thursday, July 13 and Friday, July 14, 2017.

2.5 Monitoring Frequency

Monitoring of nesting Piping plovers and Least terns not associated with the covered activities occurred daily during dawn and dusk hours 7 days per week, March thru September, by the NRO and Lead Shorebird Monitor.

During implementation of the covered activity, eight HCP brood monitors were assigned to the self-escort zone each day, split into two shifts. Brood monitors met at the beginning and end of their shifts to discuss daily observations and to share the most recent observations and activity. This allowed all monitors to share observations that are unique to a specific time of day, i.e. the ability to locate tracks in the lower light that might be obscured in the mid-day sun. It also allowed monitors to observe the behavior of the pair over the course of the entire day as well as help determine their foraging range. Daily HCP observations were relayed to the NRO to be added to the daily log.

NRO daily logs tracked all Piping plover and Least tern activity from March thru September. This data was contained in the Census and nesting data was compiled and submitted to MADFW via the online data entry system PIPLODES and TERNODES.

2.6 Shorebird Monitors, Rangers, and Schedules

Shorebird Monitors were equipped with radios for communications. In addition, Orleans provided all necessary equipment including binoculars, umbrellas, beach monitoring chairs, drinking water, daily log sheets, rain gear, and transportation. The morning shifts were from *6:30 a.m. – 12:30 p.m.* and the afternoon shifts from 1*2:00 p.m. – 6:30 p.m*. Four monitors staffed each shift. Two monitors were responsible for keeping visual contact with the brood, one monitor or a Beach Ranger was responsible

for policing the self-escort zone, and one monitor was staffed at the entrance gate. All monitors were responsible for assisting in locating the chicks prior to opening the self-escort zone during the specified access and egress windows.

Table 5: The 2017 Shorebird Monitoring Program HCP Schedule

		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6am-12:30	Brood	Terry	Maya	Maya	Maya	Matt	Colton	Colton
	Brood	Chris	Terry	Terry	Terry	Maya	Terry	Terry
	Road1	Will	Will	Kasey	Jessica	Kasey	Jessica	Matt
	Road2	Matt	Matt	Will	Kelly	Jessica	Kelly	Kasey
12-6:30pm	Brood	Colton	Colton	Colton	Colton	Chris	Maya	Chris
	Brood	Chris	Chris	Chris	Terry	Kelly	Chris	Maya
	Road1	Jessica	Jessica	Matt	Matt	Will	Will	Kelly
	Road2	Kelly	Kelly	Kasey	Will	Kasey	Matt	Jessica

The monitor staffed at the entrance gate was responsible for ensuring that all over-sand vehicles participating in the HCP were in possession of a signed copy (by the operator) of the HCP Procedures and Conditions and that they were fully aware of the protocols. The gate monitor was also responsible for recording the over-sand vehicle activity (# of passes) in the daily log. Signage reiterating the HCP Procedures and Conditions was displayed at the gate. Nauset Beach Rangers were on duty from 7:30 a.m. – 1 a.m. daily during the HCP self-escort program. The Nauset Beach Rangers were responsible for enforcing the "Nauset Beach Rules and Regulations for OSV". Nauset Beach Rangers were also responsible for clearing the beach of vehicles and raking the ruts with a mechanical beach drag at the end of the afternoon (6 p.m.) egress window (unfledged chicks were located and monitored prior and during rut smoothing).

2.7 Effectiveness monitoring

The long-term goal is to increase, and then maintain Piping plover population recovery objectives along Nauset Beach (Orleans), at or above, on average, the level needed to maintain a stable or modestly growing Piping plover population (>1.2 fledglings/pair) (Melvin and Gibbs 1996).

In 2017, The Town of Orleans' Nauset Beach fledge rate for Piping plovers was 2.47 fledglings/pair.

In all, Nauset Beach had 19 nests with 15 productive nests fledging 47 chicks. Within the 15 productive nest, 6 nests did not hatch all of their four laid eggs, leaving 12.76% of laid (potential) eggs unhatched in nests.

2.8 Impact Minimization Measures

"Self-escorting" as defined under the HCP means that each OSV is preceded by a walker (16 years of age or older) at least 10 feet in front of that vehicle and at least 15 feet behind the preceding vehicle. Thus, vehicle speeds are limited to the speed of the walking (not running) escort. The self-escorting program is limited to three 2-hour windows of opportunity to access or egress the Nauset Beach South.

Two trained and experienced "brood" monitors were assigned to the (N-N2A) brood to locate and monitor the movements prior to and during each self-escort window. Two trained and experienced "road" monitors were assigned to log on and off each OSV that passed through the HCP self-escort zone, educate users and observe the self-escorted OSV to ensure that the escorting protocols were followed.

In the case that a chick moved within the 100 feet of the self-escort zone, brood monitors radioed road monitors and traffic was halted during the self-escort window for the period of time it took for the chick(s) to be beyond 100 feet of the corridor.

Nauset Beach Rangers were also responsible for clearing the beach of vehicles and raking the ruts with a mechanical beach drag at the end of the afternoon egress window (unfledged chicks were located and monitored prior and during rut smoothing).

Furthermore, the Town of Orleans Natural Resources Department expanded its social media network by providing informative alerts regarding the HCP, insightful commentary regarding Nauset Beach, and educational dialogue on its newly designed Facebook page <Orleans, MA – Natural Resources>. Since the launch of the new Facebook page, the site has 2.2K individual followers.

A HCP User Guide was again distributed to all OSV permit holders. It is a requirement for all OSV operators to have a signed copy (by the driver) of this guide in order to access the permit area while the HCP is being implemented**.**

A HCP educational video was produced and displayed on the Town of Orleans website. The video is required to be watched by all OSV permit holders.

Signage has been designed to clearly define self-escort area and procedures. Signs are installed in the HCP self-escort zone prior to the implementation of the HCP.

CHAPTER 3 MITIGATION

3.1 Mitigation Measures

In 2017, the Town provided $13,000.00 for funding for off-site educational outreach, increased law enforcement and selective predator management to be administered by MADFW. As specified in the HCP the Town will provide $5,800 per year for each Piping plover brood, nest or territory exposed to covered activities. A maximum of two exposures are permitted per year. Because the funds will be used by MADFW to benefit both Piping plovers and Least terns at sites where the two species co-occur, no additional payments will be necessary for Least tern mitigation. In the unlikely event that only Least terns and no Piping plovers are exposed to covered activities, the Town will still provide $5,800 to

mitigate impacts to Least tern. These funds will be sufficient to achieve the 2.5:1 mitigation ratio for both Piping plovers and Least terns as described in the HCP. Prior to carrying out covered activities during a given beach season; during the three year COI term, the Town will deposit mitigation funds into an escrow account of off-site management to benefit the Piping plover recovery at off-site locations. As the Town has done for the last two years, the $13,000.00 off-site mitigation funds are placed in an escrow account and MassWildlife NHESP determine how the funds will be applied (based upon MADFW criteria) at other beaches in Massachusetts, thus benefiting the statewide population of Piping plovers and contributes to increasing productivity at one or more Piping plover breeding sites in Massachusetts, through funding of off-site mitigation conservation measures. This conservation fund is managed by the Massachusetts Division of Fisheries and Wildlife (MADFW) to increase productivity on State beaches through selective predator management.

CHAPTER 4 SPECIES OF SPECIAL STATUS

4.1 Least Terns

In 2017, Least Terns (LETE) established a nesting sub-colony on Nauset Spit north of the Orleans town line in Eastham on the northernmost end of Nauset Beach. Historically, Least terns have nested and fledged chicks on Nauset Spit in Eastham, and data over past years shows that colony size varies annually. In 2016, Least Terns did not establish a nesting colony on Nauset Spit. This year, approximately 62 nests with Least terns eggs occupying them were observed during the A-census, June 5-June 20. July 8, 78 nests of Least terns we observed at their height of population during the B-census.

Another colony of Least terns, once again, established a territory south of Little Pochet Wash. Over the last 5 years, Least terns have nested south of Little Pochet Wash and peaked in population in 2013 with 65 pairs counted. In 2015, 35 pairs were counted. None were observed in 2016. 2017, 17 nests occupied with egg/eggs were counted during the A-census.

During the July Full Moon, on July 9, The Nauset Spit Least tern colony was predated by coyotes. The Least tern colony at Little Pochet Wash was also predated the night of July 10, but to a much lesser degree than Nauset Spit. Four days later on July 14, coyotes predated the Least tern colony across the Spit at the southern end of Cape Cod National Seashore's Coast Guard Beach.

4.2 Roseate Terns

Our first sighting of a Roseate tern, this season, took place on August 18 on Nauset Beach South in the vicinity of Trail 5 within a Least tern sub-colony. On August 22, sightings of six Roseate terns were again observed in the same area. Four of the Roseate terns were banded with both yellow and red bands. The remaining two other Roseate terns were silver banded.

Again on August 22, while monitoring the Nauset Spit area, we had a chance meeting with USGS Research Wildlife Biologist Jeff Spendelow who was doing research at the Spit. During our stay with Mr.

Spendelow, he read the bands on many of the Roseate terns through his spotting scope, all the while recording the band numbers on a recorder. In total, 21 Roseate terns were counted on Nauset Spit on August 22.

4.3 American Oystercatchers

We counted two pairs of American Oystercatchers (AMOY) in 2017 (during the annual census).

A single Oystercatcher was observed on April 24 flying over the dunes of Nauset Spit, and taking flight south. By mid-May we had many observations, indirectly locating their territory at 41.817925400 / 69.940156750. On May 23, two pairs were counted in the same territory. Acts of territorial aggressiveness were displayed on May 27 at location 41.8183396604 / 69.949245598.. And, on May 29, overly aggressive attacks by one of the pairs toward the other pair were observed at 41.81868968 / 69.9403067. We monitored the Oystercatchers from a distance of 100 yards, observing the two pairs daily, one pair in the north side of the territory, the other pair taking up roots in the south end of the territory. It looked as though two pairs of Oystercatchers were going to establish nests north of New Island, on Nauset Spit (where they historically have nested). The two pairs were observed going through territorial battles over two weeks. Then, as if they had disappeared, we didn't make another Oystercatcher observation after June 8 on North Beach. For two weeks afterwards we did not observe the two pairs on either Nauset Spit or Nauset Beach South. After extensive searches through June, no nests were found.

On July 5, a pair of Oystercatchers' was observed flying north from Trail 3 on Nauset Beach South. The pair was not seen again.

4.4 Diamondback terrapins

Diamondback terrapins nest within the dunes of Nauset Beach, particularly in the vicinity of where the Little Pochet Overwash connects with Pochet Bay. The primary "Search Area" for Diamondback terrapins extends from Little Pochet Overwash to the vicinity of "Bagdad" Camp 5 by Trail 3, a total of 2.3 miles

Surveillance of the area by Mass Audubon staff began in late June 2017. Irregular checks were conducted by Bob Prescott, Mass Audubon's Wellfleet Bay Wildlife Sanctuary Director, throughout July and August. The results of those track surveys can be found in Table 1 (adult tracks) and Table 2 (hatchling tracks). *Note: Typically only instances when tracks were found were noted, but additional unreported surveys when tracks were NOT found were also conducted during this time.*

In conjunction, Orleans Natural Resources Officer (Dick Hilmer) was assigned the lead role of monitoring for Diamondback terrapins for the Town of Orleans during daily OSV Trail patrols during the nesting season starting at 6:30am and continuing throughout the day, into the early evening, beginning the last week of May and continuing through mid-October.

NRO Hilmer attended the Diamondback terrapin training sponsored by Mass. Audubon at the Wellfleet Bay Sanctuary. The training included the biological behavior of terrapins, including nesting behavior, identifying and locating nests and tracks of adult females and hatchlings. NRO Hilmer also attended the Hatchling Training on Monday, July 31, 2017.

An on-site training for new and returning Mass Audubon DBT staff and volunteers took place at Nauset on August 28th, 2017. The first hatchling tracks (from a wild nest) were also found on this day (Table 2). Regular twice daily (AM & PM) checks of the three protected nests and the section of the OSV Trail leading up to them began on August 27th. Site checks continued until October 6th, when the two remaining nests were excavated. This meant hatchling track surveys were typically being conducted twice a day. *Note: Table 2 only details the instances during these shifts/surveys when tracks were found.*

Map 8: Terrapin Nests located by Orleans Natural Resources Officer in conjunction with Mass Audubon.

The Town of Orleans Department of Natural Resources executed the following "Action Plan Protocols" in agreement with Mass Audubon Wellfleet Bay Wildlife Sancturary:

Action Plan: When we observe tracks, we will follow the tracks and/or follow the terrapin until it leads us to a disturbed spot of sand, a turn around, or the tracks lead us back into the water.

When we find a nest: Whether within the OSV corridor or on the east side of the OSV corridor, we (1) ping the nest to gather decimal degrees on a "Collectors App"; (2) fill in the appropriate windows on the app to import data; and place a flag next to the nest. This data includes, dates and times of all track surveys, personnel, GPS coordinates for any tracks observed crossing the OSV corridor, GPS coordinates for all nests, nest dispositions and fates, hatch dates, number of hatchlings, protective measures taken (i.e.: relocated to Pochet Terrapin Garden).

Verify the Nest: Once a nest is located (the ridge, no vegetation, circular size, darker sand, tracks and softer at the throat), we take off the top layer of sand gently. Press two fingers lightly at the top of the nest to find the throat, and sink fingers into the sand. We dig out gently until we feel or see the top egg, and measure the distance from the surface to the top egg. We call Audubon to report the nest, with lat/long coordinates and approximately how deep the top egg is. And, request further assistance from a representative of Mass Audubon should we decide the nest is within the OSV corridor or on the east side of the trail.

Relocating a Nest: If a nest is found to be located within the OSV corridor or on the east side of the South Trail, it needs to be moved within 24 hours, sooner if possible. Before the nest is relocated, a call is made to Jon Regosin for permission to have Bob Prescott relocate the nest to the Pochet Terrapin Garden. Once permission has been granted, Bob Prescott relocates the nest.

The 2017 Diamondback Terrapin season summary published by MassAudubon Wellfleet Bay Wildlife Sanctuary.

During surveys, Bob Prescott and Dick Hilmer, staff and volunteers, located a total of three recently-laid Diamondback terrapin (DBT) nests, all of which Bob Prescott relocated to the 'Pochet Overwash Turtle Garden' (POTG) (Figure 1). He then inserted a 'predator excluder' (PE) made of hardware cloth and wooden stakes around each of the nests in order to prevent predators from digging them up and eating the eggs. He also secured a numbered metal tag to each PE in order to distinguish between them.

This year, Mass Audubon Wellfleet Bay Wildlife Sanctuary used tag numbers 76, 85 and 87. The outcomes of all three protected nests are described below.

Nest #76:

- Nest #76 was found on June 28th, 2017. The original location was 41.777416, -69.9368024. It was relocated to the POTG (41.7768, -69.93622) on June 29th.
- The first two hatchlings were released south of the Pochet bridge on September 29th. The final 6 hatchlings were released on October 20th in the upland S of the Pochet Overwash (Table 3).
- **Hatching success: 73%** (8 out of 11 eggs hatched)

Nest #85:

- Nest #85 was found on June 29th, 2017. Its original location was south of the Pochet Overwash, off New Pochet Island (41.77261, -69.9350). It was relocated to the POTG (41.77679, -69.93621).
- All hatchlings were released in the upland south of the Pochet Overwash on October 20th. See Table 3 for more hatchling details.
- **Hatching success: 62%** (8 out of 13 eggs hatched)

Nest #87:

- Nest #87 was found on July 10th, 2017. Its original location was east of the OSV trail (41.77677 -69.93562). It was relocated to the POTG (41.77744, -69.93623).
- All 14 eggs were placed in an incubator at ~82°F to speed up development and encourage them to hatch. On October 13th, one hatchling emerged and two others were "pipping". On October 16th, five more had hatched and two new ones were "pipping". By October 19th, 11 healthy hatchlings had emerged and the remaining three eggs were deemed non-viable (1 undeveloped, 1 partially developed and 1 mostly developed).
- The 11 hatchlings were released south of the Pochet Overwash on 3 separate days (see Table 3).
- **Hatching success: 79%** (11 out of 14 eggs hatched)

PIT Tagging:

We did not PIT tag any Nauset DBTs in 2017. We were not actively looking for adults during the mating and nesting seasons (May through August). And hatchlings are too small to subcutaneously inject the 8.4mm BioMark MiniHPT8 microchips we had into them using a needle.

Headstarting:

We did not headstart any of the DBT hatchlings found at Nauset in 2017. All were released.

Map 9: Map depicting the route typically walked by Mass Audubon's Diamondback terrapin volunteers checking on the protected nests and surveying for hatchling tracks (in blue). The 'Pochet Overwash Turtle Garden' (POTG) is marked in yellow & labeled 'Terrapin nests'.

Table 6: GPS coordinates of adult female DBT tracks found by Bob Prescott at Nauset in July 2017.

Date	Latitude	Longitude	Comments
7/8/2017	41.77833	-69.93599	One old set of tracks
7/10/2017	41.77759	-69.93593	--
7/10/2017	41.77683	-69.93572	Nest area (POTG) trail
7/10/2017	41.77673	-69.93562	More NE, crossed the OSV trail at **41.77679, -69.93558**
7/28/2017	41.77480	-69.93616	Crossed east at **41.77390, -69.93568**

Table 7: Times and locations of DBT hatchling tracks found by MAS staff and volunteers at Nauset.

Date	Time	Latitude	Longitude	Comments
8/28/2017	1530	41.77676	-69.93576	1st set of hatchling tracks found
8/28/2017	1630	41.77615	-69.93546	2 sets of tracks?
9/1/2017	0720	41.77766	-69.93587	Multiple sets of fresh hatchling tracks in tire tracks along west side of OSV trail (see **Figure 2**)
9/1/2017	1700	41.77766	-69.93587	1 set crossing 2 OSV trails from east to west
9/2/2017	0820	--	--	1 set on west side of road, a little more than half way to the walking bridge (no GPS taken)
9/5/2017	AM	41.783552	-69.941751	West side of OSV trail, 40 paces south of entrance to foot path towards POTG
9/5/2017	PM	41.77767	-69.93590	Another set of tracks, west side of OSV trail
9/6/2017	AM	41.777238	-69.935913	Several sets west of OSV trail, 2.5 posts south of OSV parking spot
9/9/2017	AM	41.783552	-69.941751	West of OSV trail
9/10/2017	1700	41.77677	-69.93589	2 sets of old tracks crossing OSV trail
9/11/2017	PM	--	--	5 or 6 clear sets on the hill just north of the Pochet Overwash, heading from east to west towards the OSV trail, but only saw one set continue on the other side of the road
9/12/2017	AM	41.777015	-69.935298	East side of OSV trail, disappeared into road
9/12/2017	PM	41.77757	-69.93586	1st set crossing OSV trail
9/12/2017	PM	41.77578	-69.93549	2nd set crossing OSV trail from east to west
9/13/2017	AM	41.7770886	-69.9362196	North trail hill near dusty miller
9/13/2017	AM	41.7758565	-69.9359299	Between POTG and Pochet Overwash, SE of phragmites
9/13/2017	AM	41.7747923	-69.9355008	North of Pochet Overwash, “wild” hatchling #2
9/13/2017	AM	41.7746723	-69.9352540	East of OSV trail at Pochet Overwash
9/13/2017	AM	41.7746723	-69.9352540	Northeast of Pochet Overwash
9/14/2017	AM	41.7756262	-69.9360295	Between phragmites and south hill, tracks faded away on either end
9/27/2017	AM	41.7768148	-69.9355541	70 yards south of OSV parking spot, in and out of tire tracks in OSV trail
9/28/2017	AM	41.7759992	-69.9355085	North of Pochet Overwash, along OSV trail
9/28/2017	AM	41.7776824	-69.9359618	“Wild” hatchling #3, had been run over in OSV trail
10/3/2017	--	41.77441	-69.93660	1st set, long track from east (eastern end: GPS given) to west (western end: **41.77440, -69.93681**)
10/3/2017	--	41.77454	-69.93590	2nd set of tracks
10/3/2017	--	41.77460	-69.93547	3rd set, crossing OSV trail
10/4/2017	AM	41.7767343	-69.9361613	Fresh set of tracks, west of OSV trail toward marsh
10/4/2017	AM	41.7757762	-69.9361703	Faint set, west of OSV trail, heading west
10/4/2017	AM	41.7743840	-69.9366451	Heading west, right by Pochet Overwash/marsh
10/4/2017	AM	41.7745200	-69.9359892	South of Pochet Overwash, long track, heading west
10/5/2017	AM	41.7772619	-69.9357703	Between POTG and Pochet Overwash
10/6/2017	PM	--	--	1 set, crossed OSV trail from east, near foot path to POTG

Table 8: Morphometric and other data on all 27 terrapin hatchlings from the 3 protected Nauset nests.

Nest Number	Hatchling Number	Hatch Date	Hatch Location	Carapace Length (cm)	Carapace Width (cm)	Plastron Length (cm)	Mass (g)	Anomalies or Comments	Date Released
76	1	9/21	Field	27	24	24	5.7	Split 5th vertebral scute, split 90 marginal, extra R & L marginals	9/29
76	2	9/21	Field	26	24	24	5.7	none	9/29
76	3	10/6	Field	27	25	24	5.9	none	10/20
76	4	10/6	Field	27	24	23	6	none	10/20
76	5	10/6	Field	27	25	23	6	none	10/20
76	6	10/6	Field	28	25	23	6	none	10/20
76	7	10/6	Field	26	24	23	6	Split 2nd vertebral	10/20
76	8	10/6	Field	32	27	27	9.6	Biggest hatchling all season across all sites!	10/20
85	1	10/4	Field	26	24	24	5.5	none	10/20
85	2	10/4	Field	26	24	23	5.4	Split 2nd & 3rd vertebral, small 4th vertebral, 13 L marginals	10/20
85	3	10/4	Field	24	23	22	4.8	none	10/20
85	4	10/4	Field	25	24	23	4.8	none	10/20
85	5	10/4	Field	26	24	24	5.3	none	10/20
85	6	10/4	Field	27	24	24	5.9	none	10/20
85	7	10/4	Field	26	24	23	5.2	none	10/20
85	8	10/4	Field	26	24	24	5	none	10/20
87	1	10/13	Captivity	27	24	23	5.9	none	10/20
87	2	10/16	Captivity	27	26	25	6.3	none	10/20
87	3	10/16	Captivity	27	25	24	6.1	none	10/20
87	4	10/16	Captivity	28	26	25	6.5	none	10/20
87	5	10/16	Captivity	26	25	24	6	none	10/20
87	6	10/16	Captivity	27	26	26	6.3	none	10/20
87	7	10/16	Captivity	27	25	24	6.2	none	10/20
87	8	10/18	Captivity	26	24	23	5.8	none	10/20
87	9	10/18	Captivity	28	25	24	6	none	10/20
87	10	10/20	Captivity	26.6	23.6	21.9	6.6	Small L 1st costal, 1st vertebral shifted to L side (assymetrical), 4th vertebral scute tri-split	10/22
87	11	10/22	Captivity	28	26	25	6.4	none	10/24

CHAPTER 5 SUMMARY

Overall, very positive feedback was received by staff from users.

Productivity: The 2017 Nauset Beach Piping Plover HCP Monitoring Program was a success. Our overall HCP fledge rate was 100%, all three chicks in the HCP brood fledged.

The overall shorebird monitoring program for 2017 increased from 2.11% in 2016 to 2.47% fledge per pair in 2017. We had a 90.38% fledge rate on all eggs that hatched in 2017. Several nest eggs did not hatch which reduced our overall productivity.

Total Vehicle Passes: 1,369 vehicle passes occurred on Nauset Beach South during the HCP. The duration of the HCP was 18 days. This was an increase over the 1,000 passes in 2016 and the 300 passes in 2015.

Caravans: There were no caravans in 2017 during the HCP.

Violation Incidents - There were no reported violation incidents in 2017. We attribute this to the outreach and education provided by monitors and staff.

Medical Emergencies - There were no medical emergency requests to leave the beach outside of the permitted access times.

Recommendations: The Town of Orleans has no recommendations at this time.

Appendix 1: HCP Daily Activity Log Summary July 15 – August 1. 2017

Week 1: July 15-July 21, 2017

Town of Orleans Department of Natural Resources
Nauset Beach South HCP Weekly Activities Summary

Summary:

Beginning on Saturday July 15, 2017, the Town of Orleans Natural Resources Department implemented the Statewide HCP program for Nauset Beach South. Similar to last year's HCP, vehicles will only be allowed access/egress to Nauset Beach South during specified access windows.

The access windows are as follows: 8am-10am / 12pm-2pm / 4pm-6pm
No vehicles are allowed on or off the beach outside of these specified access windows.

All Over-Sand Vehicles (OSV) with the exception of self-contained vehicles are expected to be off the beach by 5:30pm. No egress through the self-escort zone will be allowed after 6pm. All OSV are required to have a passenger over the age of 16 to walk 15 feet in front of the vehicle in the specified self-escort corridor. This is a mandatory requirement with a zero tolerance policy. Anyone that fails to follow the HCP Procedures and Conditions are subject to sticker revocation.

Additionally, all OSV are only permitted on the beach if they have in possession a signed copy of the HCP Procedures and Conditions. The South Trail Gate Attendant (Buggy Booth) makes sure that the OSV driver has read and understands the HCP Procedures and Conditions, and confirms the OSV driver has watched the HCP video on the Town of Orleans website.

No dogs were allowed on Nauset Beach South during the first week of the HCP.

Location of HCP Self Escort Corridor:

The 2017 HCP self-escort zone for continued use in the presence of the unfledged chicks was placed within the northern end of the Nemo Wash, north of Trail 1, on the South Trail. This area is adjacent Pochet Creek and the marsh to the west, and the Atlantic Ocean with its wrack line to the east.

HCP Personnel:

Two shorebird monitors were placed with the HCP brood (N-N2A) from 7am-6pm, to locate and monitor chick activity during the access windows. Additionally, two self-escort attendants were positioned at the north and south sides of the HCP self-escort zone to ensure compliance by the self-escort vehicles. All personnel were equipped with hand-held radios for constant stream of communications between the self-escort attendants, the buggy booth, and the lead shorebird monitor/Natural Resource Officer. At the end of each day, the HCP zone is groomed/dragged.

Education:

Press Release on the HCP opening posted on Town of Orleans website, email notification, and Town of Orleans Natural Resources Facebook Page.

Brood Daily Observations: N-N2A (Nemo North)
Shorebird Monitor assigned to N-N2A: Terry Bull

N-N2A Biography:
Nest Found June 4, 2017 with 1 egg. Clutch complete on June 9 w/4 eggs. Exclosed on June 9, 2017
Eggs hatched on July 6, 2017

Daily Activity of Brood N-N2A

Saturday, July 15 – Day 1: On the ocean side at north end of self-escort zone, in an out of beach grass, never crossed the road, remained on ocean side in wrack line. Both adults present, 3 chicks observed all day.

Sunday, July 16 – Day 2: All the PIPL's (2 adults / 3 chicks) crossed in an orderly manner through self-escort zone just before 8am, north of the south gate in the wash heading west mudflats directly west of the southerly wash in self-escort zone. 3 chicks stayed on west side all day. Returned to ocean side just after 6PM, prior to sweeping road.

Monday, July 17 – Day 3: Female and chicks found ocean side at 7am, by the north end of their territory. 10:30am, female crosses two chicks to west/marsh side and leaves 1 chick ocean side. Two chicks crossed road, returning to ocean side at 11:00am. 11:15am, female takes 1 chick to west/marsh side, leaving 2 chicks on ocean side. At 1pm 2 chicks crossed from ocean side to west/marsh side where they remained for the remainder of the day. No sign of male adult PIPL all day.

Tuesday, July 18 – Day 4: High tide at 7am, female greeted monitor in southern wash, and chicks were observed on west / marsh side, where they remained all day. No adult male PIPL was observed. Tail feathers observed on all 3 chicks.

Weds, July 19 – Day 5: High tide at 8am. Female observed on ocean side with 3 chicks feeding in the wrack line. Female and 3 chicks crossed the self-escort corridor at 7:58am, remaining on the west / marsh side for the rest of the day. No male PIPL was observed.

Thursday July 20 – Day 6: High tide at 9am. Female and 3 chicks located and observed on west / marsh side at 7:20am, and remained on the west / marsh side for the remainder of the day. No male PIPL was observed. No male PIPL observed. Flight feathers observed on all three chicks.

Friday, July 21 – Day 7: Very hectic morning, ocean side first thing, then expanded their territory and moved north along ocean 100 yards. Remained north for only a short period of time, Female tried to gather them all, but only 2 chicks came to her. The 2 chicks and female crossed the self-escort zone at 8am, leaving 1 chick on the ocean side. Monitor Colton Leach assisted Monitor Terry Bull at 8:30am.

Terry Bull remained with 2 chicks and female on west / marsh side, while Colton Leach monitored 1 chick on ocean side. The chick on the ocean side crossed the self-escort zone at 10:30am, where Terry and Colton monitored the brood together. Female and 3 chicks crossed the self-escort zone at 3:15pm and returned to the ocean side to feed in the wrack line. No male PIPL observed.

*On Friday, July 21 – Chicks were very active. 3 chicks observed flapping their wings and flopping.

Week 2: July 22 -July 29, 2017

HCP - Town of Orleans Department of Natural Resources
Nauset Beach South HCP Weekly Activities Summary
Week of July 22 -July 29, 2017

Summary:

The access windows are as follows: 8am-10am / 12pm-2pm / 4pm-6pm
No vehicles are allowed on or off the beach outside of these specified access windows.

Additionally, all OSV are only permitted on the beach if they have in possession a signed copy of the HCP Procedures and Conditions. The South Trail Gate Attendant makes sure that the OSV driver has read and understands the HCP Procedures and Conditions, and makes sure the OSV driver has watched the HCP video on the Town of Orleans website.

Location of HCP Self-escort Corridor:

The 2017 HCP Self-Escort Corridor for continued use in the presence of the unfledged chicks was placed in the northern end of the Nemo Wash, north of Trail 1 on the South Trail. This area is adjacent Pochet Creek and the marsh to the west, and the Atlantic Ocean with its wrack line to the east.

HCP Personnel:

Two shorebird monitors were placed with the HCP brood (N-N2A) from 7am-6pm, to locate and monitor chick activity during the access windows. On Friday, July 28, an additional monitor was assigned to the very active, separated brood. Two self-escort attendants were positioned at the north and south sides of the HCP self-escort corridor to ensure compliance by the self-escort vehicles. All personnel were equipped with hand-held radios for constant stream of communications between the self-escort attendants, the buggy booth, and the lead shorebird monitor/Natural Resource Officer. At the end of each day, the HCP corridor is groomed/dragged.

Brood Daily Observations: N-N2A (Nemo North)
Shorebird Monitor assigned to N-N2A: Terry Bull

N-N2A Biography:
Nest Found June 4, 2017 with 1 egg. Clutch complete on June 9 w/4 eggs. Exclosed on June 9, 2017
Eggs hatched on July 6, 2017

Daily Activity of Brood N-N2A

Saturday, July 22 – HCP Day 8: Chicks found at 7:00am on the front beach, at the north end of escort zone, 138 yards east of South Trail. Female PIPL gathered 3 chicks and she shepherded them across the self-escort zone to the west side marsh at 8:10. Self-Escort Trail was closed from 8am-8:20am. 3 Chicks remained on west side / marsh until 3:50pm when the female PIPL brought them through the self-escort zone in a very organized manner. This time they crossed the corridor in the wash north of the wash previously crossed. Female and three chicks remained on ocean side in wrack line until the self-escort zone closed at 6pm. Observation: 2 chicks have now paired up and are observed side-by-side frequently; while the third chick strays / wonders off. No male observed. 2 passes across the corridor, one at approximately 8:10am, the other at 3:50pm.

Sunday, July 23 – HCP Day 9: (Cloudy cold and windy, high tide at noon). 3 chicks were found at south end of front beach, and proceeded to travel north along the water's edge 200 yards north between 7:15am and 10:15am. Multiple flight attempts were observed during the morning. A chick crossed the corridor at 10:30am during the no-access window, and returned across the trail to ocean side within 20 minutes. The three chicks and female remained on the ocean side, hunkered down within the tufts of dune grass, protected from the wind, from 11am to closing at 6:00pm. No male observed. The female PIPL brooded all three chicks at different times throughout the day as the nor'easter approached. 46 vehicles passed through the HCP self-escort escort, which is a low count for a Sunday in July.

Monday, July 24 – Day 10: (Rain event-1/4 in. precipitation, windy East 9-18mph 26G, cold). 3 Chicks and Female were found by the south end of the ocean side wrack line. Female brooding chicks. Monitors mostly sat in Kubota ATV all day on the trail monitoring crossing. 1 car passed through HCP self-escort zone. The chicks and female did not cross the trail. No male observed.

Tuesday, July 25 – Day 11: Noreaster still atop (60F, NNE 7-13mph G18, 0 precip). Wind off the ocean and fetch swell during evening damaged lifeguard chairs as the longshore current moved one of the chairs a quarter mile south depositing it on the beach. 3 Chicks and female were located along the ocean side north of escort zone at 7:10am. Multiple flight attempts by all 3 chicks were observed during the morning, as they stayed on the ocean side in the wrack line. During the afternoon, 3 chicks and female hunkered down in grasses along the dune footing along the ocean side and remained in the grasses for the remainder of the day. No crossings observed. No male observed.

Weds, July 26 – Day 12: Weather pattern broke. (65F, SSE 3-8mph, 0 precip). Found 3 chicks and female along ocean side at 6:52am along the northern end of the escort zone. All three chicks observed attempting to fly down the coastal beach bank, all at the same time, crash landing on the flats as they tried to land. 3 chicks moved freely north to south and back as the female lay sentinel on the coastal beach bank. Chicks and female stayed on ocean side until 12:45pm, at which time the three chicks separated. 1 chick was escorted across the corridor by the female, shepherding the chick to the west side / marsh flats (with Monitor Terry Bull). One chick crossed the corridor alone, but circled back to the ocean side. The last (3rd) chick never crossed the self-escort zone. Monitor Colton Leach stayed with the

two chicks on the ocean side. The Self-escort corridor was closed from 12:40pm-1pm. At 2:40, during the 2-4pm closed access window the female and 1 chick crossed the corridor west to east, towards the ocean side, and settled into foraging the wrack line. All stayed ocean side until 4:30pm when the female and two chicks crossed the corridor and went back to the west side /marsh. Monitor Colton Leach followed. The HCP self-escort corridor was closed between 4:30pm-4:35pm. This left one chick ocean side with Terry Bull until the Self-Escort Zone closed at 6pm. No male was observed. 8 passes by female and chicks in total. The HCP self-escort zone was closed twice for a total of 25 minutes.

Thursday July 27 – Day 13: (68F, SW 7-12mph 18G, .01 precip). Three chicks and female were found on ocean side at 7:03am and remained on ocean side in the wrack line, moving north to south for the morning. At 1:17, the female organized the three chicks and escorted them across the corridor to the west side /marsh for the remainder of the day. The HCP self-escort zone closed for 12 minutes between 1:15pm and 1:27pm. No attempts at flight. No male observed. 4 passes (1 female and 3 chicks).

Friday, July 28 – Day 14: (76F, SW 5-8mph, 0 precip). Three chicks and female found along ocean side, but further south than observed previously. At 8:15, female escorted one chick across self-escort corridor to the west side marsh to an area on the marsh further south than they had previously moved. No vehicles were observed on the trail, nor were any vehicles close /or in the HCP self-escort zone, so there was no need to close the self-escort zone. Second chick crossed independently at 8:45am and joined the female and chick in the west side marsh. One chick remained on the ocean side with monitor Colton Leach. Female flew from the west side marsh at 10:30am, leaving two chicks in marsh, landing near the one chick on ocean side. She stuck around for a moment on the ocean side and then returned via flight to west side marsh and the two chicks. (We did not count the female movement as passes since she flew). The third chick at 11:14am crossed the trail went to the marsh turned around and returned to ocean side. The HCP self-escort corridor was closed between 11:10am and 11:23am. (No vehicles in the self-escort corridor, no vehicles effected). At 12noon, the 2 chicks and female were on west marsh side and monitor Terry Bull observed 1 chick fly 25 feet, 10 feet off the ground and make a good landing. Colton Leach monitored the one chick still ocean side. At 2:30pm female crossed 2 chicks to the ocean side, and 1 of the chicks was observed flying 30+ feet nailing its landing. At 2:15pm during the self-escort window closure, the HCP gate staff and Lead Shorebird monitor moved the southern end of the escort zone 150 feet south. At 4 pm, all 3 chicks were ocean side, although separated from each other. 3 monitors were discharged to the ocean side (Bull, Leach, Hilmer) to monitor individual chick movement. At 4:45pm, three chicks and female settled down in the dune grasses of the ocean side and remained in the grasses until the self-escort corridor was closed at 6pm. No male was observed. 8 passes in total (2 female and 6 chick passes across HCP self-escort zone).

Week 3 – July 29 – August 1, 2017

Town of Orleans Department of Natural Resources
Nauset Beach South HCP Weekly Activities Summary
Week of July 29 – Aug 1, 2017

Summary:

Saturday July 29 thru 12 noon on August 1, the access windows remained as follows:
8am-10am / 12pm-2pm / 4pm-6pm. Vehicles off beach by 5:30pm, and thru the HCP corridor by 6pm.

No vehicles were allowed on or off the beach outside of these specified access windows. The Nauset Beach South Trail remained closed from 6pm-8am.

Additionally, all OSV are only permitted on the beach if they have in possession a signed copy of the HCP Procedures and Conditions. The South Trail Gate Attendant makes sure that the OSV driver has read and understands the HCP Procedures and Conditions, and makes sure the OSV driver has watched the HCP video on the Town of Orleans website.

At 12 noon on August 1, 2017, the Orleans Department of Natural Resources removed the HCP Self-Escort Zone on Nauset Beach South Trail.

Location of HCP Self Escort Corridor:

Between July 29 and noon August 1, 2017, the 2017 HCP Self-Escort Corridor for continued use in the presence of unfledged chicks was placed in the northern end of the Nemo Wash, north of Trail 1 on the South Trail. This area is adjacent Pochet Creek and the marsh to the west, and the Atlantic Ocean with its wrack line to the east.

HCP Personnel:

Two shorebird monitors were placed with the HCP brood (N-N2A) of 3 chicks from 7am-6pm, to locate and monitor chick activity during the access windows. On Friday, July 28, an additional monitor was assigned to the very active chicks. Two self-escort attendants were positioned at the north and south sides of the HCP self-escort corridor to ensure compliance by the self-escort vehicles. All personnel were equipped with hand-held radios for constant stream of communications between the self-escort attendants, the buggy booth, and the lead shorebird monitor/Natural Resource Officer. At the end of each day, the HCP corridor is groomed/dragged.

Brood Daily Observations: N-N2A (Nemo North)
Shorebird Monitor assigned to N-N2A: Terry Bull

N-N2A Biography:
Nest Found June 4, 2017 with 1 egg. Clutch complete on June 9 w/4 eggs. Exclosed on June 9, 2017
Eggs hatched on July 6, 2017

Daily Activity of Brood N-N2A

Saturday, July 29 – HCP Day 15: (Temp 60-71F, Wind NNE 14-23mph G28, 0 precip). Great difficulty finding birds in AM. Dense fog, cold, and breezy – low tide 10:30am. Monitors found 1 chick quickly but didn't find other two until 7:45am. They were on front beach together, much further south than usual. 8:15am adult crossed 1 chick to the marsh. That chick stayed remained at the marsh until 10:15am.

During no access window, mother brought the chick (by the marsh back) over to the ocean side, reuniting all three chicks. Female Adult then flew from the ocean side to a favorite location by the marsh near the auto bridge just west of the south wash at 11:30am. Chicks remained on the ocean side huddled in the grasses. Female adult returned to brood at 2pm. 3:30pm, with the wind subsiding, 2 chicks were observed taking flight and landing. Flights did not maintain a 50 ft. length. Landing were solid. From 3:45pm to closing time at 6pm, chicks huddled in grasses without much movement.

Sunday, July 30 – HCP Day 16: (Temp 60-73F, Wind ENE 10-16mph G20, 0 precip). Brisk wind off the ocean. Sunny and warm. Again difficulty finding the chicks, but eventually found all three and adult ocean side at 7:20am. Chicks were separated and feeding on low wrack line north of Trail 1. By 8:10am monitors observed all three chicks take flight and hit their landing of 30 ft. or more, but with no banking and acceleration noticed. More elevation in flight was also observed. Chicks separated at the point of needing 3 monitors (Hilmer, Leach, Bull) by 9:15am. One chick crossed the road, went onto the HCP corridor trail and traveled north in the road, crossed west again and then crossed back to ocean. We closed the corridor for 15 minutes until chick settled down. All three chicks and female adult stayed ocean side an in beach grass until rad closed.

Hilmer's chick crossed near north gate at 10:15am (a usual time). At 11:30am 2 chicks and adult crossed HCP corridor from ocean side to marsh into northwest wash territory. Observed several good flight attempts in wash by the 2 chicks. Chicks stayed on marsh side until 2:10pm when adult crossed one chick back to ocean side. Access window was closed. At 2:30pm chick returned to the marsh 20 minutes later, where 2 chicks and female adult remained. The 2 chicks continued to fly freely for extended flights of over 50+ feet. At 3:30 2 chicks and adult in marsh by nemo w territory third chick with Colton on ocean side but south end of escort zone.

About 4:30 one chick from the marsh crossed to ocean side in area of the south end of escort zone, stopping traffic briefly. Never located third chick again in marsh.

Observed flights that were over 100+, with high elevation, and banking.

Monday Aug 31 – HCP Day 17 (Temp 61-80F, Wind South 9-20mph G22, 0 precip). Beautiful morning, sunny, cool light breeze, tide high 6:30am birds on ocean side between foraging in the wrack line. Female present but a distance from chicks. Chicks stayed on tidal plats feeding all morning. 10:15am – Maya and Terry witnessed the adult and 1 chick fly over 300+ feet. Another chick took flight of 100+ feet with bank and acceleration out of the bank twice. Two chicks observed in a footprint along the coastal bank preening themselves (an adult behavior). At 5:05, monitors observed two chicks fly to the marsh.

Tuesday, August 1 – HCP Day 18 (Temp 67-80F, wind SE 9-15mph, G18). 3 chicks and female adult were found very quickly 6:50am on the ocean side moving freely within the wrack line. Female observed to be very relaxed. The chicks continued to forage in the wrack line and take flight whenever necessary. Observed multiple flights. At 9:17am Nemo North brood was declared fledged by Hilmer. After a mid-morning meeting between Manager of Natural Resources and Natural Resources Officer/Shorebird

Monitor, it was announced on the Town of Orleans website and Natural Resources Facebook page that at noon, on August 1, the HCP corridor was opened and program terminated.

Concluding Summary:

The chicks were actually first seen in flight of less than 50 ft with a perfect landing on Saturday, July 29. Sunday, July 30, all three chicks were confirmed by three monitors (Hilmer, Bull, Leach) of flights over 50 feet with a bank. We held off opening the HCP corridor on Monday, primarily because of the age of the chicks. Monday, July 31, both shifts of monitors including gate attendants witnessed all three chicks fly over 50 ft, with a bank and continued flight. We still didn't open the self-escort zone until Tuesday, Aug 1, after the three monitors again, observed each of the three chicks in flight for over 50 ft with a bank and continued flight after the bank. With numerous flights observed per chick, meeting Federal, State, and Town requirements, it was determined at 9:17am that we observed the chicks fledge for three days. At 26 days they were pronounced fledged. At 12 noon, after a mid-morning meeting, we opened the HCP. Simultaneously, 2 monitors and 2 attendants were assigned to the gate and field monitoring, respectfully, to apply the program requirements through 6pm on August 1, minus the self-escort component. The next morning, Aug 2, 2 monitors and 2 attendants again worked from sunrise to dusk in the former HCP Self-escort zone to keep eyes on the fledged brood and continue to educate OSV drivers and passengers to be diligent in observing movements along the sandy wash area even though the chicks fledged.