Section N

Shorebird Monitoring Reports

2018

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

"Got It" Photo courtesy: Terry Bull, Orleans Shorebird Monitor 2018

PREPARED BY:

Town of Orleans Department of Natural Resources
139 Main Street, Orleans MA 02653
Contact: Nathan Sears
(508) 240-3755
nsears@town.orleans.ma.us

October 2018

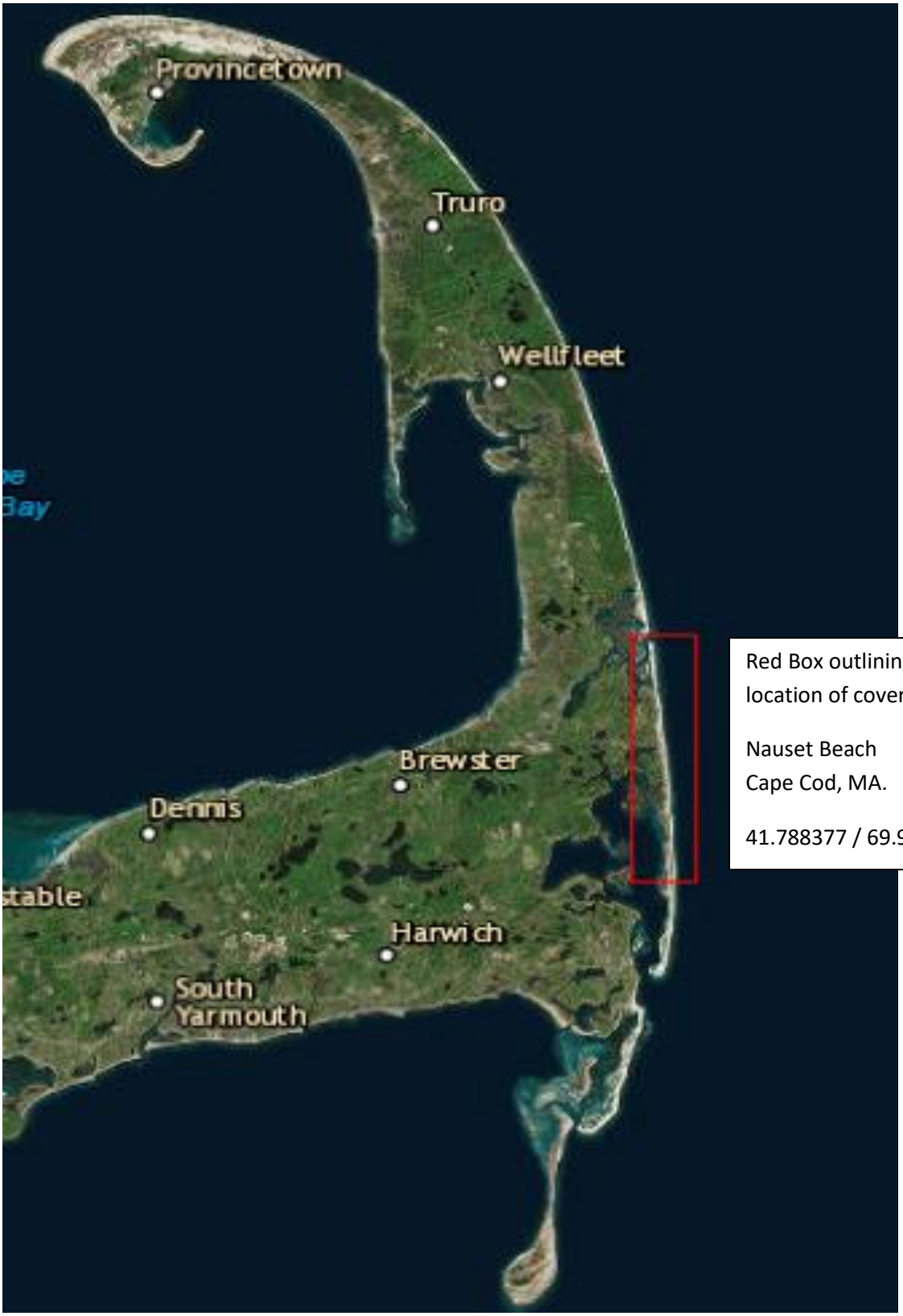
TABLE OF CONTENTS

Maps **Page**

Tables

Graphs

Map 1: Lotus Map – Location of Nauset Beach in Orleans, MA on Cape Cod



Red Box outlining location of covered area:

Nauset Beach
Cape Cod, MA.

41.788377 / 69.935542

CHAPTER 1 INTRODUCTION

1.1 Introduction to 2018 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 2018 (year three), similarly to 2017 (year two) and 2016 (year 1), under the Permit standard, Orleans was eligible for 2 takes based on the number of productive nesting Piping plover pairs from the previous season.

1.2 2018 Town of Orleans Statewide HCP Implementation

In compliance with the General Conditions of Conservation & Management Permit
#016-282 DFW / NHESP File # 16-3597

Plan Location: Nauset Beach, Orleans
Covered Activity: Over-Sand Vehicle Use in the Vicinity of Unfledged Chicks
Brood Location: Pochet Wash
Allowable Take Exposures : 2
Take Exposures Used: 1 (RS-A)
Start of Implementation: July 19, 2018
End of Implementation: August 5, 2018
Days Brood(s) Exposed to Covered Activity: 17 days
% of Broods Exposed: 3.57% (1 brood out of 28 productive nests)
Age of Chicks When First Exposed: 17 days old (Hatched on 7/2)

1.3 2018 HCP Summary

The Over-Sand Vehicle (OSV) Trail on Nauset Beach South closed at 6:00 am on June 1st to all OSV due to the presence of unfledged Piping plover chicks within the vicinity of the OSV corridor. By July 19, all of the unfledged chicks in the vicinity of the OSV corridor had fledged except for the (RS-A) brood which consisted of three chicks. On July 17, 2018 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 July 19, the Town of Orleans Statewide HCP was implemented.

The HCP brood (RS-A) consisted of two adult Piping plovers and three chicks (17 days old) at the time of implementation. By implementing the Statewide HCP program on July 19, 2018, this allowed OSV to pass through the Pochet Wash area to access the miles of Nauset Beach South that had been closed for 49 days. On August 4, 2018, the three chicks of the (RS-A) brood were declared fledged; and the 2018 HCP concluded. Because of the HCP, the Town of Orleans was able to open Nauset Beach South for an additional 17 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 (MADFW 1993)" would have normally remained closed.

1.4 Summary of 2018 Shorebird Monitoring Program: Piping plovers

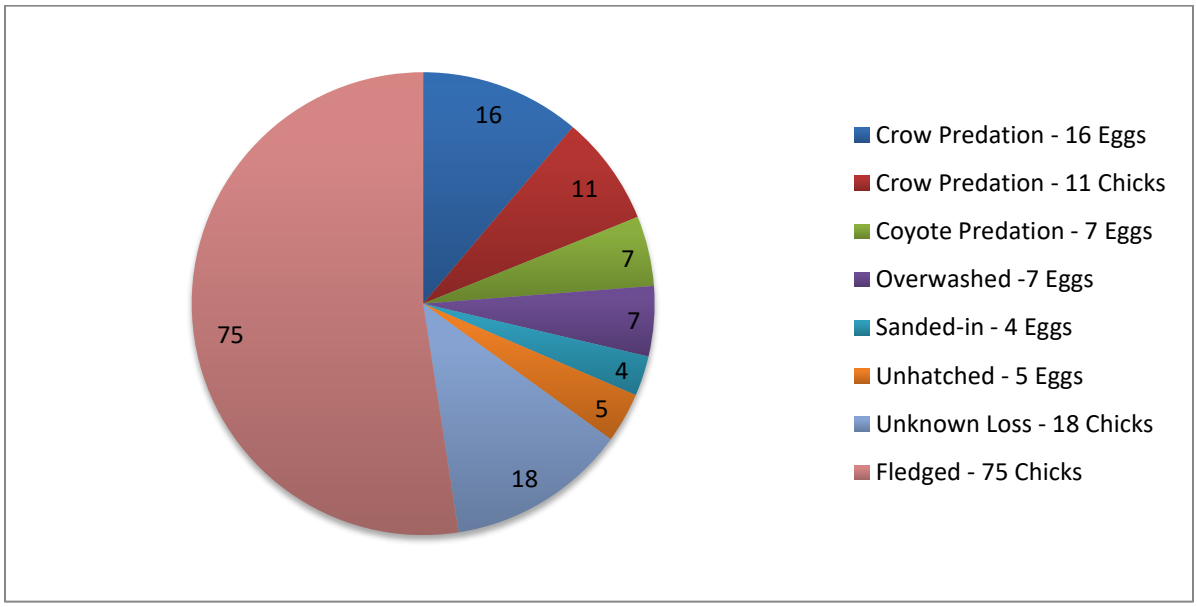
Beginning early March 2018, all potential shorebird nesting habitat was fenced off with symbolic fencing on both Nauset Spit and Nauset Beach South. By April 1, fifteen miles of symbolic fencing was properly installed.

Twelve months a year, non-essential vehicle are prohibited from nesting areas in accordance with the Guidelines, except during the HCP when non-essential vehicles may pass through the monitored self-escort zones.

While fencing on March 28, the first Piping plover was observed by the Orleans' Natural Resources Officer/Head Shorebird Monitor (NRO) on Nauset Beach South near Little Pochet Wash. The first nest was found on May 2 and the last Piping plover brood fledged on August 17.

In all, Nauset Beach had 38 Piping plover nests with 28 productive pairs fledging 75 chicks. The following graph summarizes the outcome of the 143 eggs laid during the 2018 Piping plover season.

Graph 1: 2018 Individual Egg Summary



Standard Type "A" exclosures were used to protect Piping plover nests. 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 <5 minutes after the exclosures were erected.

In March of 2018, 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.

A full time Natural Resources officer patrols Nauset Beach daily throughout the year enforcing beach regulations and monitoring activities. Additionally, seasonal beach rangers conduct routine daily patrols between 7:30am and 11pm seven days a week from Memorial Day to Columbus Day.

Table 1: 2018 Summary of Piping plover Nest Activity

	Pair #No	Nest #	Date Clutch Found	Eggs Found	Date Clutch Complete	Eggs Laid	Exclosure Placed	Eggs Hatched	Fate	Chicks fledged
South										
	LPN	A	5/2/18	2	5/6/18	4	5/4/18	4	Hatched 6/1	4
	LPS	A	5/11/18	1	5/17/18	4	angle	4	Hatched 6/13	4
	NemoN	A	5/3/18	1	5/9/18	4	5/8/18	4	Hatched 6/6	4
	MW	A	5/6/18	2	5/9/18	4	5/7/18	3	Hatched 6/4	3
	LPW	A	5/15/18	4	5/13/18	4	5/16/18	3	Hatched 6/21	1
	T2	A	5/14/18	1	5/20/18	4	5/20/18	4	Hatched 6/16	4
	T5	A	5/3/18	2	5/9/18	4	5/9/18	0	Sanded in 5/28	0
	T3	A	5/30/18	4	5/29/18	4	5/31/18	4	Hatched 6/24	4
	AIR	A	5/24/18	1	X	3	X	0	Predated 6/1	0
	RN	A	5/22/18	2	5/27/18	4	5/28/18	4	Hatched 6/21	4
	RS	A	5/29/18	1	6/4/18	4	6/5/18	3	Hatched 7/2	3
	Tote	A	6/1/18	1	6/7/18	4	6/7/18	3	Hatched 7/2	0
	T5	B	6/3/18	1	6/11/18	4	failed first	4	Hatched 7/6	2
	Air	B	6/10/18	3	6/11/18	4	6/12/18	4	Hatched 7/1	0
	LPM	A	6/15/18	2	6/17/18	3	dense grass	0	Predated 7/14	0
North										
	ASP	A	5/8/18	1	5/14/18	4	dense grass	0	Predated 5/28	0
	ResS	A	5/4/18	1	X	2	not complete	0	Predated 5/8	0
	Cove	A	5/10/18	2	5/13/18	3	5/14/18	0	Overwashed 5/28	0
	ResN	A	5/15/18	3	5/16/18	4	angle	4	Hatched 6/10	3
	Urn	A	5/8/18	1	5/15/18	4	angle	0	Predated 6/10	0
	E1	A	5/6/18	2	5/9/18	4	5/11/18	4	Hatched 6/4	0
	E2	A	5/11/18	1	5/16/18	4	5/17/18	4	Hatched 6/12	0
	E3	A	5/15/18	3	5/16/18	4	5/17/18	0	Predated 6/12	0
	C1	A	5/21/18	1	5/27/18	4	5/26/18	0	Overwashed 6/5	0
	ResS	B	5/20/18	2	5/24/18	4	5/24/18	4	Hatched 6/19	4
	PN	A	5/24/18	2	5/28/18	4	5/28/18	3	Hatched 6/24	3
	PW	A	5/29/18	1	X	1	not complete	0	Predated 5/31	0
	C1	B	6/12/18	1	6/18/18	4	6/18/18	4	Hatched 7/12	3
	Cove	B	6/6/18	2	6/10/18	4	6/11/18	4	Hatched 7/6	2
	ASP	B	6/6/18	2	6/10/18	4	dense grass	4	Hatched 7/5	2
	Spit1	A	6/7/18	2	6/11/18	4	spit	4	Hatched 7/4	4
	Spi 2	A	6/7/18	2	6/11/18	4	spit	4	Hatched 7/5	4
	E4	A	6/11/18	2	6/15/18	4	dense grass	4	Hatched 7/10	4
	NI	A	6/7/18	1	6/12/18	4	CCNS	4	Hatched 7/2	1
	PW	B	6/16/18	4	6/15/18	4	failed first	4	Hatched 7/10	4
	E1	B	6/19/18	1	6/25/18	4	failed first	4	Hatched 7/20	4
	E2	B	6/21/18	1	X	3	X	0	Predated 6/25	0
	Urn	B	6/21/18	3	6/23/18	4	spit	4	Hatched 7/14	4

Map 2 – Area 1 & 2 - Nauset Spit – Piping plover Nest Locations (X = Failed Nest / = Nest)

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Map 3 – Area 3 & 4 – Nauset Spit and Nauset Beach South - Piping plover Nest Locations

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Map 4 – Area 5 & 6 - Nauset Beach South – Piping plover Nest Locations: Trail 1 – Trail 3

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Map 5 – Area 7 - Nauset Beach South – Piping plover Nest Locations: Trail 5

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

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 of Orleans has a history of managing pedestrian and vehicular use in compliance with USFWS's Guideline for Managing Recreational Activities in Piping plover Breeding Habitat on the U.S. Atlantic 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 (MADFW 1993), and the 1991 and 2014 Town of Orleans Conservation Commission Orders of Conditions (OOC), as required under the Massachusetts Wetlands Protection Act.

2.2 Determination of the Self-Escort Zone

During the evening of July 14, 2018, Nauset Beach was subjected to an extreme high tide surge as a result of hurricane "Chris". The storm-induced waves combined with an astronomical "King Tide" exceeded the height of the dune crest and significantly flooded the beach and shorebird habitat. This storm event led to the loss of two broods, (Air-B) (Tote-A), the loss of one nest (LPM-A), and the separation of one brood (RS-A). After three days of intensive monitoring, it was determined that (RS-A) was the only unfledged brood remaining in the vicinity of the OSV corridor. (RS-A) was comprised of three unfledged chicks. One of the chicks (RS-A solo chick) was separated from the other two (RS-A pair chicks) by a distance of approximately 600 ft. The (RS-A) adults were witnessed regularly attending both chick locations. On Tuesday, July 17, 2018, 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.*

The NRO, the Lead Shorebird Monitor, and HCP Monitors observed the foraging habits of the two adults and three chicks of the (RS-A) brood prior to the initiation of the HCP. Based upon detailed daily observations, including their foraging range and daily movement, two self-escort zones were established to protect the separated brood. The specific locations of the self-escort zones were intended to be adaptive and variable to reflect the locations of the brood. Additionally, 100 feet on either side of the self-escort zones were maintained as a "safety zone" for the 17 day implementation. The self-escort zones were never moved laterally and were clearly marked at the two end points and had a 15-foot travel width delineated with symbolic fencing. The locations of the self-escort zones remained stationary for the first 9 days. On day 9, July 27, the solo unfledged chick (RS-A solo chick) in the northern self-escort zone was declared fledged and the northern zone was eliminated. By August 5, the two remaining chicks (RS-A pair chicks) had been declared fledged and the southern zone was eliminated.

Map 6 – 2018 Covered Area - RS-A Brood Range and Self-Escort Zone

2.3 Vehicle Numbers

Each time a vehicle passed through the HCP self-escort zone, it counted as one pass. 1,864 total vehicle passes were recorded through the HCP program self-escort zone in 2018.

Table 2: Vehicle Passes through the HCP Self-Escort Zone July 19-August 4, 2018

Date	OSV	Self-contained	Total Passes
July 19	14	0	28
July 20	31	3	65
July 21	65	3	133
July 22	15	0	36
July 23	13	0	26
July 24	23	1	47
July 25	22	3	48
Date	OSV	Self-contained	Total Passes
July 26	10	3	23
July 27	38	16	95
July 28	98	22	218
July 29	156	5	358
July 30	55	7	122
July 31	50	1	108
Aug 1	42	0	85
Date	OS	Self-contained	Total Passes
Aug 2	57	4	118
Aug 3	80	16	180
Aug 4	73	12	174
		TOTAL PASSES	**1864**

2.4 HCP Shorebird Monitor Training

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

All eleven 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. A morning and afternoon shift schedule was posted and 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 distance of 100+ feet and without interfering with their natural behavior. Two weeks into training, 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, the Wetlands Protection Act, and acquainted with the Endangered Species Act and Migratory Bird Treaty Act, so that they were able to effectively provide outreach education and enforcement to all the beach user groups.

During practice training sessions prior to initiation of the HCP, each HCP monitor was required to locate the (RS-A chicks) prior to 8:00 a.m.

2.5 Shorebird Monitors, Rangers, and Schedules

Shorebird Monitors were equipped with hand-held 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 am – 1:00 pm* and the afternoon shifts from 1*2:00 pm – 6:30 pm*. 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 exit windows.

The beach employee staffed at the Buggy Booth at the entrance gate was responsible for ensuring that all OSV 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. Staffing at the Buggy Booth was also responsible for recording the OSV activity (# of passes) in the daily log. Signage reiterating the HCP Procedures and Conditions was displayed at the gate booth. Nauset Beach Rangers were on duty from 7:30 am – 11:00 pm 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 beach drag at the end of the afternoon (6 pm) exit window. Unfledged chicks were located and monitored prior and during rut dragging.

Table 3: 2018 Shorebird Monitoring Program Sample Schedule

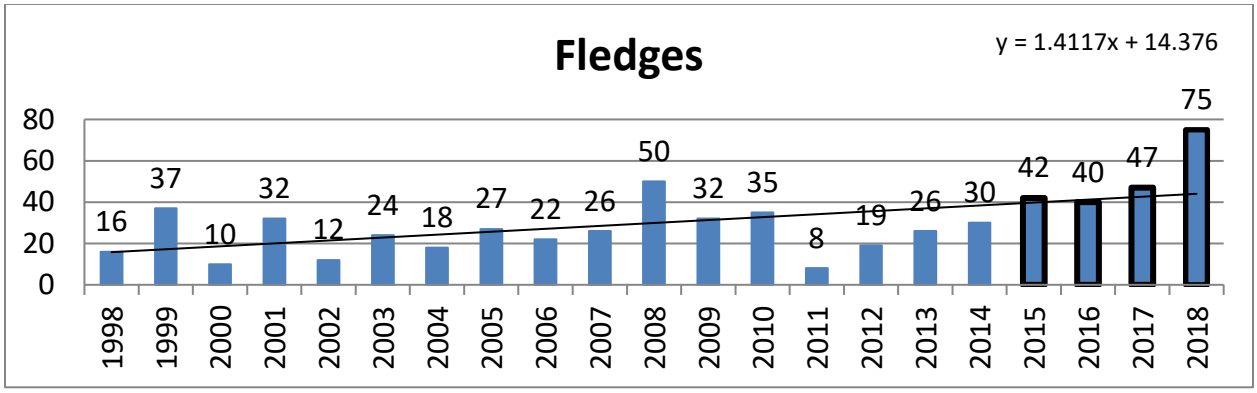
		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6:30 am-1:00 pm	Brood	Megan	Sam	Sam	Hugh	Terry	Hugh	Terry
	Brood	Trevor	Trevor	Chris	Terry	Sam	Sam	Sam
	Road1	Julia	Megan	Julia	Kelly	Trevor	Megan	Ryan
	Road2	Aidan	Terry	Megan	Ryan	Megan	Julia	Kelly
12:30 - 6:30 pm	Brood	Ryan	Ryan	Terry	Hugh	Chris	Trevor	Terry
	Brood	Chris	Hugh	Aidan	James	Hugh	Kelly	Chris
	Road1	Kelly	Kelly	Trevor	Kelly	James	Aidan	Sam
	Road2	Terry	James	James	Trevor	Ryan	Sam	James

CHAPTER 3 IMPACT MINIMIZATION MEASURES

3.1 Monitoring Frequency

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

Graph 2: Yearly Fledge Count 1998 - 2018



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 were 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 to help determine their foraging range. Daily HCP observations were relayed to the NRO and inputted 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.

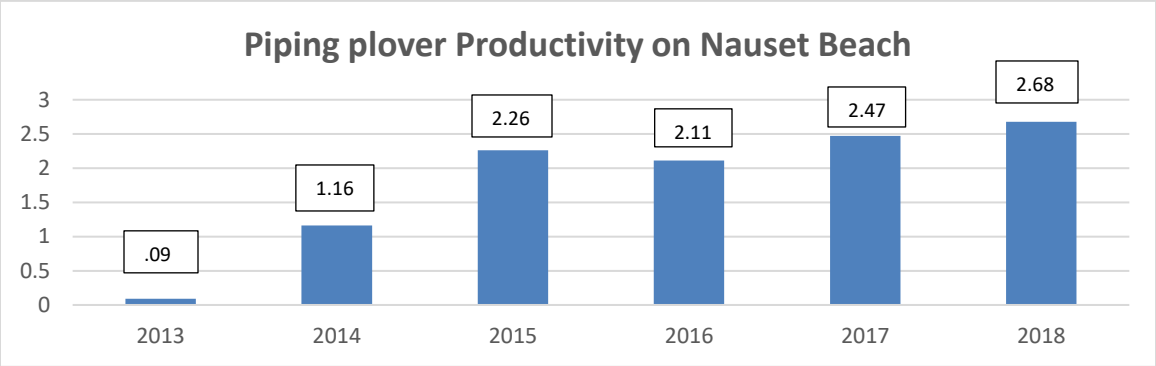
3.2 Effectiveness Monitoring

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).

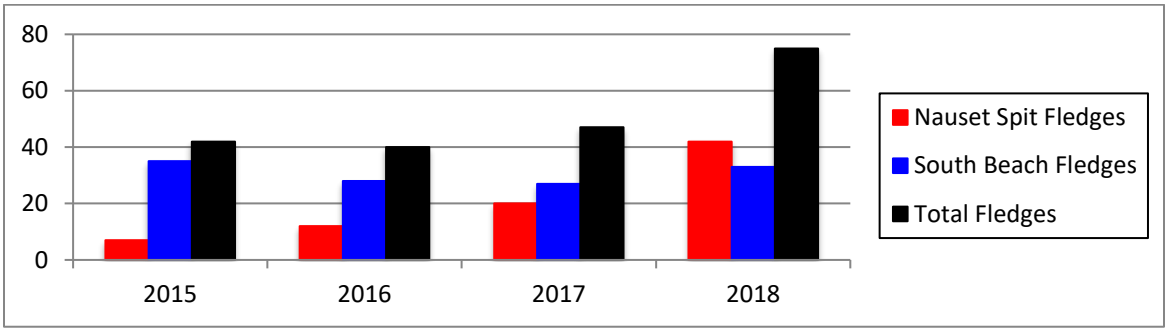
In 2018, The Town of Orleans' Nauset Beach fledge rate for Piping plovers was 2.679 fledglings/pair.

In all, Nauset Beach had 38 nests with 28 productive pairs fledging 75 chicks. 143 eggs were laid.

Graph 3: Piping plover Productivity on Nauset Beach 2013-2018



Graph 4: Fledge Count Piping plovers since HCP Implementation 2015-2018



3.3 Education Measures

The Town of Orleans Natural Resources Department expanded its social media network in 2018 by providing more informative alerts regarding the HCP updates and trail status, regularly published insightful commentary regarding Nauset Beach, and educational dialogue on its newly designed Facebook page <Orleans, MA – Natural Resources>. In 2018, the Towns' Natural Resources Facebook audience rose to 3,570 individual users, an increase of 62% in social media and educational outreach.

A HCP User Guide was again distributed to all OSV permit holders. It was a requirement for all OSV operators to have a signed copy (by the driver) of this guide in order to access the covered 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 resident and non-resident OSV permit holders.

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

3.4 Recreational Benefits

Vehicles passes during HCP implementation have increased 83.48% over the last three years from 300 OSV passes in 2015 to 1864 OSV passes in 2018, with a marked increase of 25%

shown this year from last – 1369 OSV HCP passes in 2017 to 1864 OSV HCP passes in 2018.

The 2018 HCP implementation offered the opportunity to keep Nauset Beach South open to OSV travel for an additional 17 days which under the standard "MADFW Guidelines" would have remained closed.

Table 4: History of Beach Closures and Number of Days Closed

Year	Date of Closure	Date Re-Opened	Number of days closed
2006	June 22	July 25	33
2007	June 22	August 1	40
2008	June 16	July 24	38
2009	May 30	August 4	66
2010	May 27	August 9	74
2011	June 3	August 5	69
2012	June 6	August 14	69
2013	June 3	August 23	81
2014	June 11	August 15	65
2015	June 4	July 26	53
2016	June 10	July 14	34
2017	June 6	July 15	39
2018	June 1	July 19	48

CHAPTER 4 MITIGATION

4.1 Mitigation Measures

In February 2018, the Town provided $11,600.00 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 provided $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 $11,600.00 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 5 SPECIES OF SPECIAL STATUS

5.1 Least terns

Least Terns (LETE) once again established nesting sub-colonies on Nauset Spit north of the Orleans town line in Eastham on the northernmost end of Nauset Beach, on the ocean side south of Little Pochet Wash, in the Pochet Wash on Nauset Beach South, and at Trail 5 at the Orleans / Chatham town line.

Least terns were monitored several times a week on Nauset Spit (due to tidal access restriction) and monitored daily at Little Pochet and at Trail 5.

Nauset Spit

During the June A-Count Census, 70 adult pairs were counted with reasonable accuracy. 21 adult pairs were counted during the B-Count Census. Nests were identified with GPS locations. Many early nests were lost to overwash. Coyote predation was also observed.

Pochet Wash

Least terns were monitored daily in the area north and south of Little Pochet Wash. A colony of 63 adult pairs was counted during the A-Count Census. An extreme overwash on July 14th disrupted the colony with nests being overwashed. Least terns were not present in large numbers afterwards. The B-Count found 11 adult pairs attempting re-nests.

Trail 5

A late developing sub-colony of Least terns gathered along the Orleans / Chatham town line between Trails 5 and Trail 6. Due to Least terns in close proximity within the Town of Chatham, monitors used a nest count for the method of survey. 12 nests were located and GPS-ed to map the sub-colony.

5.2 Roseate Terns

6 Roseate terns were observed within a large common tern migration flock on the ocean flats of Nauset Spit during the week of September 3 – September 8, 2018 during routine monitoring patrol. Observations were made based upon bands.

No Roseate terns were observed on Nauset Beach South in 2018 in Orleans.

5.3 American Oystercatchers

Two pairs of American Oystercatchers (AMOY) were observed in flight on Nauset Spit and Nauset Beach South in 2018 (during the annual A-Count and B-Count census).

After extensive searches through July, no AMOY nests were found.

Map 7 – 2018 Least Tern nests located on Nauset Spit

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Map 8 – 2018 Least Tern nests located on Nauset Beach South: Pochet Wash

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Map 9 – 2018 Least Tern nests located at Trail 5

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

5.4 Diamondback terrapins

The Town of Orleans' Natural Resources Officer was responsible for monitoring Diamondback terrapins for the Town of Orleans during the regular daily OSV corridor patrols from the last week of May through mid-September.

Surveillance of the area by Mass Audubon staff began in late June 2018. Regular checks were conducted by Robert Prescott, along with a daily schedule of Wellfleet Bay Wildlife Sanctuary (WBWS) trained volunteer turtle monitors. A backpack kit was left for the season in the buggy booth for daily monitoring patrols. The pack had nest data sheets and clipboard, water spritzer, paper towels, and DBT carrier.

Although multiple tracks were observed, only one nest was located in the Pochet Wash in 2018. The nest was comprised of 12 eggs. Since the nest was found on the east side of the Nauset Beach South OSV corridor, Mass Audubon was called to relocate the eggs to "Pochet Wash Turtle Garden", on the west side of the OSV Trail. A Wellfleet Bay Wildlife Sanctuary staff member processed the nest data, relocated the eggs to the "Pochet Wash Turtle Garden," and installed a predator excluder made of hardware cloth and wooden stakes. A numbered metal tag was attached to the excluder in order to distinguish the nest.

Table 5: 2018 GPS Location of Diamondback Terrapin Tracks, Nest, Turtle Garden

Date	Activity	Latitude	Longitude
4-Jul	Tracks	41.78403043	-69.93695604
17-Jun	Tracks	41.78265848	-69.93729944
5-Jul	"DT highway"	41.78076081	-69.93791442
8-Jun	Relocated nest	41.77679194	-69.93618289
5-Jul	Tracks	41.77557367	-69.93613383
10-Jul	Tracks	41.77414720	-69.93553706
13-Jul	Tracks	41.77350485	-69.93565994
12-Jul	Tracks	41.76751380	-69.93447592

After 80 days, Robert Prescott from the Wellfleet Bay Sanctuary made that decision to move the eggs to the Sanctuary for further incubation. 11 of 12 eggs hatched two weeks later. The hatchlings were released on the west side of Pochet Creek.

As a matter of "Standard Operating Procedures", the Town of Orleans Department of Natural Resources executed the following "Action Plan Protocols" in agreement with Mass Audubon Wellfleet Bay Wildlife Sanctuary (WBWS) when a nest was located:

Action Plan: When DBT tracks were observed, we followed the tracks and/or followed the terrapin until it lead us to a disturbed spot of sand, a turn around, or the tracks lead us back into the water.

Map 10: 2018 Location of DBT Tracks, Nest, and Turtle Garden

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

When we found a nest: Using GPS, we (1) pinged the nest, or tracks if no nest, to gather GPS coordinates, date and time of observation: (2) if a nest, placed a flag next to the nest.

Verify the Nest: Once a nest is located, monitors verified the nest by taking off the top layer of sand gently; pressing 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 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 Natural Heritage for permission to have Robert Prescott relocate the nest to the Pochet Turtle Garden. Once permission has been granted, Robert Prescott or WBWS staff member relocates the nest.

CHAPTER 6 ABSTRACT

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

Productivity: The 2018 Nauset Beach Piping plover HCP Monitoring Program was a success. Our overall HCP fledge rate was 100%, all three chicks in the HCP brood (RS-A) fledged.

The 2018 Town of Orleans Piping plover productivity increased to 2.68 fledges per breeding pair from 2.47 fledges per breeding pair in 2017.

Total Vehicle Passes: 1,864 vehicle passes occurred on Nauset Beach South during the HCP. The duration of the HCP was 17 days.

Caravans: There were no caravans in 2018 during the HCP.

Violation Incidents - No violations were issued during the HCP. We attribute this to adequate training and strategic positioning of staff and effective educational outreach.

Outreach and Education - We find that we are able to reach the target audience most effectively through social media, email blasts, and on-site staff interactions. We did not undergo any formal programs.

Medical Emergencies - One Medical Emergency was logged for a gentleman complaining of chest pains at Trail 1 during a 2pm-4pm HCP beach access / exit closure. No emergency transport was required through self-escort zone.

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

APPENDIX 1 – HCP DAILY ACTIVITY LOG SUMMARY JULY 19 –AUGUST 4, 2018

Summary:

On July 19, 2018, the Town of Orleans Natural Resources Department implemented the Statewide HCP program for Nauset Beach South. Similar to last year's HCP, vehicles were only allowed access/exit to the South Beach during specified access windows.

The access windows are as follows: 8am-10am / 12pm-2pm / 4pm-6pm
No non-essential vehicles were 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 exit through the self-escort zone was allowed after 6pm. All OSV were 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.

Location of HCP Self Escort Corridor:

The 2018 HCP self-escort zone was placed in Riley Wash within the north end of Pochet Wash 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. Due to the fact that the brood was separated by the storm surge of Hurricane Chris and an astronomical high tide, two self-escort zones for the one brood were established.

The northerly HCP self-escort zone was 544 feet in length (181 yards) and 15 feet wide.

The southerly HCP self-escort zone was just south of the other self-escort zone and north of the Little Pochet Wash. The southerly self-escort zone was 626 feet (209 yards) in length and 15 feet wide.

HCP Personnel:

Two shorebird monitors were placed with the HCP brood (RS-A) 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 was groomed/dragged.

Education:

A press release on the HCP opening and updates were posted on Town of Orleans website, sent as an email notification, and posted on the Town of Orleans Natural Resources Facebook Page.

Brood Daily Observations: RS-A

RS-A Biography: Nest Found 5/29/2018 with 1 egg. Clutch complete on 6/4/2018 w/4 eggs. Exclosed on 6/5/2018. Three of four eggs hatched on 7/2/2018. RS-A Brood separated by storm on 7/14/2018. RS-A Brood declared fledged on 8/4/2018.

Daily Activity of Brood RS-A

Week 1: July 19 –Aug 25, 2018

July 19 – Fair / Temp 60-69 / Wind 10-13 SSW G22. (RS-A solo chick) located in Pochet Creek marsh on the west side of the northerly self-escort zone (Map 7, Page 13), and remains all day with one (RS-A adult). (RS-A pair chicks) located on front beach on the east side of the southerly self-escort zone (Map 7, Page 13) with adult present and remain all morning. Meanwhile, the other (RS-A adult) begins to take flight designating to monitors the path the adult wants the (RS-A pair chicks) to take to cross the self-escort zone. At 10:30am, (RS-A pair chicks) move from beach front to dune grass east of self-escort zone while (RS-A adult) continues to call from west side of self-escort zone. (RS-A adult) takes flight at 11:15 am and mimics the path flown earlier. At 11:25 am the (RS-A pair chicks) cross the self-escort zone and remained west of the zone until 3:45 pm when they cross back west to east to ocean for the remainder of the day.

July 20 – Fair / Temp 57-77 / Wind 5-9 S. (RS-A solo chick) and (RS-A adult) located quickly 6:45 am in marsh grass creek side mingling with recently fledged (RN-A brood). Low tide most of the day, there was little movement from (RS-A solo chick) aside from foraging up and down the creek all day. Noticeable flight feathers showing on (RS-A solo chick). (RS-A adult) flew midday and joined the other (RS-A adult) and (RS-A pair chicks). (RS-A adult) returned to join (RS-A solo chick) by late afternoon as incoming tide flooded marsh. (RS-A adult) and (RS-A solo chick) remained in Riley Wash until closing. (RS-A pair chick) was located ocean side by white barrel at 7:00 am. By 8:15 am (RS-A adult) brings (RS-A pair chicks) together in upland grasses, then moved south where they were driven back by a small number of terns. 10:10 am, (RS-A adult) attempted (flight path technique) to move (RS-A pair chicks) across trail, but pair didn't follow. 11:30 am, (RS-A adult) moved pair west across self-escort zone to bay side without interrupting OSV movement. At 5:15 pm (RS-A pair chicks) crossed zone from east to west without interrupting OSV movement.

July 21 – Mostly cloudy / Temps 55-72 / Wind 5-12 SW. (RS-A solo chick) and (RS-A adult) located in Riley Wash south side, 50 yards from creek. By 10:30 am (RS-A solo chick) and (RS-A adult) foraging in creek with ebbing tide, where they remained for the day. Observed attempts by (RS-A solo chick) to jump and flap wings. (RS-A pair chicks) were again found ocean side by 7:00 am. 10-10:30 am two attempts by (RS-A adult) to cross pair to west side. Second attempt successful. At 4:45 pm (RS-A) adult made multiple

flights to get (RS-A pair chicks) to cross to ocean side. They finally did cross back to ocean side at 5:00 pm without interrupting OSV movement.

July 22 – Cloudy / Bands of rain throughout day /Temp 64-72 / Wind 10-15 WNW G 23. (RS-A solo chick) located ocean side on Riley Wash. No adult observed with (RS-A solo chick). (RS-A solo chick) stayed ocean side all morning. (RS-A adult) returned at 11:30 am and remained with (RS-A solo chick) ocean side, but at a distance and sitting under a clump of beach grass. At 5:30 pm, (RS-A solo chick) and (RS-A adult) made a sprint to the creek side. The self-escort zone was interrupted and closed with one OSV halted in the zone. Two OSV attempting to exit were held on the south side of the self-escort zone. In less than 5 minutes (RS-A adult) and (RS-A solo chick) crossed the self-escort zone and began foraging in the creek. Once (RS-A solo chick) and (RS-A adult) were settled into the creek area, over 100 feet from the self-escort zone, all OSV traffic commenced again. (RS-A solo chick) and (RS-A adult) remained creek until 6:00 pm closing. After a long morning search, the (RS-A pair chicks) were located at 7:45 am ocean side by a white barrel brought in by a recent high tide. Two (RS-A adults) were present with (RS-A pair chicks) at this time. By 9:15 am, both (RS-A adults) attempted to move (RS-A pair chicks) west. (RS-A pair chicks), however, stay on east side on the ocean flats. By 10:15 am, (RS-A pair chicks) cross trail to bay side with both (RS-A adults). 11:30 am, one of the (RS-A adults) returns to (RS-A solo chick). (RS-A pair chicks) stay on bay side all day waiting out storm and winds.

July 23 – Partly cloudy / Temps 64-75 / 10-15 SSW G23. (RS-A solo chick) located by 7:00 am along creek. At 10:30 am, observed adult flying circles around (RS-A solo chick). Observed (RS-A solo chick) attempting to fly. (RS-A solo chick) and (RS-A adult) remained creek side the whole day. By 7:30 am, located (RS-A pair chicks) and (RS-A adult) behind black tote, ocean side. 9:30 am (RS-A adult) flying back and forth east to west. By 9:45 (RS-A pair chicks) and (RS-A adult) move bay side to forage in the marsh. Noticed good growth in flight feathers on one of the (RS-A pair chicks). The other one of the (RS-A pair chicks) is not displaying flight feathers. (RS-A pair chicks) remained bay side for the afternoon.

July 24 – Partly cloudy / Temps 64-78 / 10-12 SSE G17. After a very long search, at 8:15 am (RS-A solo chick) and (RS-A adult) are found foraging on the flats on the ocean side. They remained ocean side until 9:20 am when they cross the trail together, very quickly, without interrupting OSV movement, and returned to the creek where they remained the rest of the day. (RS-A solo chick) observed jumping and flapping wings during afternoon. (RS-A pair chicks) and (RS-A adult) are found on ocean side in peat by 7:30 am. At 9:15 am (RS-A adult) marched (RS-A pair chicks) to upland area but didn't cross them. All three remained in dune beach grass. 10:45 am (RS-A adult) started flying to show (RS-A pair chicks) path to bay side. 12:30pm, without interrupting OSV movement, (RS-A pair chicks) cross the self-escort zone to the marsh bay side. (RS-A pair chicks) and (RS-A adult) remain on the west side by the creek through the end of day.

July 25 – Dense fog morning / mostly cloudy afternoon / Temp 63-75 / Wind 9-12 SSE-SSW G22. (RS-A solo chick) located at 6:50 am on ocean side without (RS-A adult). (RS-A solo chick) observed in flight for a short distance (10 ft), definitely off the ground. (RS-A solo chick) crossed the trail (walking) unattended at 10:30 am and continued to practice taking flight all day on creek side without (RS-A adult) present. (RS-A pair chicks) and two (RS-A adults) were found by black tote around 7:30 am. One of the (RS-A pair

chicks) showing lengthy flight feathers. The flight feathers on the other (RS-A pair chick) growing very slowly. 8:45 am (RS-A adults) move (RS-A pair chicks) to beach grass and (RS-A adults) take flight as usual to show the path to the bay side. 9:30 am, both (RS-A pair chicks) leave grass for ocean front. 10:00 am (RS-A pair chicks) still on front beach, (RS-A adults) still flying to get them to cross west. One of the (RS-A pair chicks) observed jumping and flapping wings, trying to take flight. 10:45 am adult pushed (RS-A pair chicks) to upland grass. By 11 am (RS-A pair chicks) cross self-escort zone to bay side in marsh where they stay for the day.

Week 2: July 26 –Aug 1, 2018

July 26 - Delayed opening HCP due to heavy rain. HCP opened at 11am. Light Rain, cloudy / Temp 63-79 / Wind 8-12 SSW 25G. (RS-A solo chick), for the first time, very hard to find. Eventually found ocean side by 11:30 am, almost to the Pochet walkway. Farthest south the (RS-A solo chick) had wandered down the beach since the (RS-A brood) was separated. No (RS-A adult) observed with (RS-A solo chick). By 2 pm (RS-A adult) retrieved (RS-A solo chick), who was mingling within the common and least tern colony, ocean side, and the two (RS-A adult and RS-A solo chick) move north back into Riley Wash. At 4:45 pm, (RS-A solo chick) and (RS-A adult) crossed through the self-escort zone without interrupting OSV movement, where they stayed for the remainder of the day. (RS-A pair chicks) were found ocean side at 11 am without (RS-A adult) present. At 1:15 pm (RS-A adult) flew onto beach. 1:50pm (RS-A pair chicks) crossed to bay side and remained in the marsh for the rest of day. One of the (RS-A pair chicks) was observed taking flight <20 feet.

July 27 - Full moon / Fog all day / Temp 73-80 / Wind 6-10 SSW. (RS-A solo chicks) found quickly along the creek with (RS-A adult) sitting beneath beach grass clump. At 11:00 am, (RS-A solo chick) was observed in flight of >50 feet. At 11:30 am, on day 26 of age, (RS-A solo chick) was declared fledged after being observed by multiple monitors and the Natural Resources Officer in flight of >100 feet with a bank while in flight. *At 12 noon the northerly self-escort zone was removed. (RS-A pair chicks) were found ocean side by 7:00 am. At 8:30 am the (RS-A adult) marched the (RS-A pair chicks) to grass, where they remained ocean side through the morning. From 12pm-2:30pm (RS-A pair chicks) remained ocean side, but adult missing. 2:30 pm, one of the (RS-A pair chicks) was observed in flight for a distance > 20 feet. By 3 pm, (RS-A adult) flew to Riley Wash to be with the other (RS-A adult) and newly fledged (RS-A solo chick). One of the (RS-A pair chicks) moved ocean side to tern colony, while the other RS-A pair chick) remained in grass. First day that the (RS-A pair chicks) were not in close proximity to each other, as well as no (RS-A adult) close by. By 4:30 pm, (RS-A adult) returned to take (RS-A pair chicks) bay side. One of the (RS-A pair chicks) moved bay side across the self-escort zone with no interruption to OSV movement. The other chick of the (RS-A pair chicks) remained ocean side. At 6PM, when we closed the HCP corridor, and after we dragged the trail, one of the (RS-A pair chicks) remained ocean side, the other one of the (RS-A pair chicks) remained with (RS-A adult) on bay side. First time we left the (RS-A pair chicks) separated east and west of each other.

July 28 - Fog and light rain / Temp 66-80 / Wind 6-10 SSW. Even though (RS-A solo fledge) was declared fledged, (RS-A solo fledge) and (RS-A adult) were found on the ocean flats at 7 am. Remained ocean side most of the morning, with many flights of sustained distances observed. Low tide 6:45 am. Found one of

the (RS-A pair chicks) and (RS-A adult) on ocean side by 7 am. The other (RS-A pair chick) was not immediately found. The (RS-A pair chick) with (RS-A adult) was observed jumping but no flight. (RS-A adult) flew west without peeping and stayed away from the (RS-A pair chick) that was jumping most of the morning. 11 am both of the (RS-A pair chicks) and one (RS-A adult) were together. Adult finally moved (RS-A pair chicks) bay side by 11:50 am. (RS-A adult) observed brooding one of the (RS-A pair chicks).

July 29 - Fair / Temp 66-82 / Variable Wind 6-7. (RS-A adult) and one of the (RS-A pair chicks) were found in marsh by 7:30 am. (RS-A adult) observed, once again, brooding the chick. The other one of the (RS-A pair chicks) was not immediately located. At 8:20am, the missing RS-A pair chick) was located ocean side, 50 yards south of usual area. At 9 am, (RS-A adult) flew ocean side. At 9:50 am, (RS-A pair chicks) were bay side. Still no flight observed from one of the (RS-A pair chicks), while the other one of the (RS-A pair chicks) is jumping, flapping, and observed in short flight <20 ft. They remain bay side all day.

July 30 – Fair / Temp 66-82 / Variable Wind 3-7. (RS-A pair chicks) and one (RS-A adult) located ocean side by a dead seal washed ashore. One of the (RS-A pair chicks with the longer flight feathers is showing many attempts to fly during the morning. The (RS-A pair chicks) and (RS-A) adult remain ocean side, mixed together with the tern colony. By 1:00 pm, after many attempts, one of the (RS-A pair chicks), with the longer flight feathers is observed in flight for more than >100 feet with a bank while in flight. Flight is observed by two other monitors. At 2:00 pm, one of the (RS-A pair chicks) is declared fledged on the 29th day of age. No signs of taking flight from the other (RS-A pair chick), though jumping, and flight feathers have more length and the chick is getting bigger.

July 31 – Foggy am, Cloudy pm / Temp 68-80 / Wind 6-10 SSW. The unfledged (RS-A pair chick) and the (RS-A pair fledged chick) are located together ocean side south by the dead seal. (Unfledged RS-A pair chick) still jumping, but no flight. Noticed (unfledged RS-A pair chick) fall while spreading wings and jumping. 10:15 am (RS-A adult) tried to cross (unfledged RS-A pair chick), to no avail. 10:50 am, (RS-A adult) and (fledged RS-A pair chick) are bay side at low tide, but (unfledged RS-A pair chick) remained on ocean flats at low tide. By end of day, still on ocean side, (unfledged RS-A pair chick) is observed with more balance. At closing of HCP 6:00 pm, (fledged RS-A pair chick) and (RS-A adult) bay side and (unfledged RS-A pair chick) ocean side.

August 1 – Fair / Temp 66-75 / Wind SSE 5-12 G20. (RS-A adult) and (fledged RS-A pair chick) on ocean side at 7:30am on flats. (Fledged RS-A pair chick) is observed flying from exposed ocean flat to other exposed ocean flats. (Unfledged RS-A pair chick) on ocean side in peat. By afternoon (RS-A adult) and (fledged RS-A pair chick) are not seen. (Unfledged RS-A pair chick) remained on ocean side all day.

Week 3: Aug 2 – Aug 5, 2018

August 2 – Partly Cloudy / Temp 75-84 / Wind SW 9-14 G26. (Unfledged RS-A pair chick) is found ocean side alone at 7:15 am. No noticeable ability to fly. Remained on ocean side all day. Mostly sheltered in beach grass. No sign of (RS-A adults) all day.

August 3 – Mostly cloudy / Temp 75-86 / Wind SW 8-12 G24. (Unfledged RS-A pair chick) found on ocean side. No signs of (RS-A adults). No attempts by (unfledged RS-A pair chick) to fly. Remained on ocean side all day.

August 4 – Rain / Temp 68-82 / Wind SSW 8-14 G24. (Unfledged RS-A pair chick) found on flats at 7 am with tern colony. At 9:45 am, (RS-A adult) and (fledged RS-A pair chick) return ocean side. Very windy. (RS-A adult) attempts to move (Unfledged RS-A pair chick) to marsh, but (unfledged RS-A air chick) stayed in beach grass in its customary location. (RS-A adult) and (fledged RS-A pair chick) fly bay side. (Unfledged RS-A pair chick) moved to bay side at 11:15 am. (RS-A adult) and (fledged RS-A pair chick) flew away by 3 pm for the rest of the day. (Unfledged RS-A pair chick) stayed on bay side for remainder of the day.

August 5 – Foggy am-Clear pm/ Temp 66-84/ Wind Variable 5-8. (Unfledged RS-A pair chick) declared fledged at 35 days old and the self-escort zone was disassembled. Monitoring continued, (unfledged RS-A pair chick) observed on ocean side with (RS-A adult) and (fledged RS-A pair chick).

We continued to monitor (unfledged RS-A pair chick) daily. On August 16, 2018, at 46 days, the (RS-A pair chick) was observed in sustained flight >100 with a bank and declared fledged.

August 23, 2018 was the last day we saw the last fledged RS-A pair chick. We believe the fledged chick moved south with the tern colony. On August 26 no terns were observed on Pochet Wash.

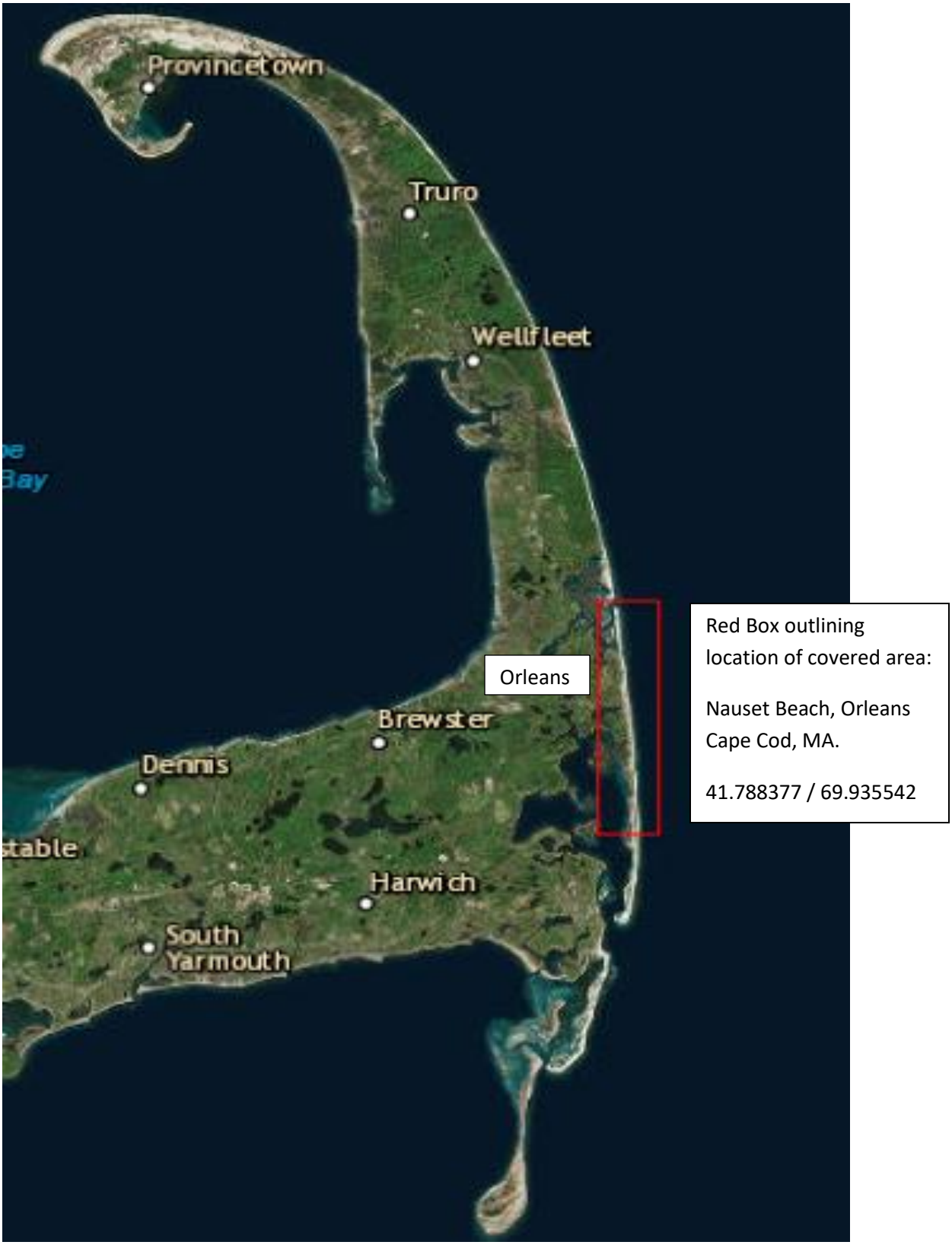
2019 TOWN OF ORLEANS - HABITAT CONSERVATION PLAN ANNUAL REPORT
ON PIPING PLOVERS AND SPECIES OF SPECIAL STATUS

"First Arrivals 2019"

Prepared by:
Town of Orleans Department of Natural Resources
139 Main Street, Orleans MA 02653
Contact: Nathan Sears
(508) 240-3755
nsears@town.orleans.ma.us
October 2019

TABLE OF CONTENTS

Locus Map – Location of Nauset Beach in Orleans, MA on Cape Cod



CHAPTER 1 INTRODUCTION

1.1 2019 Town of Orleans Statewide Habitat Conservation Plan

This annual report summarizes the Town of Orleans' HCP implementation activities during 2019 and has been prepared in accordance with the requirements of the HCP.

February 26, 2019, the Massachusetts Division of Fisheries and Wildlife (MassWildlife) re-issued a 3-year Conservation and Management Permit to the Town of Orleans (the "Permit Holder"). The permit and associated Certificate of Inclusion (COI) in the Massachusetts Habitat Conservation Plan (HCP) was issued in accordance with the Endangered Species Act (ESA) authorizing the "Take" of the State and Federally listed Piping Plover, which is listed as "Threatened" pursuant to the MESA and "Threatened" pursuant to ESA, as well as, the permit also authorizes the Taking of the state-listed Least Tern and Diamond-backed Terrapins, listed as Special Concern and Threatened, respectively.

The purpose of the HCP is to provide the necessary protection to Piping Plovers, Least Terns, and Diamond-backed terrapins that will advance the recovery of the state- and federally-threatened species while allowing flexible management of recreational activities on nesting beaches under a state-wide Incidental Take Permit (ITP).

The goals of this annual report are as follow: (1) to provide a brief summary describing the HCP implementation of the covered activities and the effects on recreation. (2) To summarize the coastal Waterbirds monitoring program in accordance with the Guidelines. (3) Provide mapping of Nauset Beach with GPS locations of Piping Plover nests, Least Tern colonies, and Diamondback terrapin nests and tracks. (3) And, to summarize the predator management mitigation program.

As a Statewide COI stakeholder the Town collects daily field logs of implementation dates of covered activities; number of broods and chicks exposed; locations of exposed broods and any impacts to the broods associated with the covered activity; and monitoring frequency.

During the 2019 HCP implementation, OSV were allowed to access Nauset Beach South through the HCP self-escort corridor past two Piping Plover broods for 16 days when access would otherwise have been restricted.

1.2 2019 HCP Implementation: Covered Activities - Piping Plover

In compliance with the General Conditions of Conservation & Management Permit
019-335 DFW / NHESP File # 16-3597

Plan Location: Nauset Beach, Orleans
Covered Activity: Over-Sand Vehicle Use in the Vicinity of Unfledged Chicks.
Description of Covered Activity Implementation: Oversand vehicles, self-escorted through a 15 wide corridor by passengers walking in front of each vehicle, were allowed past 2 broods of unfledged chicks.
Brood Location: Pochet Wash
Allowable Take Exposures: 2
Take Exposures Used: 2
% of Total Pairs Exposed: 5.00% (2 broods out of 40 productive pairs)
Pair Identifier: 1. RWM-A (41.781076N / 69.936821W) 2. LPS-B (41.773684N / 69.933996W)
Take 1 - Age of Chicks When First Exposed: RWM-A: 20 days old (Hatched on 7/5)
Take 2 - Age of Chicks When First Exposed: LPS-B: 10 days old (Hatched on 7/15)

 # Chicks Exposed: 1. RWM-A: 3 chicks 2. LPS-B: 3 chicks
 # Fledged from Exposed Pairs: 1. RWM-A: 3 Fledged 2. LPS-B: 3 Fledged
Start of Implementation: July 24, 2019
End of Implementation: August 8, 2019
Days Brood(s) Exposed to Covered Activity: 1. RWM-A: 8 days 2. LPS-B: 16 days
Productivity (Fledges/pair): 2.70 fledges per pair (108 fledges / 40 pairs)

1.3 2019 HCP Implementation Summary

The Nauset Beach South Over-Sand Vehicle (OSV) Trail closed at 6:00 am on May 31, 2019 to all OSV users due to the presence of unfledged Piping Plover chicks within the vicinity of the OSV corridor. Nauset Beach South OSV Trail remained closed for 54 days from May 31 thru July 23, 2019.

On July 22, 2019, MassWildlife was contacted by the Town of Orleans 24 hours in advance to inform the State that the Town would be "starting our HCP on Wednesday, July 24 at 8:00 a.m. and requesting one 'Take" for Piping Plover brood (RWM-A)". Under the covered activity "OSV Use in the Vicinity of Unfledged Piping Plover Chicks", the Town is permitted to drive past up to two broods of unfledged Piping Plovers subject to impact minimization measures to reduce the risk of chick mortality. An HCP Self-Escort Zone was installed by HCP monitors that afternoon in Riley Wash.

The afternoon of July 23, 2019 two EF-1 tornadoes touched down on Cape Cod. One of the two tornados touched down west of Orleans and moved east over Nauset Beach producing thunderstorms and winds reaching 110mph. Two broods of unfledged chicks were still on Nauset Beach South at the time the tornado passed over. (1) The HCP brood (RWM-A) for which the "Take" was requested on July 22nd, and (2) a second Piping Plover brood (LPS-B) of two adults and three chicks, which was isolated from the vicinity of the OSV Corridor by over 200 yards of coastal dune grass.

By 7:30 a.m. on July 24, 2019, after the severe weather had passed, the (RWM-A) brood and (LPS-B) had been locate.

At 8:00 a.m., the Town of Orleans implemented the 2019 HCP allowing OSV to self-escort through a 15 ft wide corridor past one brood – (RWM-A).

As the morning progressed it became apparent that the foraging range for (LPS-B) had likely shifted. The brood continued to travel north from their previous isolated (separated from the OSV Corridor by an expansive coastal dune) location to a new area just north of Little Pochet Wash on the front beach. Due to the proximity of the brood to an overwash, it was decided that a second "Take" was warranted.

Immediately, MassWildlife was contacted and a second "Take" was requesting for (LPS-B) for the covered activity – OSV Use in the Vicinity of Unfledged Piping Plover chicks. A HCP Self-Escort Zone was installed by HCP monitors in Little Pochet Wash.

Beginning at 8 am Thursday, July 25, HCP staff began running two self-escort zones.

Thanks to the HCP, the Town of Orleans was able to open Nauset Beach South for an additional 16 days between July 24 and August 8, 2019 which would have normally remained closed without the issuance of a Conservation and Management permit and the associated Certificate of Inclusion in the Massachusetts HCP.

1.4 2019 Shorebird Management

By April 1, updated contact information was provided to MassWildlife and symbolic fencing was installed around the perimeter of all areas of suitable habitat for Piping Plover and Least Tern colonies, totaling approximately 15 miles of fencing.

Durable, bright yellow “Area Closed” signs indicating nesting habitat were placed at frequent intervals along the symbolic fencing. In addition, "No Dogs Allowed Anywhere on Beach” and “No Kite" signs were posted.

Large educational posters, detailing nesting and breeding behaviors of coastal shorebirds are secured year-round at the Nauset Beach South Gatehouse. This outreach program educates user groups and beachgoers in the identification and protection of shorebirds. The signs contain images of the shorebirds and penalties for entering the restricted nesting habitat.

Fencing and signs are maintained by the Natural Resources Officer / Shorebird Specialist (NRO) year-round and replaced as necessary.

On April 2, 2019, the Town of Orleans received a letter of permit from the Massachusetts Division of Fisheries and Wildlife (MADFW) designating the Natural Resources Manager and employees under his supervision as agents of the MADFW for the purpose of installing and monitoring predator exclosures to prevent predation of Piping Plover nests.

The Town uses Standard type “A” predator control exclosures protecting nests whenever possible based upon dune topography in relationship to where the nest was located. Installation of exclosures is carried out in accordance with the USFWS guidelines by the NRO and lead coastal waterbirds monitor.

In 2019, 29 nests were protected with predator control exclosures. In all cases, the adult Piping Plovers resumed incubation <5 minutes after the exclosures were erected.

Construction and monitoring of predator-control exclosures placed around Piping Plover nests complied with the 1996 guidelines prepared by the Atlantic Coast Piping Plover Recovery Team and the U.S. Fish and Wildlife Service. All circular exclosures were constructed so that there was at least a 5 foot-wide buffer between the nest and the outside edge of the exclosure in all directions (i.e., a 10 foot diameter on circular exclosures), and tops made of netting to prevent entry by avian predators.

The Town continued the non-lethal predator control program on Nauset Beach, which was initiated in March 2015. With the purpose of modifying the behavior of targeted smart predators, four baited decoy electrified exclosures were deployed on the barrier beach adjacent to identified wildlife corridors.

The electrified decoy exclosures were regularly baited with fresh fish racks (replenished every two weeks) and monitored until they were removed in early September. The locations of the electrified decoy exclosures were adjusted/moved regularly with the intent to avoid site specific behavior modifications. All predator tracks in close proximity to the decoy exclosures were monitored and recorded.

No vegetation management occurs on the Barrier Beach.

1.4.1 Monitoring Frequency

Monitoring and management of Piping Plovers, Least Terns and Diamond-backed terrapins is coordinated by the Natural Resources Manager and carried out by the Natural Resources Officer (NRO) with assistance from the Lead Shorebird Monitor and seasonal HCP monitors.

Monitoring occurred daily from dawn to dusk, 7 days per week, April thru September

In addition to Nauset Beach, Skaket Beach on Cape Cod Bay was monitored twice weekly starting May 1 and continued to be monitored for Piping Plovers until July 8. 2019.

Daily monitoring is an integral part of assessing population counts of coastal waterbirds and provides the Town with the necessary accumulated data to track yearly abundance, distribution, and reproductive success as it relates to Piping Plover, Least terns, and other shorebirds on Nauset Beach. Intensive monitoring of Diamond-backed terrapins started early-June and twice daily monitoring of Diamond-backed terrapins began August 26, 2019 thru October 2nd.

The data from the Piping Plover Census June 1-9 was reported to MassWildlife by way of

The Massachusetts Piping Plover Census Short Form was submitted by the end of July indicating Index Count and Total Count of Piping Plovers.

The final census was submitted by September 30, 2019 via the online data entry system PIPLODES and TERNLODES. The final census reports the frequency of site visits; design(s) and installation dates of predator exclosures; dates of nest discovery, completion, and hatching or failure; number of eggs on the date the nest was discovered; total numbers of eggs laid, eggs hatched, and chicks fledged; reasons for egg and chick loss, if determined; and comments regarding census results, limiting factors, and management needs. Maps of sites showing the locations of all nests are also submitted with census forms. This data is collected and stored through a handheld computer device loaded with a Collector App. (For Summary of Census Data see Appendix A)

CHAPTER 2 IMPLEMENTATION OF THE COVERED ACTIVITIES AND IMPACT MINIMIZATION MEASURES

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 of Orleans has a history of managing pedestrian and vehicular use in compliance with USFWS's Guideline for Managing Recreational Activities in Piping plover Breeding Habitat on the U.S. Atlantic 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 (MADFW 1993), and the 1991 and 2014 Town of Orleans Conservation Commission Orders of Conditions (OOC), as required under the Massachusetts Wetlands Protection Act.

The covered activity "OSV Use in the Vicinity of Unfledged Piping Plover Chicks" and key elements of the conditions on covered activities are as follows:

1. Narrow travel corridor (15 feet wide) with no parking.

2. OSV Self-Escort Zone restricted to 6 hours/day (8am-10am/12noon-2pm/4am-6pm)

3. Intensive monitoring of chicks in the HCP Corridor at all times when access windows open for travel.

4. Escort of vehicle(s) and temporarily halting traffic for chicks approaching with 100 feet of the HCP Corridor.

5. Staff training, enforcement, and communication protocols.

6. Mandatory OSV operator education.

7. Vehicle ruts were smoothed out at least once/day when young chicks are present.

2.2 Determination of the Self-Escort Zones

Two self-escort corridors were administered by the Orleans Natural Resources Manager and the NRO during the 2019 HCP season. Both of the self-escort zones were established in the Pochet Wash area on Nauset Beach South. The RWM-A brood self-escort corridor was located at the Riley Wash (the northern section of the larger Pochet Wash area). The LPS-B brood self-escort corridor was located at Little Pochet Wash (the midway section of the larger Pochet Wash).

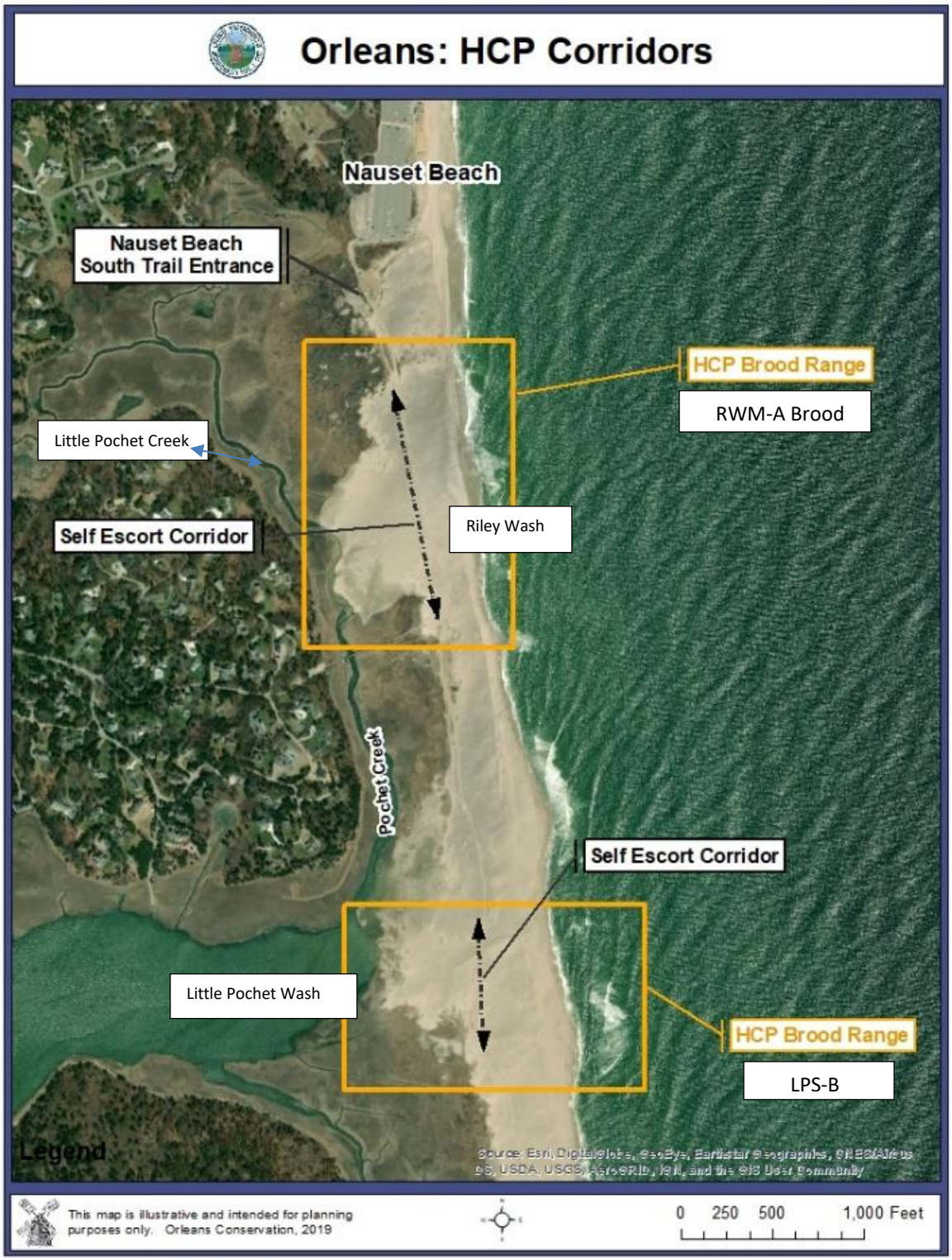
Based upon detailed daily observations, including the broods' foraging ranges and daily movements, the layout of the self-escort corridors were justified.

The RWM-A self-escort corridor was 502 feet in length and 15 feet wide.

The LPS-B self-escort corridor was 326 feet in length and 15 feet wide.

The specific locations of the two self-escort zones were intended to be adaptive and variable to reflect the location of each brood. The self-escort OSV Corridors had the potential to be shifted north and south along the identified route depending on Piping Plover locations and/or movements. Neither self-escort corridor was modified from the original route during the 2019 HCP implementation. Additionally, 100 feet on either side of the self-escort corridor was included as a protective "safety zone" should Piping Plovers move within 100 feet of the self-escort corridor.

2019 Self Escort Corridors



2.3 Vehicle Numbers

Each time a vehicle passed through the HCP self-escort corridors, it was counted as one pass. 2,362 total vehicle passes were recorded through the 2019 HCP self-escort corridors.

The 2,362 total vehicle passes this season showed an increase of 498 vehicle passes from 2018.

Vehicle Passes through the HCP Self-Escort Zone July 24-August 8, 2019

Date	OSV	Self-contained	Total Passes
July 24	13	1	27
July 25	27	5	59
July 26	52	7	111
July 27	106	14	226
		Total First Week	**423**

Date	OSV	Self-contained	Total Passes
July 28	165	3	333
July 29	65	1	133
July 30	57	1	58
July 31	55	1	111
August 1	32	8	40
August 2	77	19	174
August 3	166	11	344
		Total Second Week	**1,193**

Date	OSV	Self-contained	Total Passes
August 4	174	6	354
August 5	79	3	161
August 6	27	0	54
August 7	78	0	156
August 8	19*	0	21*
		Total Third Week	**746**
		Total 2019 Season	**2,362**

2.4 HCP Shorebird Monitor Training

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

All ten 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 Waterbirds 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. A morning and afternoon shift schedule was posted and 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 distance of 100+ feet and without interfering with their natural behavior. Two weeks into training, 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, the Wetlands Protection Act, and acquainted with the Endangered Species Act and Migratory Bird Treaty Act, so that they were able to effectively provide outreach education and enforcement to all the beach user groups.

During practice training sessions prior to initiation of the HCP, each HCP monitor was required to locate the broods prior to 8:00 a.m.

2.5 Shorebird Monitors, Rangers, and Schedules

Shorebird monitors were equipped with hand-held 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 am – 1:00 pm* and the afternoon shifts from 1*2:30 pm – 6:30 pm*. Four monitors staffed each shift. One monitor was assigned to keep visual contact with each brood, two monitors were responsible for policing each self-escort corridor, and one monitor was staffed at the entrance gate. The NRO and Lead Shorebird Monitor were present daily to oversee and assist with monitoring.

2019 HCP Monitor Schedule

	24	25	26	27	28	29	30	31
	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
Hailey	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	OFF	12:30PM-6:30PM	6:45AM-1:00PM
Will	6:45AM-1:00PM	12:30PM-6:30PM	6:45AM-1:00PM	OFF	OFF	OFF	OFF	12:30PM-6:30PM
Olivia	6:45AM-1:00PM	12:30-6:30	6:45AM-1:00PM	OFF	OFF	OFF	OFF	12:30PM-6:30PM
Hugh	6:45AM-6:30PM	6:45AM-1:00PM	OFF	OFF	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM
Sam	OFF	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	12:30PM-6:30PM	OFF
Aidan	12:30PM-6:30PM	12:30PM-6:30PM	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM	12:30PM-6:30PM	OFF	6:45AM-6:30PM
Maddie	6:45AM-6:30PM	OFF	6:45AM-1:00PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM	OFF	OFF
Caroline	12:30PM-6:30PM	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	OFF	6:45AM-6:30PM	6:45AM-1:00PM	12:30PM-6:30PM
Claire	12:30PM-6:30PM	6:45AM-6:30PM	12:30PM-6:30PM	OFF	OFF	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM
Megan	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-1:00PM	OFF	OFF	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-1:00PM

The HCP monitor stationed at the gatehouse was responsible for ensuring that all OSV 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, and for recording the OSV activity (# of passes) in the daily log. Signage reiterating the HCP Procedures and Conditions was displayed at the gatehouse. Nauset Beach Rangers were on duty from 7:30 am – 11:00 pm 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 beach drag at the end of the afternoon (6 p.m.) exit window. Unfledged chicks were located and monitored prior and during rut dragging.

2.6 Education Measures

The Town of Orleans Natural Resources Department expanded its social media network in 2019 by providing more informative alerts regarding the HCP updates and trail status, regularly published insightful commentary regarding Nauset Beach, and educational dialogue on its newly designed Facebook page <Orleans, MA – Natural Resources>. In 2019, the Towns' Natural Resources Facebook audience rose modestly to 3,794 individual users, an increase of 6% in social media and educational outreach.

A HCP User Guide was again distributed to all OSV permit holders. It was a requirement for all OSV operators to have a signed copy (by the driver) of this guide in order to access the covered 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 resident and non-resident OSV permit holders.

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

CHAPTER 3 MITIGATION

3.1 Mitigation Measures

To meet the biological goal of increasing and maintaining Piping Plover, Least Tern, and Diamond-backed terrapin productivity at Nauset Beach and Statewide, mitigation measures focused on reducing predation of eggs and chicks, and on educational outreach at Nauset Beach. The mitigation plan incorporates a strategy to address on-site efforts to address predation at Nauset Beach. The Town has also committed support to off-site predator management plans elsewhere in the State. Together, the on-site and off-site mitigation plans assure that adequate mitigation is being provided each year to offset the authorized incidental take (ITP).

In February 2019, the Town provided $11,600.00 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 provided $5,800 in 2019 for each Piping Plover brood, nest or territory exposed to covered activities. A maximum of two exposures are permitted per year. Because the funds are 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 $11,600.00 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 CONCERN

4.1 Least Terns

Least Terns (Sternum Antillarum) (LETE) once again established nesting sub-colonies on Nauset Spit north of the Orleans town line in Eastham on the northernmost end of Nauset Beach and on the ocean side of the South Trail in

Pochet Wash. Two new locations sprang up in 2019, a sub-colony on North Spit in Priscilla's Wash and a small sub-colony in Riley Wash on Nauset Beach South in Pochet Wash.

Least terns were monitored several times a week on Nauset Spit (due to tidal access restriction) and monitored daily in Priscilla's Wash and on Nauset Beach South in Pochet Wash.

Nauset Spit

During the June A-Count Census, 83 adult pairs were counted with reasonable accuracy. 34 adult pairs were counted during the B-Count Census. Nests were identified with GPS locations. Many early nests were lost to overwash. Coyote predation was also observed. Abundance was considered “Good”. Productivity was considered “Poor”.

North Spit – Priscilla’s Wash

During the June A-Count Census, 63 adult pairs were counted with reasonable accuracy. 37 adult pairs were counted during the B-Count Census. Nests were identified with GPS locations. Many nests were lost to overwash, coyote and crow predation. Abundance was considered "excellent” for the first year site. Productivity was considered “Good to Poor”.

Pochet Wash

Two sub-colonies of Least terns were monitored daily in the area north and south of Little Pochet Wash on Nauset Beach South. In total, 50 adult pairs was counted during the A-Count Census. A B-Count the second week in July counted 41 adult pairs. However, after the July 23, 2019 extreme weather storm, Least terns were not present in large numbers afterwards. Abundance for most of the season was excellent. The Productivity was “Good to Poor”.

.

2019 Least Tern nests located on Nauset Spit

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

2019 Least Tern nests located on Nauset Beach South: Pochet Wash

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

4.2 Roseate Terns

Roseate terns (Sterna dougallii) were observed within a large common tern migration flock on the ocean flats of Nauset Spit during the week of August 26 – August 30, 2019 during routine monitoring patrol. Observations were made from 100 yards away with binoculars. .

In a conversation with Jeff Spendelow, USGS member and Chair of the Technical Working Group of the USFWS's Recovery Team for the endangered NW Atlantic breeding population of Roseate Terns, the first week of September, 2019 he said "a large number of Roseate terns, perhaps as many as a couple thousand", we observed on the flats west of the Chatham Inlet at Pleasant Bay.

No Roseate terns were observed on Nauset Beach South in 2019 in Orleans

4.3 American Oystercatchers

One pair of American Oystercatchers (Haematopus palliatus) (AMOY) was consistently observed in flight on Nauset Spit (primarily) and Nauset Beach South (occasionally) in 2019 (during the annual A-Count and B-Count census).

After extensive searches through July, no AMOY nests were found.

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 Riley Wash to Little Pochet Wash and further south to the vicinity of "Bagdad" Camp 5 by Trail 3, a total of 2.3 miles.

Beginning the last week of May and continuing through mid-August, the Orleans NRO is assigned the lead role of monitoring for Diamondback terrapins for the Town of Orleans during daily OSV Trail patrols.

Wellfleet Bay Wildlife Sanctuary terrapin monitor volunteers assist with daily monitoring. Volunteer training was held August 27, 2019 at Nauset Beach. From that day forward through October 2, 2019, this group patrolled 36 continuous days, morning and afternoon, looking for tracks and checking the exclosures for hatchlings.

The training included the biological behavior of terrapins, including nesting behavior, identifying and locating nests and tracks of adult females and hatchlings. A backpack kit was left for the season in the buggy booth for daily monitoring patrols. The kit was comprised of nest data sheets, water spritzer, paper towels, and DBT carrier.

As a matter of "Standard Operating Procedures", the Town of Orleans Department of Natural Resources executes the following "Action Plan Protocols" in agreement with Mass Audubon Wellfleet Bay Wildlife Sanctuary (WBWS) when a nest is located:

Action Plan: When DBT tracks are observed tracks are followed until it leads to a disturbed spot of sand, a turn around, or back into the water.

When a nest is found: (1) location in decimal degrees is collected on the "Collectors App"; (2) data is imported and the nest is flagged. 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, and protective measures taken. WBWS was contacted. Relocating a Nest: When a nest was found within the OSV corridor or on the east side of the Nauset Beach South Trail, the nest was moved by a trained

WBWS staff member within 24 hours, sooner if possible. The excavated nest eggs were moved to Terrapin Garden until hatchlings appear 60 to 90 days later. A Wellfleet Bay Wildlife Sanctuary staff member processed the nest data, relocated the eggs to the "Pochet Wash Turtle Garden," and installed a predator excluder made of hardware cloth and wooden stakes. A numbered metal tag was attached to the excluder in order to distinguish the nest. "Pochet Wash Turtle Garden", on the west side of the OSV Trail.

In total, 53 of the 70 eggs Diamond-backed terrapins hatched and all 53 were released into Pleasant Bay off Little Pochet Wash.

2019 GPS Location of Diamondback Terrapin Tracks, Nest, DDTGarden

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

2019 - Locations of Diamondback Terrapin Nests and Tracks -

Date	Latitude	Longitude	Location	Result
6/12/2019			South of Pochet walk, in OSV trail	Nest (DT1)
6/22/2019			Riley Northwest	Nest (DT2)
6/22/2019			South of Pochet walk, in OSV trail	Tracks
7/6/2019			North end of Riley	Tracks
7/7/2019			North end of Riley	Nest (DT3)
7/7/2019			South of Pochet walk, in OSV trail	Tracks
7/7/2019			South of Pochet walk, in OSV trail	Tracks
7/10/2016			South of Bagdad Camp	Nest (DT4)
7/10/2019			South of Bagdad Camp	Possible predated nest
7/13/2019			South of Bagdad Camp	Tracks
7/17/2019			South of Bagdad Camp	Tracks

2019 Diamondback Terrapin Nest and Total Egg Productivity

NEST	Date Found	Latitude	Longitude	Moved?	Eggs
DT1	6/12/2019			Yes	16
DT2	6/22/2019			Yes	16
DT3	7/7/2019			Yes	19
DT4	7/10/2019			Yes	19
				Total	70

4.5 Incident Report

Incident Report: Injury to a Least Tern chick on July 6, 2019
Reporting Officer: Richard Hilmer, Town of Orleans Natural Resources Officer

Description of Incident:

On Saturday, July 6, 2019 at 8:56am, a Least tern chick was found injured in the Pochet Wash. After investigation, it appeared that the injury was caused by a large branch being dragged through an area that was cordoned off by symbolic fencing. The chick was brought to a wildlife rehabilitation center. MassWildlife was notified and a report was submitted. Massachusetts Environmental Police Officer Adam Brightman followed up on the incident on July 18, 2019 and interviewed NRO Hilmer about the incident. No further enforcement was taken. After five days of care, the chick was euthanized.

CHAPTER 5 EFFECTIVENESS MONITORING

5.1 Effectiveness Monitoring

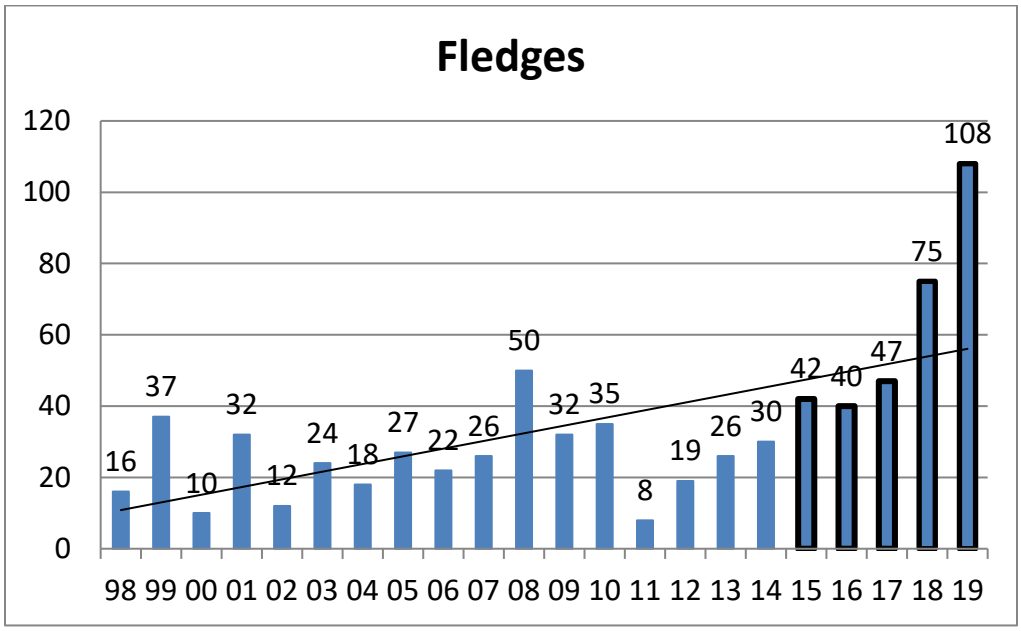
The long-term goal is to increase, and then maintain Piping Plover population recovery objectives along Nauset Beach (Orleans), at or above, on average, the level needed to maintain a stable or modestly growing Piping plover population (>1.2 fledglings/pair) (Melvin and Gibbs 1996).

Effectiveness monitoring consisted of documenting pair behavior, chick behavior, crossing frequency, and nesting and fledging success at the covered activity implementation sites. Measures of reproductive success were also collected at the selective predator management implementation sites. Monitoring information was provided to MassWildlife through HCP weekly reports and through the PIPLODES online database.

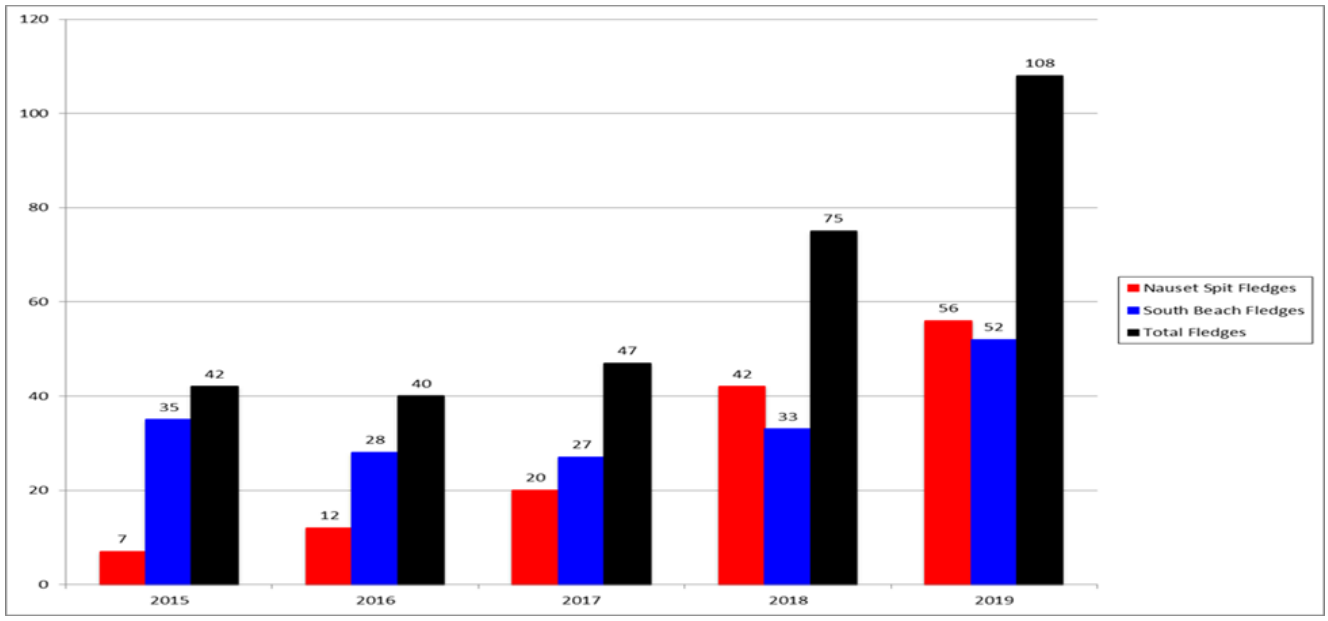
In 2019, The Town of Orleans' Nauset Beach fledge rate for Piping Plovers was 2.70 fledglings/pair.

In all, Nauset Beach had 52 nests with 40 productive pairs fledging 108 chicks. 199 eggs were laid.

Yearly Fledge Count 1998 – 2019



Fledge Count Piping Plovers since HCP Implementation 2015-2019



CHAPTER 6 RECREATIONAL BENEFITS

6.1 Recreational Benefits

Vehicles passes during HCP implementation have increased over the last four years from 300 OSV passes in 2015 to 1864 OSV passes in 2018, to 2362 OSV passes now in 2019 with a marked increase registered over the last three years – from 1369 OSV HCP passes in 2017 to 1864 OSV HCP passes in 2018 to 2364 in 2019.

The 2019 HCP implementation offered the opportunity to keep Nauset Beach South open to OSV travel for an additional 16 days which under the standard "MADFW Guidelines" would have remained closed.

History of Beach Closures and Number of Days Closed

Year	Date of Closure	Date Re-Opened	Number of days closed
2006	June 22	July 25	33
2007	June 22	August 1	40
2008	June 16	July 24	38
2009	May 30	August 4	66
2010	May 27	August 9	74
2011	June 3	August 5	69
2012	June 6	August 14	69
2013	June 3	August 23	81
2014	June 11	August 15	65
2015	June 4	July 26	53
2016	June 10	July 14	34
2017	June 6	July 15	39
2018	June 1	July 19	48
2019	May 31	July 24	54

CHAPTER 7 ABSTRACT

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

Productivity: The 2019 Nauset Beach Piping Plover HCP Monitoring Program was a success. Our overall HCP fledge rate was 100%, all six chicks in the two HCP broods fledged.

The 2019 Town of Orleans Piping plover productivity 2.70 fledges / pair.

Total Vehicle Passes: 2,362 OSV passes occurred on Nauset Beach South during the HCP. The duration of the HCP was 16 days.

Caravans: There were no caravans in 2019 during the HCP.

Incidents:

Wildlife Incident: A Least tern was injured in an unresolved accident.

Medical Emergencies - One Medical Emergency evacuation during a closed window of access or egress.

Violation Incidents - There were no violations during the HCP in 2019. We attribute this to the outreach and education provided by monitors and staff.

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

Appendix A – 2019 Summary of Final Census

Total Pairs: 40 Total Nesting Pairs: 40

Total nests: 52 Total Number of Nest Hatched: 40

Fledging Success: 2.70 fledges / pair

Causes of Nest Failure and Mortality:

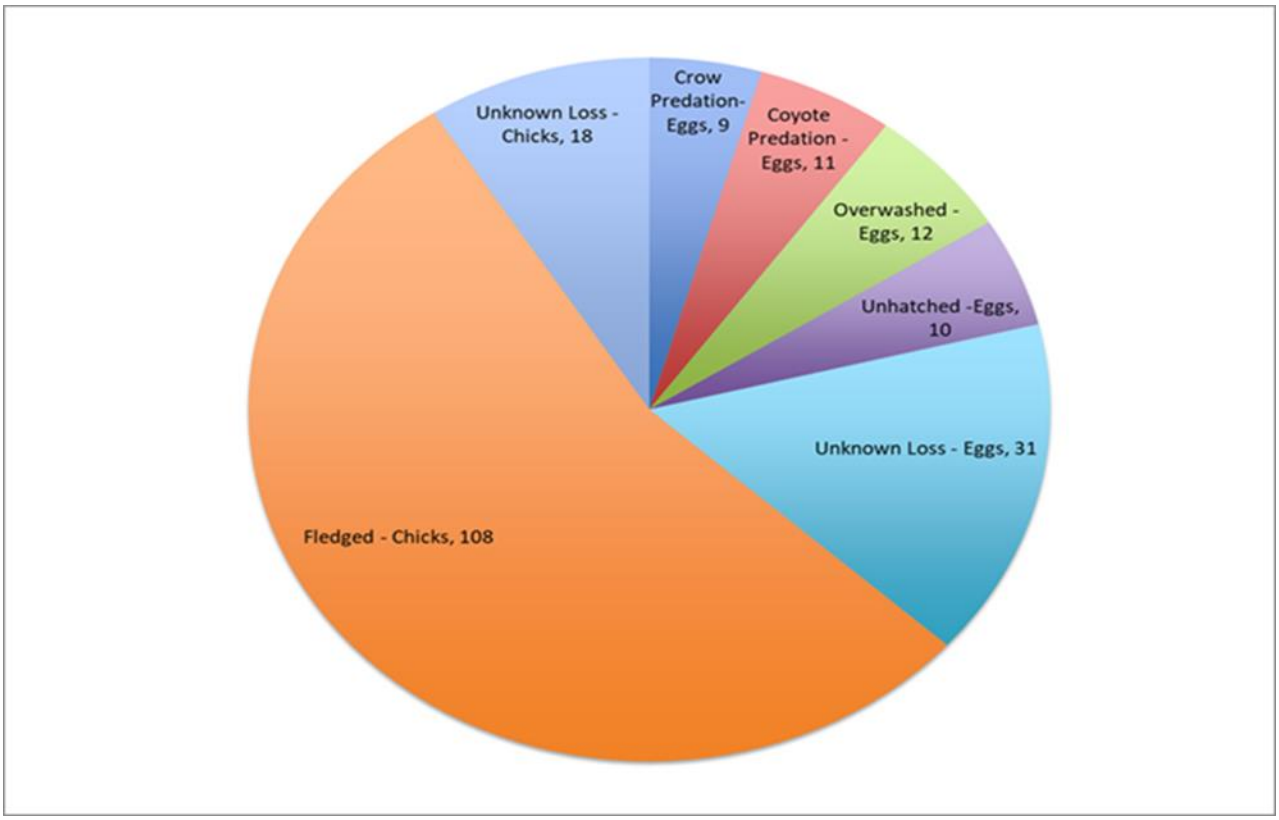


Table 1: 2019 Summary of Piping plover Nest Activity									
Piplodes	Nest	Clutch Found	Eggs Laid	Eggs lost	Complete	Date Hatched	Hatched	Chicks lost	Fledged
MID	A	4/27/2019	4	4	5/5/2019		0	0	0
NN	A	4/29/2019	4	0	5/6/2019	6/4/2019	4	0	4
RN	A	5/1/2019	4	4	5/6/2019		0	0	0
LPM	A	5/8/2019	4	0	5/18/2019	6/13/2019	4	0	4
NS	A	5/11/2019	4	0	5/18/2019	6/16/2019	4	1	3
RS	A	5/13/2019	4	1	5/17/2019	6/14/2019	3	0	3
T5	A	5/13/2019	4	0	5/19/2019	6/15/2019	4	1	3
LPN	A	5/15/2019	4	0	5/19/2019	6/14/2019	4	0	4
LPS	A	5/15/2019	4	4	5/18/2019		0	0	0
LWN	A	5/15/2019	3	1	5/17/2019	6/14/2019	2	0	2
T3	A	5/18/2019	4	1	5/19/2019	6/17/2019	3	0	3
LWS	A	5/22/2019	4	4	5/28/2019		0	0	0
RM	A	5/25/2019	4	1	5/29/2019	6/25/2019	3	0	3
RR	A	5/25/2019	4	0	6/1/2019	6/27/2019	4	2	2
LPW	A	5/25/2019	4	0	5/27/2019	6/28/2019	4	1	3
MID	B	5/25/2019	4	0	5/29/2019	6/27/2019	4	1	3
5.5 **	A	5/26/2019	4	4	6/2/2019		0	0	0
T1	A	6/1/2019	4	1	6/7/2019	7/3/2019	3	0	3
RWM	A	6/2/2019	4	1	6/8/2019	7/5/2019	3	0	3
5.5 **	B	6/7/2019	4	0	6/12/2019	7/13/2019	4	0	4
LWS	B	6/8/2019	3	0	6/10/2019	7/2/2019	3	1	2
LPS	B	6/15/2018	4	1	6/20/2019	7/15/2019	3	0	3
P-E	A	5/7/2019	4	4	5/11/2019		0	0	0
P-SE	A	5/7/2019	4	0	5/11/2019	6/9/2019	4	0	4
P-S	A	5/5/2019	4	4	5/7/2019		0	0	0
RESN	A	5/7/2019	4	0	5/10/2019	6/8/2019	4	1	3
ASP	A	5/5/2019	4	1	5/12/2019	6/9/2019	3	0	3
CN	A	5/9/2019	4	0	5/8/2019	6/3/2019	4	1	3
2W	A	5/10/2019	4	4	5/14/2019		0	0	0
3WM	A	5/16/2019	4	0	5/16/2019	6/13/2019	4	1	3
S-S	A	5/16/2019	3	3	5/15/2019		0	0	0
S-M	A	5/16/2019	4	4	5/17/2019		0	0	0
TLS	A	5/21/2019	4	0	5/25/2019	6/19/2019	4	0	4
P-E	B	5/25/2019	4	1	6/1/2019	6/29/2019	3	0	3
COVE	A	5/25/2019	4	0	6/1/2019	6/29/2019	4	0	4
P-N	A	5/25/2019	4	0	6/1/2019	6/29/2019	4	0	4
URN	A	5/28/2019	4	4	6/2/2019		0	0	0
ELBOW	A	5/28/2019	4	0	6/1/2019	6/26/2019	4	2	2
S-N	A	5/28/2019	4	4	5/27/2019		0	0	0
S-NS	A	5/28/2019	1	1			0	0	0
P-S	B	6/2/2019	4	4	6/9/2019		0	0	0
GN	A	6/4/2019	4	0	6/3/2019	6/30/2019	4	2	2
S-MS	A	6/4/2019	4	4	6/5/2019		0	0	0
3WS	A	6/4/2019	4	0	6/3/2019	6/30/2019	4	0	4
COVES	A	6/5/2019	4	4	6/10/2019		0	0	0
S-SE	A	6/9/2019	4	0	6/14/2019	7/8/2019	4	0	4
S-N	B	6/14/2019	4	4	6/12/2019		0	0	0
S-M	B	6/22/2019	4	0	6/20/2019	7/13/2019	4	4	0
COVES	B	7/1/2019	4	0	6/28/2019	7/19/2019	4	0	4
URN	B	7/1/2019	3	0	7/2/2019	7/14/2019	3	0	3
S-NS	B	7/2/2019	3	0	6/13/2019	7/9/2019	3	0	3
S-S	B	7/2/2019	3	0	7/4/2019	7/25/2019	3	0	3
	52		**199**	**73**			**126**	**18**	**108**

Area 1 & 2 - Nauset Spit – Piping Plover Nest Locations

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Area 3 & 4 – Nauset Beach South – Public Beach to Trail 1 - Piping Plover Nest Locations

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Area 5 & 6 - Nauset Beach South – Piping Plover Nest Locations: Trail 1 – Trail 3

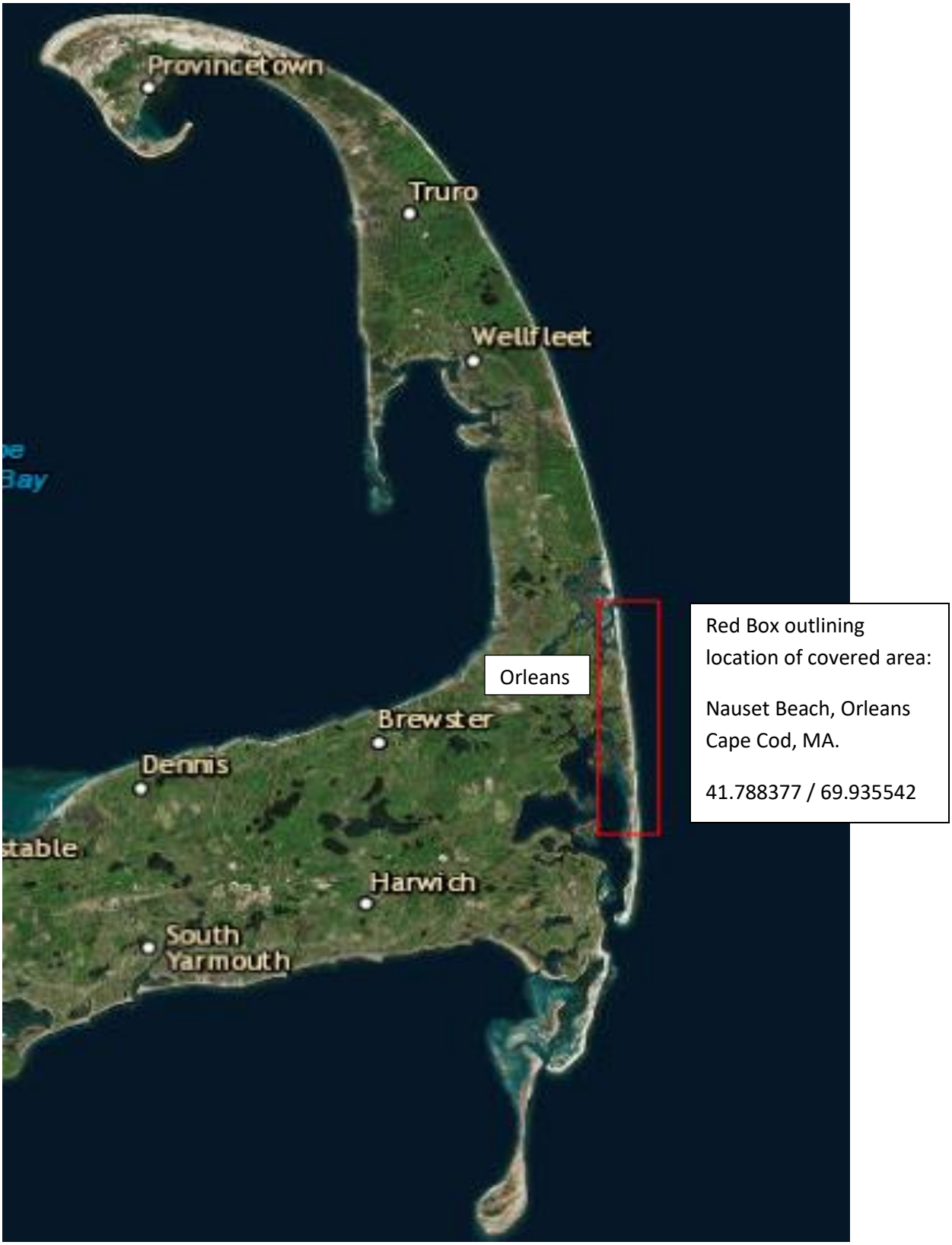
Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

2020 TOWN OF ORLEANS - HABITAT CONSERVATION PLAN ANNUAL REPORT ON PIPING PLOVERS AND SPECIES OF SPECIAL STATUS

Prepared by:
Town of Orleans Department of Natural Resources
40 Giddiah Hill Road, Orleans MA 02653
Contact: Nathan Sears
(508) 240-3755
nsears@town.orleans.ma.us
October 2020

TABLE OF CONTENTS

Locus Map – Location of Nauset Beach in Orleans, MA on Cape Cod



CHAPTER 1 INTRODUCTION

1.1 2020 Town of Orleans Statewide Habitat Conservation Plan

This annual report summarizes the Town of Orleans' HCP implementation activities during 2020 and has been prepared in accordance with the requirements of the HCP.

February 26, 2019, the Massachusetts Division of Fisheries and Wildlife (MassWildlife) re-issued a 3-year Conservation and Management Permit to the Town of Orleans (the "Permit Holder"). The permit and associated Certificate of Inclusion (COI) in the Massachusetts Habitat Conservation Plan (HCP) was issued in accordance with the Endangered Species Act (ESA) authorizing the "Take" of the State and Federally listed Piping plover, which is listed as "Threatened" pursuant to the MESA and "Threatened" pursuant to ESA, as well as, the permit also authorizes the Taking of the state-listed Least Tern and Diamond-backed Terrapins, listed as Special Concern and Threatened, respectively.

On May 19, 2020, Massachusetts Division of Fisheries and Wildlife authorized the Town of Orleans to implement the HCP for 2020. The purpose of the HCP is to provide the necessary protection to Piping plovers, Least terns, and Diamond-backed terrapins that will advance the recovery of the state- and federally-threatened species while allowing flexible management of recreational activities on nesting beaches under a Statewide Incidental Take Permit (ITP).

The goals of this annual report are as follow: (1) to provide a brief summary describing the HCP implementation of the covered activities and the effects on recreation. (2) To summarize the Towns coastal waterbirds monitoring program in accordance with the Guidelines. (3) Provide mapping of Nauset Beach with GPS locations of Piping plover nests, Least tern colonies, and Diamond-back terrapin nests and tracks. (4) And, to summarize the predator management mitigation program.

As a Statewide COI stakeholder the Town collects daily field logs of implementation dates of covered activities; number of broods and chicks exposed; locations of exposed broods and any impacts to the broods associated with the covered activity; and monitoring frequency.

During the 2020 HCP implementation, OSV were allowed to access Nauset Beach South through the HCP self-escort corridor past two Piping plover broods for 8 days when access would otherwise have been restricted.

1.2 2020 HCP Implementation: Covered Activities - Piping Plover

In compliance with the General Conditions of Conservation & Management Permit
019-335 DFW / NHESP File # 16-3597

HCP Location: Nauset Beach, Orleans
Covered Activity: Over-Sand Vehicle Use in the Vicinity of Unfledged Chicks
Description of Covered Activity Implementation: Oversand vehicles, self-escorted through a 15 wide corridor by passengers walking in front of each vehicle, were allowed past 2 brood of unfledged chicks
Broods Location: Nauset Beach South OSV Trail in Pochet Wash
Allowable Take Exposures: 2
Take Exposures Used: 2 (RW–A and NS-A)
% of Broods Exposed: 4.76% (2 broods out of 42 pairs)
Pair Identifier: 1. RW-A 2. NS-A

Take 1 – Age of Chicks When First Exposed: RW-A / 25 Days (Hatched 6/23/2020
Take 2 – Age of Chicks When First Exposed: NS-A / 22 Days (Hatched 6/26/2020)
 # Chicks Exposed: 1. RW-A: 3 Chicks 2. NS-A: 3 Chicks
 # Fledged Chicks from Exposed Pairs: 1. RW-A: 3 Chicks Fledged 2. NS-A: 3 Chicks Fledged
Start Date of Implementation: July 18, 2020 at 8:00 AM
End Date of Implementation: July 26, 2020 at 9:00 AM
Exposed to Covered Activity: 1. RW-A: 6 Days 2. NS-A: 8 Days
HCP Productivity (Fledges/Pair): 100% - 3 fledges per pair (6 fledges / 2 pairs)
Overall 2020 Piping Plover Season: 1.98 fledges per pair (83 fledges / 42 pairs)

1.3 2020 HCP Implementation Summary

The Town of Orleans contacted NHESP on Thursday, July 16, 2020 to inform NHESP that on Saturday, July 18, 2020, the Town would start self-escorting vehicles in the Over-Sand Vehicle (OSV) Trail within the vicinity of two Piping plover broods in the Pochet Wash on Nauset Beach South OSV Trail. The two self-escort zones were distanced 1.07 miles apart. Both self-escort zones were approximately 600 ft. in length with a 15 ft. wide corridor. During the HCP Implementation, 1775 OSV passes were logged.

Brood (RW-A) of two adults and three Piping plover chicks were located in Riley Wash, within the northernmost sector of Pochet Wash. The RW-A chicks were 25 days old at the implementation of the self-escort zone on July 18, 2020. Two of the chicks were declared fledged after being observed in flight >100 ft. with a bank on Tuesday, July 21, 2020 at 28 days old. The RW-A brood was declared fledged when the last of three chicks was observed in flight >100 ft. with ascending altitude and a bank in flight on Thursday July 23, 2020. The Riley Wash self-escort zone was lifted at 10 am after the 8:00 am-10:00 am access/egress window.

Brood (NS-A) of two adults and three Piping plover chicks located in the southernmost sector of Pochet Wash in Nemo Wash (NS-A) were 22 days old at the implementation of the HCP self-escort zone on July 18, 2020. All of the NS-A chicks were observed in flight by late Saturday afternoon, July 25, though it was observed that one of the chicks did not reach a fledging altitude. The brood continued to be monitored throughout the 4:00PM-6:00PM access/egress window. On Sunday, July 26, 2020, at 7:00 am all 3 NS-A chicks were monitored and traffic monitors were in the self-escort zone. By 8:30 am, all 3 chicks were observed in flight >100 ft. with ascending altitude and a bank in flight and declared fledged. At 9:00 am, the NS-A self-escort zone was lifted.

Thanks to the HCP, the Town of Orleans was able to open Nauset Beach South for an additional 8 days and 1 hour between July 18 and July 26, 2020 which would have normally remained closed without the issuance of a Conservation and Management permit and the associated Certificate of Inclusion in the Massachusetts HCP.

1.4 2020 Shorebird Management

On March 22, 2020, the Town provided Department of Natural Resources contact information to MassWildlife.

Prior to April 1 of each year, the perimeter of Nauset Beach, from Nauset Spit in Eastham, through Orleans, to the Pleasant Bay Spit in Chatham is symbolically fenced with stakes and twined, and signs posting “Area Closed – Threatened Birds Nesting”. The symbolic fencing totals >15 miles of dunes, front beach and critical habitat. Maps of Nauset Beach on pages 18, 19 and 20 show areas of designated critical habitat and the areas symbolically fenced.

When active nest scrapes are identified, the symbolic fencing is adjusted seaward, in many case along the wrack line.

Durable, bright yellow “Area Closed” signs indicating nesting habitat were placed at frequent intervals along the symbolic fencing. In addition, "No Dogs Allowed Anywhere on Beach” and “No Kite" signs were posted. Symbolic fencing and “Area Closed: Threatened Birds Nesting” signs are maintained by the Natural Resources Officer / Shorebird Specialist (NRO) year-round with additional support from Beach Rangers May-October.

As recommended in a March 9, 2020 titled ‘signs as predator perches’, signage around nesting areas was positioned higher on the post/stakes to reduce occurrences of predatory perches.

Large educational posters, detailing nesting and breeding behaviors of coastal shorebirds are secured year-round at the Nauset Beach South Gatehouse. This outreach program educates user groups and beachgoers in the identification and protection of shorebirds. The signs contain images of the shorebirds and penalties for entering the restricted nesting habitat.

1.4.1 Piping Plover Predator Exclosure Program

On April 10, 2020, the Town of Orleans received a letter of permit from the Massachusetts Division of Fisheries and Wildlife (MADFW) designating the Natural Resources Manager and employees under his supervision as agents of the MADFW for the purpose of installing and monitoring predator exclosures to prevent predation of Piping plover nests.

The Town uses Standard type “A” predator control exclosures wherever possible to protect ‘active’ Piping plover nests. Installation of exclosures is carried out in accordance with the USFWS guidelines by the NRO and two staff monitors at all times.

Construction and monitoring of predator-control exclosures complied with the 1996 guidelines prepared by the Atlantic Coast Piping Plover Recovery Team and the U.S. Fish and Wildlife Service. All circular exclosures were constructed so that there was at least a 5 foot-wide buffer between the nest and the outside edge of the exclosure in all directions (i.e., a 10 foot diameter on circular exclosures), and crow netting was placed on the top of the exclosure to prevent entry by avian predators..

In total, 27 active Piping plover nests were protected with predator control exclosures in 2020. Exclosures were installed in under 10 minutes in all cases. Once staff had completed installation of the exclosure and were clear of the area, for all 27 exclosed nests adult Piping plovers resumed incubation in <5 minutes.

With the purpose of modifying the behavior of targeted smart predators, the Town continued the non-lethal predator control program on Nauset Beach. Four baited decoy electrified exclosures were deployed on the barrier beach adjacent to identified wildlife corridors.

These electrified decoy exclosures were regularly baited with fresh fish racks and monitored until they were removed in early September. The locations of the electrified decoy exclosures were adjusted/moved regularly with the intent to avoid site specific behavior modifications. All predator tracks in close proximity to the decoy exclosures were monitored and recorded.

1.4.2 Monitoring Frequency

Monitoring and management of Piping plovers, Least terns and Diamond-backed terrapins is coordinated by the Natural Resources Manager and carried out by the Natural Resources Officer (NRO) with assistance from the Lead Shorebird Monitor, Beach Rangers, and seasonal HCP monitors on Nauset Beach and Skaket Beach.

Our most effective approach to protecting our threatened species is through daily habitat monitoring from dawn to dusk, 7 days per week, April thru September 2020.

Monitoring and evaluation are integral and individually distinct parts of our HCP programs' preparation and implementation. Daily monitoring addresses the challenges of beach management and assessing fluctuations in critical habitat. It provides an all-encompassing strategy for understanding nesting territories, provides up to date population counts, and enhances habitat protection management.

All field observations are record in a field notebook maintained by the NRO, and on a mobile ArcGIS Collector app that captures accurate data including coordinates, nest activity, and fledge dates. A summary of the standardized datasheet documenting Piping plover pairs is on page 17. During the HCP, brood activity is logged in a 2020 HCP Daily Log. That daily 2020 HCP log is on page 29.

The accumulated data provided by the daily monitoring of species populations and productivity is tracked yearly. The data from the Piping Plover Census June 1-9, 2020 was reported to MassWildlife by way of The Massachusetts Piping Plover Census Short Form submitted July 29. 2020. The Census Short Forms for Piping plovers, Least terns, and American Oystercatchers included results for the Index Count and Total Count of individual species. Intensive monitoring of Diamond-backed terrapins started on June 1, 2020 and continued through October 8, 2020.

The final "Full Census Report" for Piping plovers, Least terns and American Oystercatchers was submitted September 28, 2020 via the online data entry system PIPLODES and TERNLODES. The final census reports the frequency of site visits; design(s) and installation dates of predator exclosures; dates of nest discovery, completion, and hatching or failure; number of eggs on the date the nest was discovered; total numbers of eggs laid, eggs hatched, and chicks fledged; reasons for egg and chick loss, if determined; and comments regarding census results, limiting factors, and management needs. Maps of sites showing the locations of all nests are also submitted with census forms. This data is collected and stored through a handheld computer device loaded with a Collector App.

CHAPTER 2 IMPLEMENTATION OF THE COVERED ACTIVITIES AND IMPACT MINIMIZATION MEASURES

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. The Town of Orleans has a history of managing pedestrian and vehicular use in compliance with USFWS's Guideline for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to "Avoid Take" under Section 9 of the Endangered Species Act (USFWS 1994), as well as compliance with 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 (MADFW 1993). Nauset Beach is also managed by 1991 and 2014 Town of Orleans Conservation Commission Orders of Conditions (OOC), as required under the Massachusetts Wetlands Protection Act.

2.2 Impact Minimization Measures for Covered Activities

Impact minimization measures limited the risk of take by reducing exposure of adults and chicks to vehicles traveling on Nauset Beach South OSV Trail. Prior to implementing the HCP Covered Activity, the following impact minimization measures were followed:

1. Beginning July 1, 2020, daily staff training for bird monitors and self-escort traffic monitors commenced under "COVID-19 Guidelines and social distancing protocols"
2. Delineate and symbolic fence 15 foot wide self-escort travel corridor.
3. Travel restrictions were posted for access/egress. The access windows are as follows: 8am-10am / 12pm-2pm / 4pm-6pm.
4. The maximum number of vehicle passes in the vicinity of the two broods of Piping plover chicks was reduced from 750 passes per day (under the OOC) to 360 passes per day during the HCP.
5. Traffic monitors were positioned at both the start and end points of the self-escort zones, and these points were clearly delineated by signage.
6. Intensive brood monitoring of the HCP PIPL chicks was performed during vehicle passage.
7. Mandatory OSV operator education at OSV sticker purchase.
8. OSV ruts smoothed in escort zones at the end of day.

Additionally, all OSV are only permitted on the beach if they have in possession a signed copy of the HCP Procedures and Conditions. The Nauset Beach 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. 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.

2.3 Determination of the Self-Escort Zones

During the 2020 HCP season, two self-escort zones were administered by the Orleans Natural Resources Manager and the NRO with a staff of eleven seasonal HCP shorebird monitors.

Based upon detailed daily observations, including the broods' foraging ranges and daily movements, the two self-escort zones were placed in Pochet Wash (a mile and a half section of beach located on Nauset Beach South). One of the two self-escort zone was erected in Riley Wash within the north end of Pochet Wash. The other self-escort zone was located in Nemo Wash in the south end of Nauset Beach South.

The Riley Wash HCP self-escort corridor is 610 feet in length and 15 feet wide.
The Nemo Wash HCP self-escort corridor is 600 feet in length and 15 feet wide.

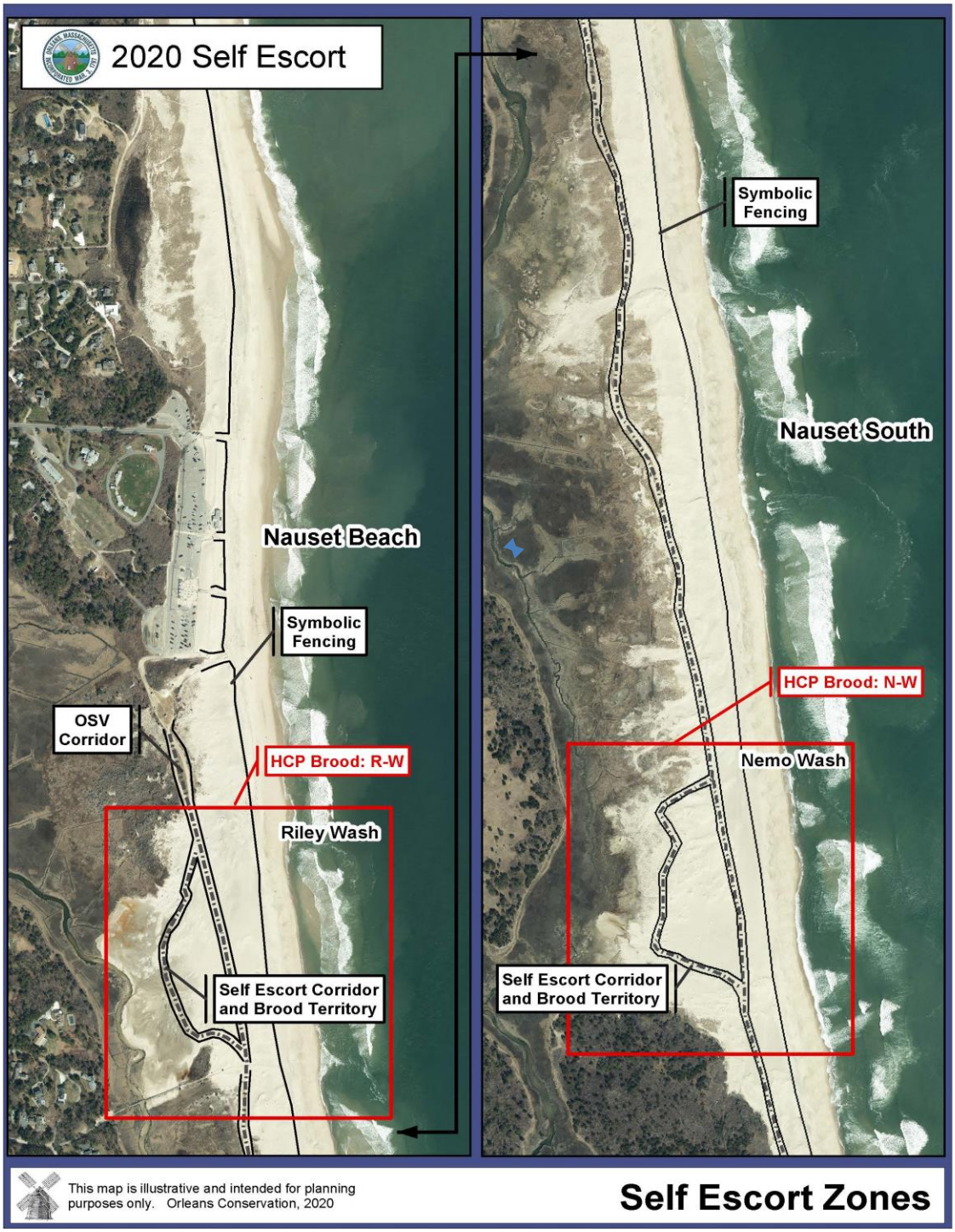
The specific locations of the two self-escort zones were intended to be adaptive and variable to reflect the location of each brood. The self-escort OSV Corridors had the potential to be shifted north and south along the identified route depending on Piping plover locations and/or movements. Neither self-escort corridor was modified from the original route during the 2020 HCP implementation. Additionally, 100 feet on either side East and West of the self-escort corridor was included in the self-escort zones as a protective "safety zone" should Piping plovers move within 100 feet of the self-escort corridor.

Vehicle Passes through the HCP Self-Escort Zone July 18 – July 26, 2020

Date	OSV	Self-contained		Essential Passes	Total Passes
July 18	154	21	(1 pass per)	6	335
July 19	169	18	(1 pass per)	1	358
July 20	57	6	(1 pass per)	0	120
July 21	69	2	(1 pass per)	3	146
July 22	35	2	(1 pass per)	2	76
July 23	68	4	(1 pass per)	1	142
July 24	85	25	(1 pass per)	3	201
July 25	173	12	(1 pass per)	2	362

July 26	31	4 (1 pass per)	0	35
		Total Passes		1775

2020 HCP Brood Territories and HCP Self- Escort Corridors



2.4 Vehicle Numbers

Traffic monitors were positioned in the Buggy Booth Gatehouse at the entrance to Nauset Beach South and at the entrance and exit to the self-escort corridor. Each time an OSV passed by the gatehouse the vehicles registration number, OSV permit and residency was recorded. Once on the trail upon entering the self-escort zone, each OSV was again logged and vehicle registration recorded. Logs were reviewed during closed travel windows. Each OSV that passed through the self-escort corridor was counted as one pass going on the beach, and as one pass coming off the beach. In total 1,775 vehicle passes were recorded during the 2020 HCP self-escort implementation.

2.5 HCP Shorebird Monitor Training

July 1, Day 1- Orientation: The Natural Resource Manager, NRO, and lead Shorebird Monitor met with all ten HCP Monitors to present an overview of the HCP Program and the HCP Monitors' responsibilities under COVID-19 Guidelines.

All ten 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 Waterbirds 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. A morning and afternoon shift schedule was posted and 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 distance of 100+ feet and without interfering with their natural behavior. Two weeks into training, 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, the Wetlands Protection Act, and acquainted with the Endangered Species Act and Migratory Bird Treaty Act, so that they were able to effectively provide outreach education and enforcement to all the beach user groups.

During practice training sessions prior to initiation of the HCP, each HCP bird monitor was required to attend the 6:30 am staff meeting and afterwards released to locate the two broods prior to 8:00 am.

2.6 Shorebird Monitors, Rangers, and Schedules

Shorebird monitors are equipped with hand-held 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 shift is from *6:30 am – 1:00 pm* and the afternoon shift from 1*2:30 pm – 6:30 pm*. Four monitors staffed each self-escort zone per shift. Two monitors are assigned to keep visual contact with each brood and two traffic monitors are responsible for each self-escort corridor. One traffic monitor was staffed at the entrance gate. The NRO and Lead Shorebird Monitor were present daily throughout the HCP implementation to oversee and assist with monitoring.

An HCP monitor was stationed at the gatehouse from 7:30 am to the closing of the HCP corridor at 6:00 pm. It was their responsibility to ensure that all OSV users 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 gatehouse monitor was also responsible for recording the OSV activity (# of passes) in the daily log. Signage reiterating the HCP Procedures and Conditions are displayed at the gatehouse. Nauset Beach Rangers were on duty from 7:30 am – 11:00 pm daily during the HCP self-escort program. Nauset Beach Rangers are responsible for clearing the OSV Trail of OSVs and raking the ruts at the end of the HCP exit window (6:00 pm), while monitors remain with the unfledged chicks. Trail gates are locked at both ends of the OSV Trail from 6:00 pm to 8:00 am during the HCP.

The full-time Natural Resources Officer (NRO) and the seasonal Nauset Beach Rangers play a vital role in educating user groups to the rules and regulations and strictly enforcing "Nauset Beach Rules and Regulations", as well as the Federal and State Endangered Species Act outlined in the State and Federal Guidelines and the State Wetlands Protections Act. The NRO patrols Nauset Beach 12 months a year. From Mid-May through October, Beach Rangers are employed from 7:30 am to 12:00 am for both OSV and public beach safety and to ensure that the different user groups comply with the rules and regulations. Beach Rangers assist in daily OSV management (counting OSV, opening and closing HCP windows, enforcing rules and regulations through education and verbal warnings). 8 citations were issued during 2020, and no citations were issued during the HCP.

The NRO is responsible for locating Piping plover, Least Tern, and Diamond-back Terrapins. Beach Rangers assist the NRO and lead shorebird monitor with the installation of Piping plover exclosures.

2.7 Education Measures

The Town of Orleans Natural Resources Department continued to use its social media network in 2020 to provide informative alerts regarding HCP updates and trail status; regularly published insightful commentary regarding Nauset Beach; and provided educational dialogue on its Facebook page <Orleans, MA – Natural Resources>. In 2020, the Towns' Natural Resources Facebook audience increased 5.79% to 4,146 individual users following our social media and educational outreach news feeds.

The HCP User Guide was again distributed to all OSV permit holders. It is a requirement for all OSV operators to read the HCP User Guide and have a signed copy (signed by the OSV operator) in the OSV prior to gaining access to the South Trail while the HCP was being implemented.

To provide HCP education, a HCP educational video is displayed on the Town of Orleans website. The video is required to be watched by all resident and non-resident OSV permit holders.

Trail Signage in the self-escort zone contains various commands and clearly define self-escort areas 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

The Town of Orleans' HCP program goal is to increase Piping plover, Least tern, and Diamond-backed terrapin productivity at Nauset Beach, and to support Statewide mitigation measures that focus on reducing predation of eggs and chicks.

During the HCP program, staff identify specific wildlife predators, monitored changes in habitat due to climate change, and determine how to reduce the impacts of human activities. This season we were faced with the challenges of the Pandemic as second homeowners and other people left their urban dwellings behind in April, May, and June to escape to Orleans for more space and more access to nature Nauset Beach.

Staff continued to work full-time, seven days a week through the Pandemic. On-site mitigation actions were considered and strategies were implemented to reduce or eliminate the loss of endangered, threatened, or state-listed species resulting from negative wildlife feeding behaviors and Pandemic driven human impacts to the beach.

The Town has also committed support to off-site predator management plans elsewhere in the State. Together, the on-site and off-site mitigation plans assure that adequate mitigation is being provided each year to offset the authorized incidental take (ITP).

On February 14, 2020, the Town provided $11,600.00 for mitigation funding of off-site educational outreach, increased law enforcement and selective predator management to be administered by MADFW. As specified in the HCP, the Town provides the funding to cover two "Take" exposures for each Piping plover brood, nest or territory exposed to covered activities. A maximum of two exposures are permitted per year. Because the funds are used by MADFW to benefit both Piping plovers and Least terns at sites where the two species co-occur, no additional payment is 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 terns. The mitigation funds are deposited into an escrow account for Orleans Conservation and Management Plan to benefit the Piping plover recovery at off-site locations

These funds are sufficient to achieve the 2.5:1 mitigation ratio for both Piping plovers and Least terns as described in the HCP. MassWildlife NHESP determines 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. This conservation fund is managed to increase productivity on State beaches through selective predator management.

CHAPTER 4 SPECIES OF SPECIAL CONCERN

4.1 Least Terns

From April 1 – May 31, 2020, weather permitting, daily Least tern observation patrols were performed on Nauset Beach. During these patrols, staff monitors evaluate trends in population size and movement; the relationship between where Least terns cluster together and areas designated pre-season to be Least tern conservation areas; and using monitoring methods to measure productivity including Least tern adults breeding on nests, eggs in scrapes, chicks, fledglings, predations, and over-washes.

Nauset Spit

During the June A-Count Census, 20 adult pairs were counted with reasonable accuracy. 30 adult pairs were counted during the B-Count Census. Nests were identified with GPS locations. Many early nests were lost to wind, over-wash and cool temperatures. Coyote and American Crow predation was also observed. Productivity was considered "Fair". 17 Least tern chicks were observed fledged.

North Spit – Priscilla's Wash

During the June A-Count Census, 25 adult pairs were counted with reasonable accuracy. 20 adult pairs were counted during the B-Count Census. Nests were identified with GPS locations. Many nests were lost to wind, over-wash, coyote and crow predation. Abundance was considered "Fair" for the second year site. Productivity was considered "Fair" with 9 fledges observed.

Pochet Wash

In the Pochet Wash area during the A-Count Census 20 pairs of Least terns were observed in Riley Wash (located in the north end of Pochet Wash).

During the B-Count, the count for Least Terns in Riley Wash was 13 pairs. Least terns started to cluster in two small colonies south of Riley Wash in Pochet Wash around June 16-20, 2020. During the July census, 22 pairs were counted during the B-Count. The productivity was "Fair" with 4 fledges observed in Riley Wash and 9 fledges observed in Pochet Wash.

4.2 Roseate Terns

No Roseate terns were observed on Nauset Spit or Nauset Beach South in 2020.

4.3 American Oystercatchers

For the third consecutive year, three pair of American Oystercatchers (Haematopus palliatus) (AMOY) were consistently observed in flight on Nauset Spit (primarily) and Nauset Beach South (occasionally) during the 2020 annual A-Count and B-Count census.

Two individuals were observed regularly on Nauset Spit during May. AMOY1-A nest with two eggs was found on May 29, 2020 on the south end of Nauset Spit. That nest was predated on June 17, 2020. AMOY1-B nest with 1 egg was located on June 19, 2020 on the north end in an isolated area of Nauset Spit. AMOY1-B egg hatched on July 15, 2020. The adult pair and unfledged chick were continuously monitored until August 13, 2020 when they were last seen.

4.4 Diamond-back terrapins

Diamond-back terrapins nest within the dunes of Nauset Beach, particularly in the vicinity of where Little Pochet Overwash connects with Pochet Bay. The primary "Search Area" for Diamond-back terrapins (DBT) extends from Riley Wash to Little Pochet Wash and further south to the vicinity of “Bagdad-Camp 5” by Trail 3, a total of 2.3 miles.

Beginning the last week of May and continuing through mid-August, the Orleans NRO is assigned the lead role of monitoring for Diamond-back terrapins for the Town of Orleans during daily OSV Trail and shorebird monitoring patrols.

Six experienced Wellfleet Bay Wildlife Sanctuary (WBWS) terrapin monitor volunteers assisted with daily monitoring starting August 21, 2020. This group patrolled each morning, looking for tracks and checking the “Garden” exclosures for hatchlings. Each afternoon, except Wednesdays, the NRO looked for tracks and checked the exclosures.

Volunteer Training was provided by WBWS in early August and included the biological behavior of terrapins, including nesting behavior, identifying and locating nests and tracks of adult females and hatchlings. A backpack kit was left for the season in the buggy booth on August 21, 2020 for daily monitoring patrols. The kit was comprised of nest data sheets, water spritzer, paper towels, and DBT carrier.

As a matter of “Standard Operating Procedures”, the Town of Orleans Department of Natural Resources executes the following “Action Plan Protocols” in agreement with Mass Audubon Wellfleet Bay Wildlife Sanctuary (WBWS) when a nest is located:

When a nest is found: (1) location in decimal degrees is collected on the NRO “Collectors App”; (2) data is imported and the nest is flagged. 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, and protective measures taken by the NRO. (3) WBWS is contacted immediately. (4) Relocating a nest in undertaken by a trained WBWS staff member within hours of discovery. The nest is excavated and eggs moved to “Pochet Wash Turtle Garden”, on the west side of the OSV Trail, until hatchlings appear 60 to 90 days later. (5) A Wellfleet Bay Wildlife Sanctuary staff member also processes the nest data prior to relocating the eggs to the “Pochet Wash Turtle Garden”, where a predator wire excluder and wooden stakes is installed for each relocated nest. A numbered metal tag is attached to the excluder in order to distinguish the nest. Four nests were relocated to the “Garden” in 2020.

In total, 61 eggs were relocated to the "Pochet Wash Turtle Garden" and 60 hatchlings emerged and were released in a variety of locations at the edge of the marshes around Pochet Bay and Pochet and Little Pochet Islands in 2020.

In addition, 2 wild nests were located late in the season in Riley Wash. 29 empty egg shards were counted giving a total hatching count for Nauset Beach of 89 Diamond-backed terrapins.

Regarding the entering of DBT data into VPRS, Bob Prescott responded, "I will submit the NHESP information in January when they shift to their new reporting platform. That was their recommendation because you can no longer get reports out of the VPRS data base."

2020 - Locations of Diamondback Terrapin Nests and Tracks

6/18/2020			Northern end of Riley Wash	Tracks
6/26/2020			North Little Pochet	Tracks
6/13/2020			South Little Pochet	Eggs Relocated
7/14/2020			South Little Pochet	Tracks
6/16/2020			South Little Pochet	Eggs Relocated
7/6/2020			South Little Pochet	Eggs Relocated
7/9/2020			South Little Pochet	Eggs Relocated
7/10/2020			South Little Pochet	Tracks
7/14/2020			South Little Pochet	Tracks
7/17/2020			South Little Pochet	Tracks
6/28/2020			South Little Pochet	Tracks
7/10/2020			South of Bagdad Camp	Tracks
7/2/2020			South of Bagdad Camp	Tracks
7/12/2020			South of Bagdad Camp	Tracks

Per the direction of NHESP, the locations have been removed due to the permitting/public review process.

CHAPTER 5 EFFECTIVENESS MONITORING

5.1 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).

Effectiveness monitoring consisted of documenting pair behavior, chick behavior, crossing frequency, and nesting and fledging success at the covered activity implementation sites. Measures of reproductive success were also collected at the selective predator management implementation sites. Monitoring information was provided to MassWildlife through HCP weekly reports and through the PIPLODES online database.

In 2020, the Town of Orleans' Nauset Beach fledge rate for Piping plovers was 1.98 fledglings/pair. 100% of the two HCP broods fledged.

In total, Nauset Spit and Nauset Beach South had 48 nests with 180 eggs laid. There were 42 pairs fledging 83 chicks.

CHAPTER 6 RECREATIONAL BENEFITS

6.1 Recreational Benefits

The 2020 HCP implementation offered the opportunity to open Nauset Beach South to OSV travel for an additional 8 days which otherwise would have remained closed due to unfledged Piping plovers in the vicinity of the OSV trail. With that said, over those 8 days, 1775 OSV passes were logged on Nauset Beach South, for a 12.75% increase in daily OSV use over last year, 2019.

Into our sixth year of the HCP, program reach and educational effectiveness has impacted public perception in a positive manner. Through social media and an increased presence by Beach Rangers and shorebird monitors on the OSV trail, the public seemed satisfied overall with recreational access and the customer service provided this season. In general, we received few negative interactions, and many positive interactions. In fact, no warnings or violations were issued during the 2020 HCP implementation.

History of Beach Closures and Number of Days Closed

Year	Date of Closure	Date Re-Opened	Number of days closed
2006	June 22	July 25	33
2007	June 22	August 1	40
2008	June 16	July 24	38
2009	May 30	August 4	66
2010	May 27	August 9	74
2011	June 3	August 5	69
2012	June 6	August 14	69
2013	June 3	August 23	81
2014	June 11	August 15	65
2015	June 4	July 26	53
2016	June 10	July 14	34
2017	June 6	July 15	39
2018	June 1	July 19	48
2019	May 31	July 24	54
2020	June 8	July 18	40

CHAPTER 7 ABSTRACT

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

Productivity: The 2020 Nauset Beach Piping Plover HCP Monitoring Program was a success. Our overall HCP fledge rate was 100%, all six chicks in the two HCP broods fledged.

The 2020 Town of Orleans Piping plover productivity is 1.98 fledges / per pair.

Total Vehicle Passes: 1,775 OSV passes were logged on Nauset Beach South during the HCP. The duration of the HCP implementation was 8 days, 1 hour.

Caravans: There were no caravans in 2020 during the HCP.

Incidents During HCP Implementation

Wildlife Incident: No wildlife incident was recorded during HCP implementation.

Medical Emergencies – No Medical Emergencies were recorded during the HCP implementation.

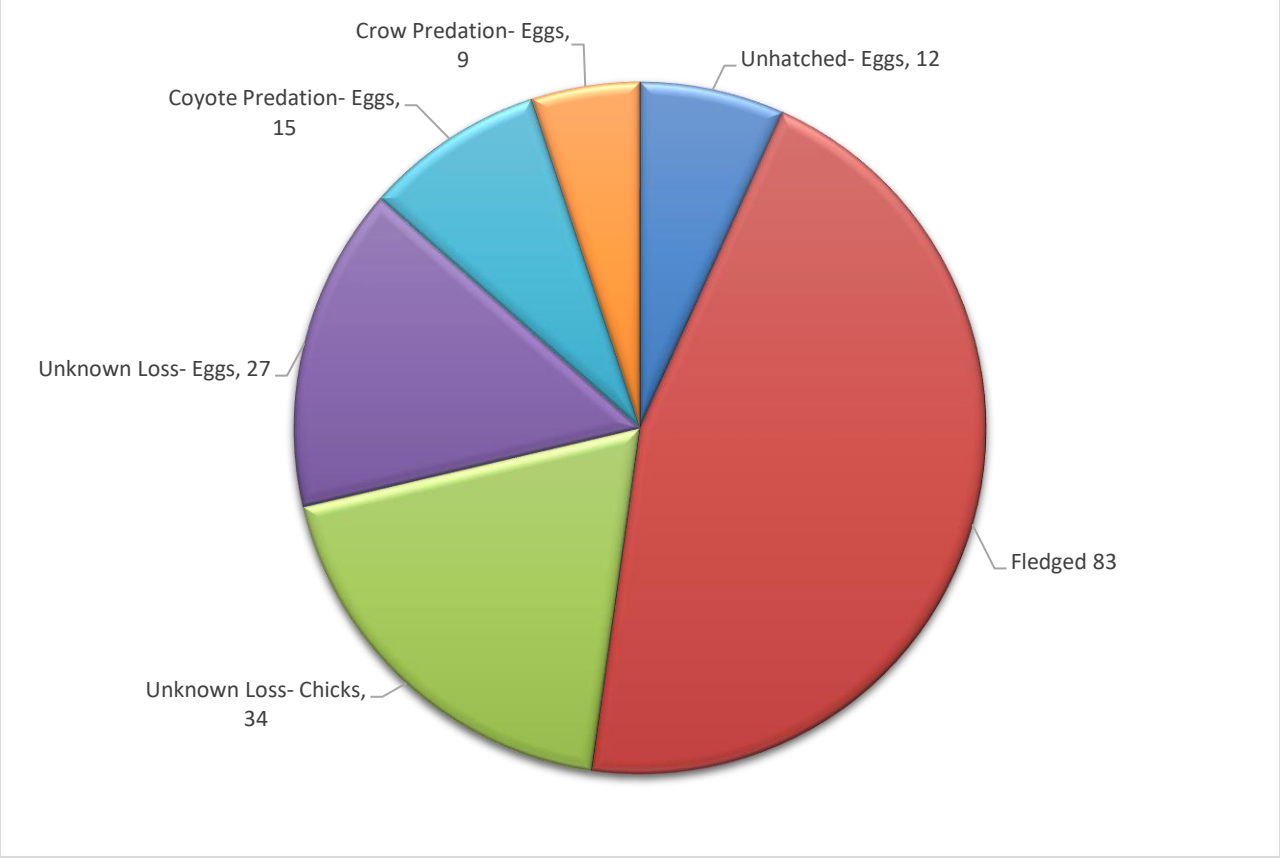
Violations - There were no violations during the HCP in 2020. We attribute this to the outreach and education provided by monitors and staff.

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

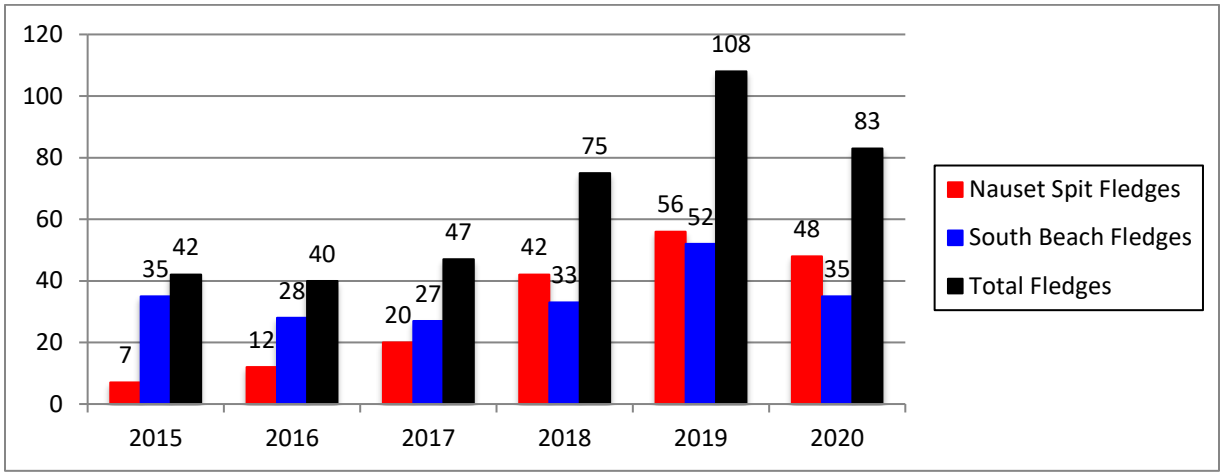
7.1 Summary of 2020 Piping Plover Productivity

Total Piping plover Pairs: A total of 42 pairs nested on Nauset Spit and Nauset Beach South
Pairs Produced: 48 nest, 180 eggs, 112 chicks, and 83 Fledglings
Nest Success: 32 of 48 nests hatched at least one egg. 66.6%; 16 nest failed before hatching one egg.
Piping plover productivity: 1.98 fledges per Piping plover pair

Causes of Nest Failure and Mortality



Fledge Count Piping Plovers since HCP Implementation 2015-2020



Piping Plover Pairs and Fledglings since HCP Implementation 2015-2020

	Nauset Spit		South Beach		Total	Total
	Pairs	Fledges	Pairs	Fledges	Pairs	Fledges
2015	5	7	14	35	19	42
2016	9	12	11	28	20	40
2017	10	20	9	27	19	47
2018	15	42	13	33	28	75
2019	23	56	18	52	41	108
2020	27	48	15	35	48	83
	89	***185***	***80***	***210***	***175***	***395***
		2.08		2.625		2.257

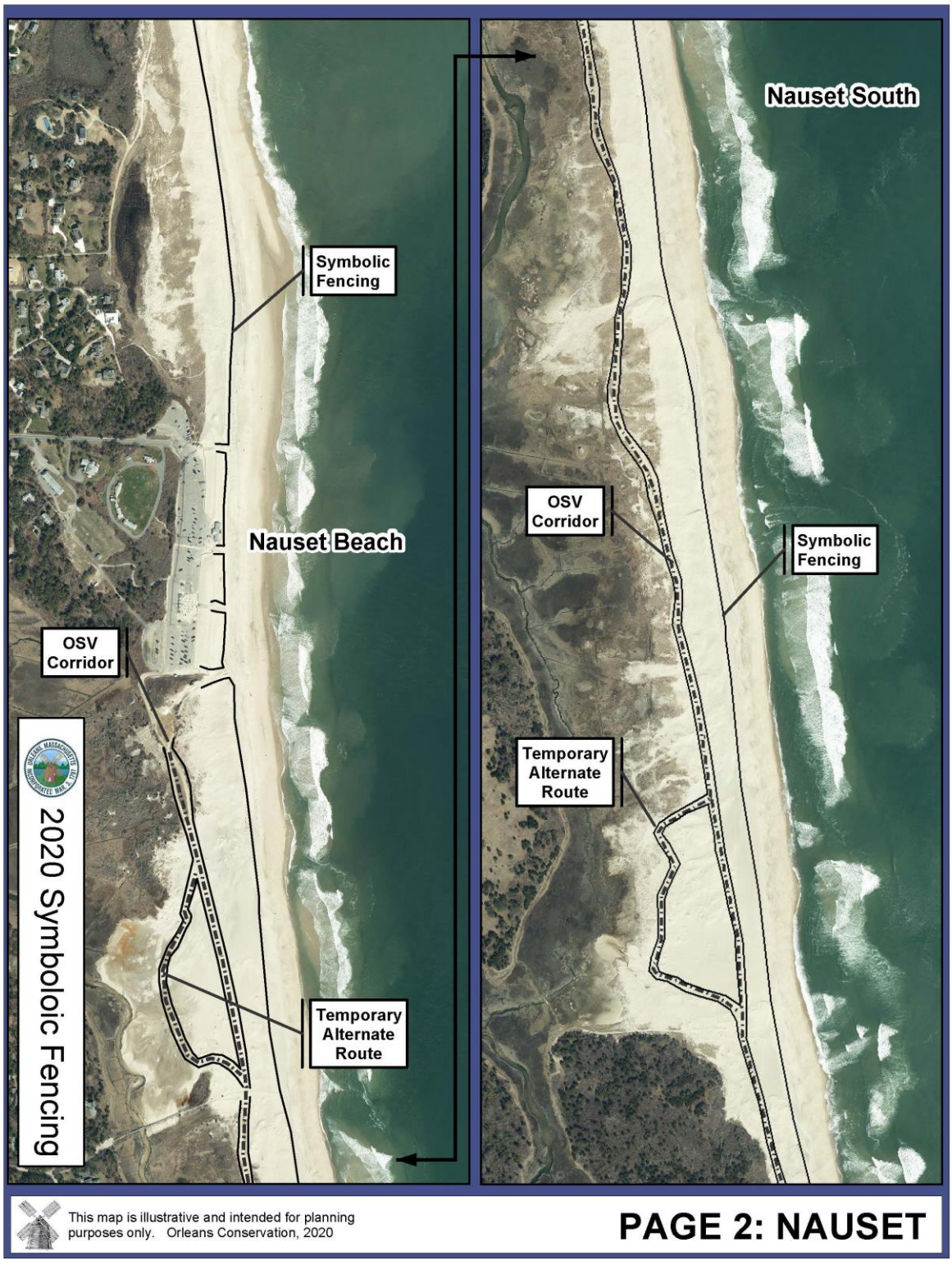
2020 HCP Monitor Schedule (Example)

	24	25	26	27	28	29	30	31
	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
Hailey	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	OFF	12:30PM-6:30PM	6:45AM-1:00PM
Will	6:45AM-1:00PM	12:30PM-6:30PM	6:45AM-1:00PM	OFF	OFF	OFF	OFF	12:30PM-6:30PM
Olivia	6:45AM-1:00PM	12:30-6:30	6:45AM-1:00PM	OFF	OFF	OFF	OFF	12:30PM-6:30PM
Hugh	6:45AM-6:30PM	6:45AM-1:00PM	OFF	OFF	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM
Sam	OFF	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	12:30PM-6:30PM	OFF
Aidan	12:30PM-6:30PM	12:30PM-6:30PM	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM	12:30PM-6:30PM	OFF	6:45AM-6:30PM
Maddie	6:45AM-6:30PM	OFF	6:45AM-1:00PM	6:45AM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM	OFF	OFF
Caroline	12:30PM-6:30PM	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-6:30PM	OFF	6:45AM-6:30PM	6:45AM-1:00PM	12:30PM-6:30PM
Claire	12:30PM-6:30PM	6:45AM-6:30PM	12:30PM-6:30PM	OFF	OFF	12:30PM-6:30PM	6:45AM-6:30PM	6:45AM-1:00PM
Megan	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-1:00PM	OFF	OFF	6:45AM-1:00PM	6:45AM-1:00PM	6:45AM-1:00PM

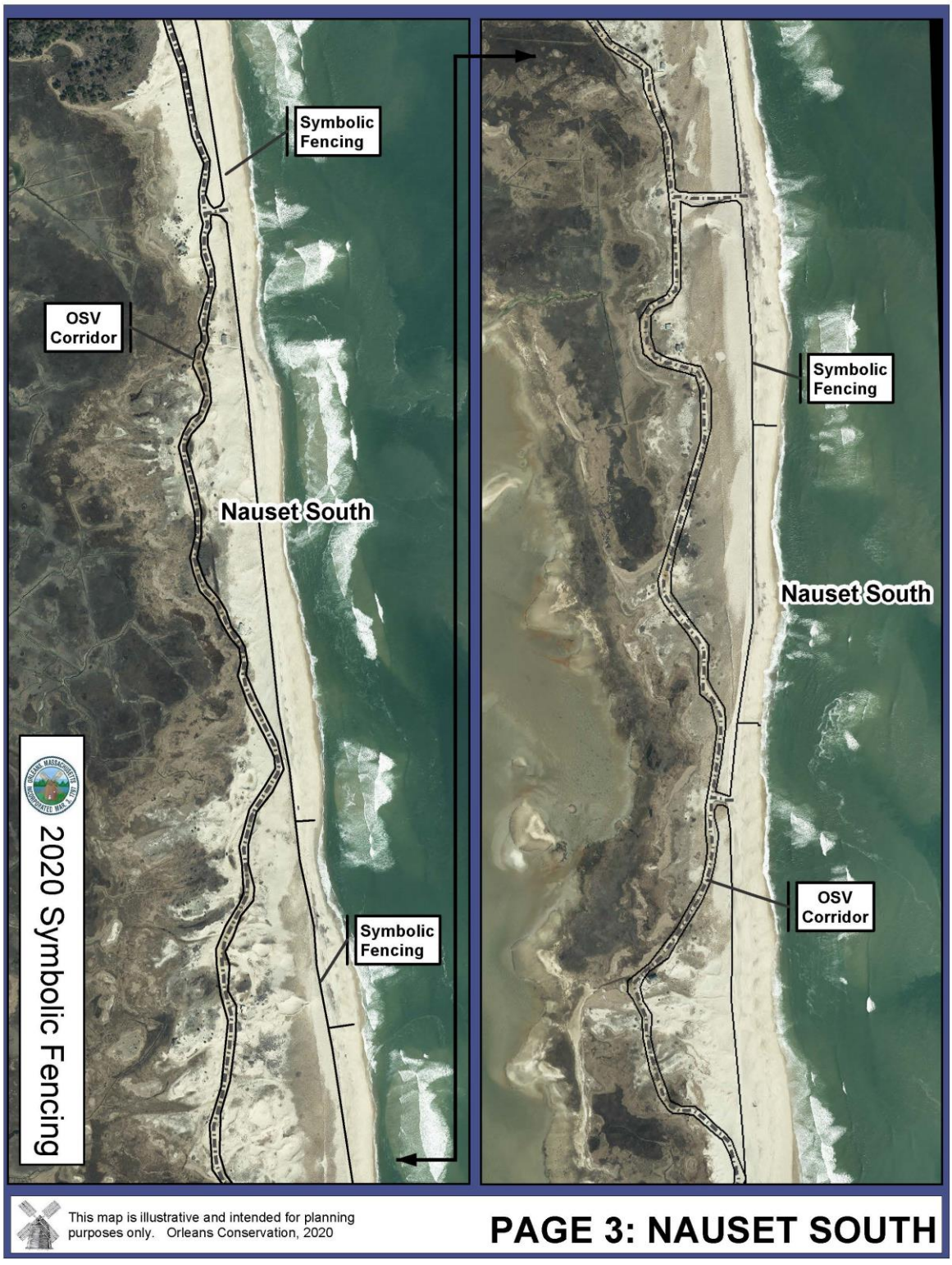
Pair #No	Nest	Nest Found	Found	Laid	Clutch	Exclosed	Hatch Date	Hatched	Fledged Chicks	Fledge Date
C-M	A	5/11/2020	1	4	5/16/2020	5/18/2020	6/13/2020	4	3	7/8/2020
P-N	A	5/15/2020	3	4	5/17/2020	5/18/2020	6/14/2020	3	3	7/10/2020
C-N	A	5/20/2020	4	4	5/18/2020	5/20/2020	6/14/2020	4	3	7/11/2020
CORN	A	5/20/2020	2	4	5/22/2020	5/24/2020	6/19/2020	4	3	7/17/2020
ASP	A	5/20/2020	4	4	Unknown		Failed			
C-S	A	5/20/2020	4	4	5/14/2020	5/21/2020	6/11/2020	4	4	7/8/2020
P-S	A	5/23/2020	3	4	5/25/2020	5/26/2020	6/22/2020	4	4	7/19/2020
P-M	A	5/25/2020	3	4	5/26/2020	5/26/2020	6/22/2020	3	3	7/19/2020
P-W	A	5/25/2020	2	4	5/28/2020	5/28/2020	6/23/2020	4	4	7/19/2020
P-NE	A	5/25/2020	2	4	5/28/2020	5/28/2020	6/24/2020	4	3	7/20/2020
COVE	A	5/28/2020	3	4	5/29/2020	5/30/2020	6/22/2020	4	1	7/19/2020
S-NM	A	5/29/2020	3	4	5/31/2020		Failed			
S-SE	A	5/29/2020	4	4	Unknown		Failed			
S-SW	A	5/29/2020	3	≥3	Predated		Failed			
S-WM	A	5/29/2020	1	≥1	Predated		Failed			
URN	A	6/1/2020	4	4	6/1/2020	6/3/2020	6/27/2020	4	3	7/25/2020
3W-S	A	6/1/2020	4	4	Unknown		Failed			
ELBOW	A	6/1/2020	4	4	5/29/2020	6/3/2020	6/24/2020	2	1	7/19/2020
ARC-S	A	6/1/2020	4	4	5/28/2020		6/24/2020	4	2	7/20/2020
ARC-N	A	6/1/2020	3	4	6/2/2020		Failed			
S-SM	A	6/7/2020	4	4	6/7/2020		Failed			
S-W	A	6/7/2020	2	4	6/11/2020		7/7/2020		3	8/1/2020
2W-N	A	6/7/2020	2	4	6/11/2020		Failed			
TL	A	6/8/2020	1	1	Predated		Failed			
GR-S	A	6/9/2020	2	4	6/12/2020		Failed			
ASP	B	6/16/2020	3	3	6/14/2020		7/11/2020	3	1	8/7/2020
RES	A	6/20/2020	4	4	6/4/2020		6/30/2020	3	3	7/26/2020
S-SE	B	6/20/2020	3	3	6/19/2020		Failed			
3W-M	A	6/20/2020	4	4	Unknown		Failed			
S-SM	B	6/22/2020	3	3	6/22/2020		7/19/2020	3	1	8/14/2020
S-SW	B	6/22/2020	3	3	Unknown		Failed			
2W-N	B	6/27/2020	2	3	6/29/2020		Failed			
3W-S	B	6/28/2020	1	3	6/30/2020		7/26/2020	3	3	8/20/2020
				120				60	48	
LP-M	A	5/8/2020	1	4	5/12/2020	5/14/2020	6/9/2020	4	3	7/6/2020
R-S	A	5/11/2020	1	4	5/16/2020	5/17/2020	6/13/2020	4	2	7/9/2020
N-N	A	5/14/2020	1	4	5/19/2020	5/20/2020	6/16/2020	4	3	7/12/2020
R-M	A	5/16/2020	1	4	5/21/2020	5/22/2020	6/18/2020	4	1	7/15/2020
TW-N	A	5/19/2020	3	4	5/20/2020	5/25/2020	6/17/2020	4	4	7/12/2020
TRL-5	A	5/21/2020	4	4	5/15/2020	5/21/2020	6/12/2020	3	2	7/11/2020
MID	A	5/19/2020	2	4	5/23/2020	5/25/2020	Failed			
LP-S	A	5/19/2020	1	4	5/24/2020	5/24/2020	6/20/2020	3	3	7/16/2020
R-N	A	5/20/2020	1	4	5/24/2020	5/25/2020	6/21/2020	4	3	7/16/2020
LP-N	A	5/21/2020	2	4	5/23/2020	5/24/2020	6/19/2020	4	4	7/16/2020
R-W	A	5/24/2020	2	4	5/27/2020	5/28/2020	6/23/2020	4	3	7/23/2020
N-S	A	5/25/2020	1	4	5/31/2020	5/31/2020	6/26/2020	3	3	7/26/2020
TW-S	A	5/25/2020	3	4	5/19/2020	5/26/2020	6/22/2020	4	1	7/18/2020
TRL-3	A	5/28/2020	4	4	5/26/2020	6/2/2020	6/12/2020	3	2	7/8/2020
MID-N	A	5/30/2020	1	4	6/3/2020	6/6/2020	6/30/2020	4	1	7/26/2020
				60				52	35	
TOTALS	48			180				112	83	

Areas designated as Critical Habitat: Symbolically Fenced on North Spit

Areas designated as Critical Habitat: Symbolically Fenced on Public Beach and Nauset Beach South



Areas designated as Critical Habitat: Symbolically Fenced on Nauset Beach South



Area 1 & 2 - North Spit – 2020 Piping Plover Nest Locations – Nauset Spit to Residents Beach

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Area 3 & 4 – Nauset Beach South –- 2020 Piping Plover Nest Locations - Public Beach to Trail 1

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Area 5 & 6 - Nauset Beach South – 2020 Piping Plover Nest Locations: Trail 1 – Trail 5

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

North Spit – 2020 Least Terns Nests – Nauset Spit and Priscilla's Wash

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Nauset Beach South – 2020 Least Terns Nests - Riley Wash and Pochet Wash

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Nauset Spit – 2020 Oystercatcher Nests – AMOY1-A and AMOY1-B

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Nauset Beach South - 2020 Diamondback Terrapin – Activity: Nests & Tracks

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

Nauset Beach South - 2020 Diamondback Terrapin – Activity: Nests & Tracks

Per the direction of NHESP, the maps have been removed due to the permitting/public review process.

2020 Town of Orleans Statewide HCP Implementation
Dates of Implementation: July 18 – July 26, 2020

HCP Location: Nauset Beach, Orleans
Covered Activity: Over-Sand Vehicle Use in the Vicinity of Unfledged Chicks
Allowable Take Exposures : 2
Take Exposures Used: 2 (Riley W–A and Nemo S-A)
Start Date of Implementation: July 18, 2020 at 8:00 AM
End Date of Implementation: July 26, 2020 at 9:00 AM

HCP Broods Location:
Riley W - A (Riley Wash: 41.781076N / 69.936821W)
Age of Three Chicks When First Exposed: 25 days old (Hatched on 6/23/2020)
100% of Riley W-A Brood Fledged at 30 Days
Nemo S – A (Pochet Wash South: 41.767176N / 69.933257W)
Age of Three Chicks When First Exposed: 22 days old (Hatched on 6/26/2020)
100 % of Nemo S-A Brood Fledged at 30 Days
% of Broods Exposed: 4.76% (2 broods out of 42 productive pairs)

HCP Daily Activity Log Summary July 18 – July 26, 2020

Summary:

The Town of Orleans contacted NHESP on Thursday, July 16, 2020 to inform NHESP that on Saturday, July 18, 2020, the Town would start self-escorting vehicles in the Over-Sand Vehicle (OSV) Trail within the vicinity of two Piping plover broods in the Pochet Wash on Nauset Beach South OSV Trail. The two self-escort zones were distanced 1.07 miles apart. Both self-escort zones were approximately 600 ft. in length with a 15 ft. wide corridor. During the HCP Implementation, 1775 OSV passes were logged.

Brood (Riley W-A) of two adults and three Piping plover chicks were located in Riley Wash, within the northernmost sector of Pochet Wash. The Riley W-A chicks were 25 days old at the implementation of the Self-Escort Zone on July 18, 2020. Two of the chicks were declared fledged after being observed in flight >100 ft. with a bank on Tuesday, July 21, 2020 at 28 days old. The brood was declared fledged when the last of three chicks was observed in flight >100 ft. with ascending altitude and a bank in flight on Thursday July 23, 2020. The Riley Wash Self-Escort Zone was lifted after the 8:00AM-10:00AM access/egress window.

Brood (Nemo S-A) of two adults and three Piping plover chicks located in the southernmost sector of Pochet Wash in Nemo Wash (Nemo S-A) were 22 days old at the implementation of the HCP Self-Escort Zone on July 18, 2020. All of the Nemo S-A chicks were observed in flight by late Saturday afternoon, July 25, though it was observed that one of the chicks did not reach a fledging altitude. The brood continued to be monitored throughout the 4:00PM-6:00PM access/egress window. On Sunday, July 26, 2020, at 7:00AM all 3 Nemo S-A chicks were monitored and traffic monitors were in the Self-Escort Zone. By 8:30AM, all 3 chicks were observed in flight >100 ft. with ascending altitude and a bank in flight. At 9:00AM, the Nemo S-A Self-Escort zone was lifted.

Impact Minimization Measures for Covered Activities:

Impact minimization measures limited the risk of take by reducing exposure of adults and chicks to vehicles traveling on Nauset Beach South OSV Trail. Prior to implementing the HCP Covered Activity, the following impact minimization measures were followed:

1. Beginning July 1, 2020, daily staff training for Bird Monitors and Self-Escort traffic monitors.
2. Delineate and symbolic fence 15 foot wide self-escort travel corridor.
3. Travel restrictions were posted for access/egress. The access windows are as follows: 8am-10am / 12pm-2pm / 4pm-6pm.
4. The maximum number of vehicle passes in the vicinity of the two broods of Piping plover chicks was reduced from 750 passes per day (under the OOC) to 360 passes per day during the HCP.
5. Traffic monitors were positioned at both the start and end points of the Self-Escort Zones, and these points were clearly delineated by signage.
6. Intensive brood monitoring of the HCP PIPL chicks was performed during vehicle passage.
7. Mandatory OSV operator education at OSV sticker purchase.
8. OSV ruts smoothed in escort zones at the end of day.

Additionally, all OSV are only permitted on the beach if they have in possession a signed copy of the HCP Procedures and Conditions. The Nauset Beach 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. 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.

Self-Escort OSV Corridor Location and Dimensions:

Two Self-Escort Zones were placed in the Pochet Wash on Nauset Beach South. One Self-Escort Zone was erected in Riley Wash within the north end of Pochet Wash on the Nauset Beach South OSV Trail, and the other self-escort corridor in Nemo Wash to the south in Pochet Wash.

The Riley Wash HCP self-escort corridor is 610 feet in length and 15 feet wide.
The Nemo Wash HCP self-escort corridor is 600 feet in length and 15 feet wide.

HCP Personnel:

Shorebird monitors were placed with the two HCP broods (Riley W and Nemo S) from 7am-6pm, to locate and monitor chick activity during the access windows and to keep an eye on the broods when access windows were closed. Additionally, two self-escort attendants were positioned at the beginning and end of the two HCP self-escort zones to ensure compliance by self-escorted OSV in the corridor. All personnel were equipped with hand-held radios for a constant stream of communications between the self-escort attendants, the buggy booth, the lead shorebird monitor, and the Natural Resource Officer. At the end of day, through July 21, the HCP corridor was dragged for ruts. Each day of the HCP, Beach Rangers swept Nauset Beach South Trail starting at 4:30 p.m. to ensure all non-self-contained OSV's were through the two self-escort zones by 6:00 PM. The Buggy Booth attendant locked the South Trail entrance at 6:00 p.m. and the Beach Ranger or Natural Resources Officer secured the blockade at the south entrance, located at the southernmost point of Pochet Wash, ensuring no overnight self-contained OSV entered into either one of the two HCP self-escort corridor zones.

Education:

A press release on the HCP opening was posted on Town of Orleans website on July 9, 2020, sent as an email notification alert, and posted on the Town of Orleans Natural Resources Facebook Page. Additionally, the local weekly newspaper *The Cape Codder* also printed the following copy as a press release.

Copy of Press Release:

Nauset Beach South to open with HCP

Beginning on Wednesday July 18, 2020, the Town of Orleans Natural Resources Department will be implementing the Statewide HCP program for Nauset Beach South. 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

All OSV, with the exception of self-contained, are expected to be off the beach by 5:30pm. No egress through the self-escort zones will be allowed after 6pm. No OSV will be allowed on or off the beach outside of specified access windows.

All OSV will be required to have a passenger over the age of 16 to walk in front of the vehicle in the specified self-escort zones. This is a mandatory requirement with a zero tolerance policy. Anyone that fails to follow the HCP Procedures and Conditions will be subject to sticker revocation.

Over-sand vehicles will only be permitted on to the beach if they have in possession a signed copy of the HCP Procedures and Conditions. Please make sure you have read and understood the HCP Procedures and Conditions. A copy of the HCP Procedures and Conditions is available for print on the Town of Orleans website. Also make sure you have watched the HCP video on the Town of Orleans website.

Trail 1, Trail 4, Trail 5 are open. Trail 4 south to Trail 5 is most conducive for self-contained campers. Dogs are allowed but must be on a leash (30 ft. maximum). Dogs or OSV in closed areas will be subject to sticker revocation. This is a zero tolerance policy.

Incidents:

Medical Emergencies: No medical emergency evacuations during the HCP Self-Escort Implementation.

Violations Incidents: There were no violations written during the 2020 HCP Self-Escort Implementation.

Daily Log Observations:
July 18, 2020 – July 26, 2020

Saturday, July 18 – Weather: Sunny and Hot. Temp 89/79. Wind SW 7-13mph, Gust 0. Precip: 0.00

Nauset Beach South HCP Self-Escort Program opened at 8:00AM

Riley W Brood: 25 Days old

7:15 AM - Riley W brood of 3 chicks and 2 adults located foraging along ocean shoreline. Incoming tide (low tide 4:30AM).
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – Riley W brood remained ocean side.
10:00 AM – Self-Escort Zone Closed
11:11 AM – 3 chicks and 1 adult prepare to cross corridor. Access window closed 10 a.m. – 12 noon.
11:16 AM – 3 chicks and 1 adult cross self-escort corridor from East to West and relocate in Pochet Creek Cove. (High tide 12:30PM)
12Noon – Self-Escort Zone Opened
2:00PM – Self-Escort Zone Closed
12 noon to 2:00 PM - 3 chicks and 1 adult remain on west side of self-escort zone in the creek during the access/egress window.
3:20 p.m. – 3 chicks are pushed by adult to cross corridor from West to East. 1 chick observed attempting flight, jumping, flapping wings.
4:00 PM – Self-Escort Zone Opened
4:00 PM to 6:00 PM– Brood remains on ocean side.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1

Nemo S Brood: 22 Days old

7:40 AM – Nemo S brood of 3 chicks and 2 adults located ocean side foraging north of Nemo Wash.
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – Nemo S brood remained ocean side.
10:00 AM – Self-Escort Zone Closed
12noon – 8:00 AM to 10:00 AM – Riley brood remained ocean side.
12noon – 2:00 PM - 3 chicks and 1 adult remain ocean side north of Nemo Wash, moving through the dunes and foraging along the high tide wrack line.
1:53 PM –With winds picking up, 1 chick observed flapping wings into the wind and jumping.
2:00 PM – Self-Escort Zone Closed
2:00 PM to 4:00 PM – Nemo S brood remains ocean side
4:00 PM – Self-Escort Zone Opened
4:00 PM to 6:00 PM– Brood remains on ocean side.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1

Sunday, July 19 – Weather: Sunny / Hot. Temp 83/73. Wind SSW 6-15mph, Gust 0. Precip: 0.00

Riley W Brood: 26 Days old

7:08 AM - Riley W brood of 3 chicks and 2 adults located foraging along ocean shoreline. Incoming tide (low tide 5:15 AM). Chicks separated, 2 chicks together north of adult, who is laying on beach crest above the wrack line, 1 chick 100 feet south of adult, foraging along waterline.
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – Nemo S brood remained ocean side.
10:00 AM – Self-Escort Zone Closed
12Noon – Self-Escort Zone Opened
12Noon to 2:00PM – 3 chicks remain ocean side with 2 chicks together north; 1 solo chick by itself south, two adults present.
2:00PM – Self-Escort Zone Closed
2:00 PM to 4:00 PM – 3 Chicks and 1 adult remain on ocean side during the access/egress window. The two chicks north are observed flapping their wings as the afternoon breeze picks up.
4:00 PM – Self-Escort Zone Opened
4:38 PM – Self-Escort Zone Closed. 1 adult and 1 chick prepare to move to west side of trail and into the creek area.
4:41 PM – 1 adult and 1 chick cross self-escort zone to the Creek. No OVS's were in the zone during the crossing. 2 chicks and 1 adult remain on the ocean side.
4:45 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1

Nemo S Brood: 23 Days old

7:32 AM – Nemo S brood of 3 chicks and 2 adults located ocean side foraging north of Nemo Wash. Fledged Nemo N brood observed in vicinity, just north of where Nemo S is observed.
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – Nemo S brood remained north of Nemo Wash on the ocean side.
10:00 AM – Self-Escort Zone Closed
11:08 AM - 3 chicks and 1 adult moved creek side during the closed window. Remain creek side, moving through the grasses and foraging in the creek wash
12noon – Self-Escort Zone Opened
12noon – 2:00 PM – Nemo S brood remain creek side.
1:27 PM –Unfledged chick (noticeable flight feathers and quick movements) moves within 150 feet of self-escort zone and the corridor is closed. No OSV in the trail. During a 7 minute closure, three OSV's arrive at south barricade to egress trail. After 7 minutes, the chick never crossed and moves back into Nemo Wash moving through the dunes and beach grasses, and back to the creek.
1:36 PM – Self-Escort Zone Opened and the three OSV self-escorted themselves very attentively.
2:00 PM – Self-Escort Zone Closed
2:15 PM to 3:00 PM – 2 chicks observed jumping.
4:00 PM – Opened self-escort corridor
4:00 PM to 6:00 PM– Nemo S Brood remains on creek side.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1.

Monday, July 20 – Weather: Sunny / Hot. Temp. 90/75. Wind SSW 3-17mph, Gust 0. Precip: 0.00

Riley W Brood : 27 Days old

7:34 AM – 1 chick located ocean side south of Riley Wash.
7:48 AM – 2 chicks (50 feet) apart, in dune grass, ocean side, foraging. 1 adult on beach crest above wrack line, facing south towards 1 chick, positioned in front of the dune where two chicks roam.
8:00 AM – Self-Escort Zone Opened
8:00AM to 10:00AM – 3 chicks and 1 adult remain ocean side
10:00 AM – Self-Escort Zone Closed
12Noon – Self-Escort Zone Opened
12Noon to 2:00PM – 3 chicks remain ocean side, 2 chicks together, 1 chick, 2 adults present.
2:00PM – Self-Escort Zone Closed
2:00 PM to 4:00 PM – 3 Chicks and 1 adult remain on ocean side during the access/egress window. 2 chicks, together, observed flapping wings and jumping, as the afternoon breeze picks up.
4:00 PM – Opened self-escort corridor
4:32 PM – 1 of the 2 chicks that have been together, observed in flight for 4-5 ft, 1 foot off the beach, with a clumsy landing.
4:50 PM – 1 adult moves to the low tide shoreline, 3 chicks follow; 1 adult remains on the beach crest overlooking low tide flats.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1

Nemo S Brood; 24 Days old

7:50 AM – 3 chicks and 1 adult found ocean side in front of area of Nemo S nest (exclosure removed 7/14/20)
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – 3 chicks and 1 adult remain ocean side moving between near shore dune grasses (out of the sun) and the shoreline foraging within incoming tidal wrack.
10:00 AM – Self-Escort Zone Closed
12noon – Self-Escort Zone Opened
12noon – 2:00 PM – The brood, 3 chicks and 1 adult, are found 200 ft. north of Nemo S nest area in a peat field on the beach front above the high tide wrack (High tide 1:00 PM). They remain out of the heat in the lee of peat clumps for the remainder of the access window.
2:00 PM – Self-Escort Zone Closed
2:15 PM to 3:00 PM – 2 chicks observed jumping.
4:00 PM – Opened self-escort corridor
4:00 PM to 6:00 PM– Brood remains in peat clumps, front beach.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1.

Tuesday, July 21 – Weather: Sunny /Hot. Temp. 90/77. Wind: WNW/SW5-15mph. Gust 0. Precip: 0

Riley W Brood – 28 Days old

7:52 AM – Brood of 3 chicks and 2 adults located on ocean shoreline at (low tide 7:30AM).
8:00 AM – Self-Escort Zone Opened
8:00AM to 10:00AM – 3 chicks and 2 adult remain ocean side
10:00 AM – Self-Escort Zone Closed
10:00 to 12Noon - 3 chicks and 1 adult remain ocean side moving north and south along the exposed ocean flats. Lots of foraging, movement by both the 3 chicks and 1 adult. 1 adult watching over brood from beach crest.
12Noon – Self-Escort Zone Opened
12Noon to 2:00PM – 3 chicks remain ocean side, 2 chicks together north of Riley Wash on the beach and within the dune forefront grass. 1 chick, 2 adults present in the grasses on a low lying dune above the wrack line.
2:00PM – Self-Escort Zone Closed
2:00 PM to 4:00 PM – 3 chicks and 1 adult remain on ocean side during the closed access/egress window. The 2 chicks who had been together, inseparable, separate. 1 chick stays within the wrack line as tide ebbs, the other chick moves inshore, to the west side of the ocean side dunes, and settles under a beach grass sprig. 1 chick remains in the dune forefront grass of South Riley during the closed access/egress window.
4:00 PM – Self-Escort Zone Opened
4:00 PM – 1 Chick stationed under the beach grass sprig moves into the wash and starts to preen one side of feathers and then the other side. Monitors notice this behavior and "what looked like a ritual". One adult is resting in the shade of a 4x4 post of lumber. The other adult with 1 chick on the ocean side.
4:22 PM – Adult resting in the shade of the lumber stands up and positions into the increasing wind. Suddenly, the other adult flies into the wash and lands adjacent the chick who is still preening. The chick moves its head and then torso into the wind, and takes flight, straight upwards. The adult joins in a parallel flight. Minutes of flight training are photographed; Plover chatter is heard, as they fly over the sand, over the ocean, in perfect unison. The other adult joins the flight, and with a call, the 1 newly fledged chick and 2 adult Piping plovers flew south.
4:32 PM – 1 of the 2 remaining chicks, the chick that have been together with the now fledged chick, is observed in flight for 4-5 ft., 1 foot off the beach, with a clumsy landing.
4:50 PM – 1 adult returns to the beach crest in North Riley and moves a chick from the dune forefront to the low tide shoreline; the other remaining unfledged chick remained alone in the wrack line foraging south.
5:12 PM – The chick north is observed jumping into the wind. Taking flight <100 ft. three times in a span of minutes.
5:20 PM – A second chick in the Riley W brood is declared fledged after being observed in flight >100 with altitude and a bank in flight. The fledged chick continues south in flight.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's.
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1

Nemo S Brood: 25 Days old

7:42 AM – 3 chicks and 1 adult found ocean side in front of Trail 1 north barricade

8:00 AM – Self-Escort Zone Opened
8:25 AM – Adult observed flying in circles back and forth from ocean to creek.
8:26 AM – The same adult observed rounding up the 3 unfledged chicks on the east side of the self-escort corridor.
8:26 AM – Self-escort corridor closed with no OSV in corridor. Two OSV's staging at north end of corridor.
8:29 AM – 2 chicks and 1 adult cross self-escort corridor in the middle of zone from ocean to creek.
8:31 AM – 1 chick crosses self-escort corridor at north end of zone from ocean to creek.
8:33 AM – Self-escort corridor opened and the two OSV's moved through the corridor heading south.
8:45 AM – 3 chicks and 1 adult move into wash at creek, on west side of self-escort zone.
8:45 AM to 10:00 AM – 3 chicks and 1 adult remain creek side.
10:00 AM – Self-Escort Zone Closed
11:53 AM – 1 chick observed attempting flight, by flapping wings and jumping, in creek wash, west side of self-escort zone.
12noon – Self-Escort Zone Opened
12noon to 2:00 PM – 3 chicks and 1 adult remain creek side.
2:00 PM – Self-Escort Zone Closed
2:15 PM to 3:00 PM – 2 chicks observed jumping.
4:00 PM – Self-Escort Zone Opened
4:00 PM to 6:00 PM– At opening, 3 chicks and I adult found ocean side north of Nemo N nest and remain north of Nemo N nest remainder of day.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped
6:00 PM to 6:20 PM – Nauset Beach South Pochet Wash dragged reducing ruts North Gate to Trail 1.

Wednesday, July 22 – Weather: Cloudy /Humid. Temp. 84/71. Wind: S-SSE 3-8mph. Gust 0. Precip: 0.01

Riley W Brood – 29 Days old

7:52 AM – Brood of 3 chicks and 2 adults on ocean shoreline at (low tide 7:30AM).
8:00 AM – Self-Escort Zone Opened
8:00AM to 10:00AM – 3 chicks and 2 adults remain ocean side
10:00 AM – Self-Escort Zone Closed
10:00 to 12Noon – 2 chicks, 1 fledged chick and 1 adult remain ocean side moving north and south along the exposed ocean flats. Fledged chick not observed in flight while foraging. 1 unfledged chick continues to attempt flight by jumping and extending wings outwards and upwards. 1 chick did not attempt flight. Adult oversees brood atop beach crest.
12Noon – Self-Escort Zone Opened
12Noon to 2:00PM – MassWildlife annual HCP compliance visit from Carolyn Mostello Coastal Waterbird Biologist, Massachusetts Division of Fisheries & Wildlife and Andrew Vitz, MassWildlife State Ornithologist
12noon to 2:00 PM – Riley W brood remains on front beach foraging in high tide wrack line (high tide 2:15 PM) with very little lateral movement along the beach, very little movement in general.
2:00PM – Self-Escort Zone Closed

2:00 PM to 4:00 PM – Riley W brood remains on front beach.
4:00 PM – Self-Escort Zone Opened

4:00 PM – Fledged chick and an unfledged chick observed together ocean side and north of adult on beach crest. 1 chick south with the other adult. Ebbing tide foraging in wrack line.
4:10 PM – Unfledged chick north observed in flight of short distance <100 ft. with very little altitude and no bank. Fledged chick remains in area of north unfledged chick. Adult remains on beach crest south of the pair.
4:30 PM – Unfledged chick north observed moving up the beach crest to the dune forefront. Chick observed jumping, spreading wings outwards and upwards. Adult on beach crest repositions itself closer to unfledged chick, north of where it had been.
5:20 PM – Unfledged chick north observed in flight, again with very little altitude, but a greater linear flight of >100 ft.
5:45 PM – 1 chick and 1 adult, south, move into the dune forefront grasses. No further movement from unfledged chick north, fledged chick nor second adult.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's.
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped

Nemo S Brood: 26 Days old

7:53 AM – 2 chicks and 1 adult found ocean side near Nemo N nest foraging at water's edge at (low tide 7:45 AM)
8:00 AM – Self-Escort Zone Opened
8:11 AM – 1 unfledged chick and adult found north of Nemo N nest in Least tern sub-colony foraging at water's edge. Second adult not observed.
8:00 AM to 10:00 AM – Nemo S brood remain on ocean side with movement north of Nemo N nest laterally north and south adjacent Least tern sub-colony.
10:00 AM – Self-Escort Zone Closed
10:53 AM – Nemo S brood of 3 unfledged chicks and 1 adult move south along waters' edge.
11:04 AM – Lead by the adult, the brood enters the wash and moves west towards the creek.
11:08 AM – Nemo S brood enter Self-Escort Zone and cross the Corridor heading towards the creek.
11:11 AM – Nemo S chicks enter creek wash, adult positioned at top of wash at the edge of the grass, while chicks move in and out of grasses within the creeks edge and creek wash.
12noon – Self-Escort Zone Opened
12noon to 2:00 PM – 3 chicks and 1 adult remain creek side.
2:00 PM – Self-Escort Zone Closed
2:30 PM to 3:30 PM – 2 chicks observed jumping. Flight feathers observed still curled.
4:00 PM – Opened self-escort corridor
5:19 PM – Nemo S brood move from creek and start moving east down the Nemo Wash.
5:19 PM – Self-Escort Zone closed. No OSV
4:00 PM to 6:00 PM– At opening, 3 chicks and 1 adult found ocean side north of Nemo N nest and remain north of Nemo N nest remainder of day.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped

Thursday, July 23 – Weather: Partly Cloudy. Temp. 87/77. Wind: SSW 5-18mph. Gust 24. Precip: 0.02

Riley W Brood – 30 Days old

6:30 AM – Found Riley W brood of 3 chicks and 2 adults on ocean shoreline (low tide 8:30 AM), along with the Riley N brood of 3 fledged chicks and 1 adult just north of the Riley W brood ocean side.

7:00 AM – Two chicks in the Riley W brood observed in flight >100 ft. with a bank and altitude. Pair of fledged chicks joined by adult, fly over the dunes, bank towards the ocean, and fly out over the ocean. A short time thereafter the three Plovers, two fledged chicks and 1 adult return to Riley Wash where the resume foraging. Solo chick observed south of the threesome, foraging along the shoreline.
8:00 AM – Self-Escort Zone Opened
8:00 AM to 9:00 AM – Winds increases to 18 mph with gusts 23 mph.
8:30 AM – Solo chick moves up the beach crest towards the middle of the wash and higher ground. 1 adult observed keeping an eye on the solo chick. The other adult is foraging with fledged chicks at water's edge.
8:45 AM – Solo chick observed in flight of <100 ft.
9:10 AM – Solo chick observed in flight >100 ft. with growing altitude until it ascends straight up and banks towards the ocean. The adult remains in the wash. Solo chick declared fledged and after a while returns to Riley Wash in close proximity to the adult.
9:10 AM to 9:30 AM – monitors continue to observe brood behavior and episodes of flight by all 3 fledged chicks.
9:25 AM – Natural Resources Manager, Nathan Sears is contacted and at 9:30AM the Riley Wash Self-Escort Zone is lifted.

Nemo S Brood: 27 Days old

7:48 AM – 3 chicks and 1 adult found ocean side near south end of Nemo Wash and 200+ feet east of Self-Escort Zone.
8:00 AM – Self-Escort Zone Opened
8:17 AM – 3 chicks and 1 adult move north past the location of their nest location.
8:19 AM to 9:15 AM – 3 chicks and 1 adult remain ocean side (low tide 8:30 AM) near former nest location foraging and all 3 unfledged chicks observed in flight <100 ft. (as winds pick up).
9:15 AM – Adult becomes vocal (peeping) from the dune grass west of where the chicks are gathered.
9:29 AM – Chicks on the move west. Self-Escort Corridor closed. No OSV in Corridor. 1 OSV approaching Self-Escort Zone from the north. The OSV is halted at corridor entrance.
9:32 AM – 3 chicks and 1 adult cross at middle of Nemo Wash, thru the Self-Escort Corridor and move toward creek wash
9:33 AM – Self-Escort Corridor is opened. 1 OSV Self-Escort themselves thru corridor.
9:35 AM to 10:00 AM – 3 chicks and 1 adult forage in creek area.
10:00 AM – Self-Escort Zone Closed
12noon – Self-Escort Zone Opened
12noon to 2:00 PM – 3 chicks and 1 adult remain creek side in the creek wash, creek grasses, and flats.
2:00 PM – Self-Escort Zone Closed
3:00 PM – Wind gusts pick up to 28 mph. 3 chicks remain in the lee of the creek. 2 chicks observed jumping. Flight feathers observed straightening on 2 of 3 unfledged chicks. 1 unfledged chick curled.
4:00 PM – Opened self-escort corridor
4:00 PM to 6:00 PM– At opening, 3 chicks and 1 adult found creek side foraging in the flats. Brood remains creek side remainder of day.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped

Friday, July 24 – Weather: Sunny/Humid. Temp. 81/69. Wind: NNW 3-12mph. Gust 0. Precip: 0.00

Nemo S Brood: 28 Days old

7:44 AM – 2 chicks and 2 adults found ocean side near former nest foraging at water's edge at (low tide 9:30 AM)
8:00 AM – Self-Escort Zone Opened
8:00 AM to 10:00 AM – Nemo S brood remain on ocean side with active movement north between the in the dune grass and the water's edge, south of the Least tern sub-colony.
10:00 AM – Self-Escort Zone Closed
12noon – Self-Escort Zone Opened
12noon to 2:00 PM – 3 chicks and 1 adult remain ocean side.
2:00 PM – Self-Escort Zone Closed
4:00 PM – Opened self-escort corridor
4:00 PM to 6:00 PM – 3 chicks and 1 adult remain ocean side. Very active moving from (high tide 3:30 PM) dune, through grasses to the water's edge. All three chicks in general vicinity of each other. 2 adults positioned on beach crest, one adult north of chicks, one adult south of chicks. Only once was 1 unfledged chick observed jumping or attempting to fly.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped.

Saturday, July 25 – Weather: Sunny/Humid. Temp. 88/65. Wind: SSW 3-13. Gust: 24. Precip: 0.00

Nemo S Brood: 29 Days old

7:50 AM: Brood not located
7:55 AM: While 2 monitors search for Nemo S brood, 1 traffic monitor walks the perimeter of the self-escort zone at 150 feet from the corridor on the east (ocean side), and two lead monitors walk the perimeter of the self-escort zone at 150 feet from the corridor on the west (creek side). No OSV's coming off the trail at 8:00 AM egress window.
8:00 AM – Self-Escort Zone opened.
8:11 AM – First OSV enters into the self-escort zone.
8:17 AM – Nemo S Brood and two adults are located 200 yards north of the Nemo N nest and the furthest north we had observed them, beyond the Least tern sub-colony. They are very active foraging between water's edge and dune habitat.
8:17 AM to 10:00 AM: Nemo S brood remains north on the ocean side. It appears as if 2 chicks have formed an attachment with one another. 1 adult is in the vicinity of the 2 unfledged chicks, while the 1 remaining unfledged chick is with the other adult south of the other 2 unfledged chicks and 1 adult.
10:37 AM: 2 unfledged chicks observed in flight <100 ft. at the water's edge.
11:03 AM: 1 of the 2 unfledged chicks is observed in flight > 100 ft. with no bank or altitude, but hits the landing. Not declared fledged.
12noon – Self-Escort Zone Opened
12noon to 2:00 PM – 3 chicks and 2 adults remain ocean side, northern location.
2:00 PM – Self-Escort Zone Closed
4:00 PM – Opened self-escort corridor
4:00 PM – 3 chicks and 2 adult remain ocean side, but moving south.
4:20 PM – Wind picks up. The brood has moved south to a location ocean side of the self-escort zone and in front of their original Nemo S nest.
4:26 PM – 1 adult leads 3 chicks towards self-escort zone. Self-escort zone closed. No OSV in corridor at the time.

4:30 PM – 1 adult, 3 chicks cross self-escort corridor, and move west into the dune grass and lay down in the shade of the grasses by the creek. 1 adult remains at the water's edge (high tide 4:30 PM).
4:31 PM – Self-Escort Zone opened
5:10 PM – 3 chicks and 1 adult gather and move east towards ocean.
5:10 PM – Self-Escort Zone is closed. 1 OSV is in the corridor with a lead monitor alongside the person escorting OSV. The OSV, in the corridor, stops immediately about 1/3 of the way into corridor. While family and monitor watches brood cross the corridor, other watch from afar. 5 OSV at south entrance.
5:14 PM – 3 chicks and 1 adult ocean side >300 feet from self-escort zone.
5:14 PM - Self-Escort Zone is opened. The OSV in the corridor continues through the zone, as do the other 5 OSV's self-escorting themselves.
5:20 PM – 1 chick on the dune crest observed positioning itself for flight. The unfledged chick takes flight >100 ft., ascends to a high altitude and banks towards the ocean, circles the beach, and returns to the beach crest. The unfledged chick is declared fledged.
5:30 PM – 1 of the 2 remaining unfledged Nemo S chicks is observed jumping and flapping its wings. Attempts are made to be lifted by the wind into flight. Simultaneously, the adult at the water's edge begins peeping in a high pitched cadence. The unfledged chick takes flight >100 ft. with altitude and a bank and returns to the shoreline. The second of three Nemo S chicks is declared fledged.
5:45 PM – The remaining unfledged chick is observed jumping, trying to get lift.
4:30 PM to 6:00 PM – Beach Ranger sweeps Nauset Beach South of all OSV's
6:00 PM – Self-Escort Corridor Closed for the evening / North Gate locked / South Gate barricade roped.

Sunday, July 26, 2020 - Weather: Sunny/Humid. Temp. 87/65. Wind: WSW 9-13. Gust: 0. Precip: 0.00

Nemo S Brood: 30 Days old

7:00 AM: All 3 Nemo S-A chicks and 2 adults are located along the shoreline (high tide 6:00 AM).
7:25 AM: All 3 chicks are observed in flight while moving parallel to the shoreline foraging.
8:00 AM: Self-Escort Zone opened
8:30 AM - 3 chicks observed and confirmed by 2 bird monitors and lead Natural Resources Officer in flight >100 ft., ascending with a bank while in flight. Nemo S brood declared fledged.
9:00 AM – After contacting Natural Resources Manager, buggy booth, toll booth and Beach Administration, the Nemo S-A Self-Escort zone is lifted.

Section O

Support Letters

Section P

Public Notice and EENF Distribution List

PUBLIC NOTICE OF ENVIRONMENTAL REVIEW

PROJECT: Nauset Estuary Dredging Project

LOCATION: Nauset Estuary, Orleans & Eastham, MA

PROPONENT: Towns of Orleans & Eastham

The undersigned is submitting an Expanded Environmental Notification Form (EENF) to the Secretary of Energy and Environmental Affairs on or before _____, 2021.

This will initiate review of the above project pursuant to the Massachusetts Environmental Policy Act ("MEPA", M.G.L. c. 30, s.s. 61-62I). Copies of the EENF may be obtained from:

Towns of Orleans & Eastham, Proponents
c/o Woods Hole Group, Inc.
Attn: Beth Gurney
107 Waterhouse Road, Bourne, MA 02532
(508) 495-6240
email: bgurney@woodsholegroup.com

During the interim Covid-19 response period, electronic copies of the EENF are also being sent to the Conservation Commissions and Planning Boards of Orleans and Eastham.

The Secretary of Energy & Environmental Affairs will publish notice of the EENF in the Environmental Monitor, will receive public comments on the project for 20 days, and will then decide, within ten days, if an Environmental Impact Report is needed. A site visit and consultation session on the project may also be scheduled. All persons wishing to comment on the project, or to be notified of a site visit or consultation session, should email MEPA@mass.gov. Mail correspondence will continue to be accepted, though responses may be delayed. Mail correspondence should be direct to the Secretary of Energy & Environmental Affairs, 100 Cambridge St., Suite 900, Boston, Massachusetts 02114, Attention: MEPA Office, referencing the above project.

By the Towns of Orleans & Eastham (Proponents)

Dept. Of Environmental Protection
Commissioner's Office
One Winter Street
Boston, MA 02108
Email: helena.boccadoro@mass.gov

Massachusetts Historic Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

DEP/Southeast Regional Office
Attn: MEPA Coordinator
20 Riverside Drive
Lakeville, MA 02347
Email: george.zoto@mass.gov
jonathan.hobill@mass.gov

Mass. Department of Transportation
Public/Private Development Unit
10 Park Plaza, Suite 4150
Boston, MA 02116
Email: MassDOTPPDU@dot.state.ma.us

MA DOT – District #5
Attn: MEPA Coordinator
Box 111
1000 County Street
Taunton, MA 02780
Email: barbara.lachance@dot.state.ma.us

Cape Cod Commission
PO Box 226
Barnstable, MA 02630
Email: regulatory@capecodcommission.org

Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway St., Suite 800
Boston, MA 02114
Email: robert.boeri@mass.gov
patrice.bordonaro@mass.gov

Division of Marine Fisheries
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: DMF.EnvReview-South@state.ma.us

Natural Heritage & Endangered Species Program
Division of Fisheries & Wildlife
Attn: Environmental Reviewer
1 Rabbit Hill Road
Westborough, MA 01581
Email: melany.cheeseman@mass.gov
emily.holt@mass.gov

Town of Orleans
Select Board
19 School Road
Orleans, MA 02653
Email: kgalligan55@gmail.com

Town of Orleans
Health Department
19 School Road
Orleans, MA 02653
Email: health@town.orleans.ma.us

Town of Orleans
Planning Department
19 School Road
Orleans, MA 02653
Email: gmeservey@town.orleans.ma.us

Town of Orleans
Conservation Commission
19 School Road
Orleans, MA 02653
Email: conservation@town.orleans.ma.us

Town of Eastham
Select Board
2500 State Highway
Eastham, MA 02642
Email: easthambos3@eastham-ma.gov

Town of Eastham
Health Department
2500 State Highway
Eastham, MA 02642
Email: boh@eastham-ma.gov

Town of Eastham
Planning Department
2500 State Highway
Eastham, MA 02642
Email: plagg@eastham-ma.gov

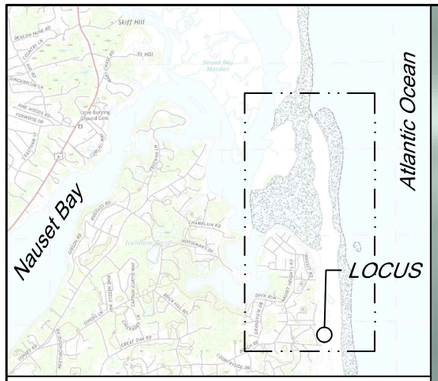
Town of Eastham
Conservation Commission
2500 State Highway
Eastham, MA 02642
Email: conservation@eastham-ma.gov

Section Q

Project Map & Plans

Dredge Plans are Currently Under Development


Dredge Channel
Placement Sites
Goose Hummock to Upland
Nauset Dune Enhancement
Sidecast_Zone
N
0 0.1 0.2 0.4 0.6
Miles
Salt Pond Bay
Town Landing
Skiff Hill
Fort Hill
CCNB
ROAD
Cove Burying Ground
Stony Island
Woods Cove
Rachel Cove
Hopkins Island
Weeset
Nauset Harbor
Nauset Heights
Tonset
Rocky Pt
Icehouse Pond
Mill Pond
Town Cove
Cranberry Bog
East Orleans
BEACH
USGS, MassGIS



Location Map Not to Scale

Atlantic Ocean

Proposed Dewatering Pipe Route

Approximate Property Line (MassGIS)

#239 Beach Road N/F Town of Orleans

#51 Nauset Road N/F 51 Nauset LLC

#55 Nauset Road N/F United States of America

#47 Nauset Road N/F 47 Nauset Road Realty Trust

Callanan's Pass

NHESP Priority Habitat for Rare Species boundary

Existing Path

Coastal Beach

Coastal Dune

Proposed Dewatering Basin

Bordering Vegetated Wetland

ASPINET ROAD

SURF PATH

CALLANANS PASS

NAUSET ROAD

NAUSET HEIGHTS ROAD

STANDISH ROAD

PRISCILLA ROAD

Nauset Estuary

Graphic Scale

300 150 0 300

1" = 300'

NOTES:

1. TOPOGRAPHIC INFORMATION COMPILED FROM AN ON-THE-GROUND SURVEY CONDUCTED BY WOODS HOLE GROUP IN FEBRUARY, 2021. ADDITIONAL PLANIMETRIC DATA PROVIDED BY MASSGIS.
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

WOODS HOLE GROUP
A CLS COMPANY
107 WATERHOUSE ROAD, BOURNE, MA 02532
TELEPHONE: (508) 540-8080 FAX: (508) 540-1001

REVISIONS:	DATE:

TITLE:
Nauset Estuary
Dredge Material Management Area

Orleans, MA

DRAWN BY: JRK	APPROVED BY:	PROJECT NO.: 2015-0121	
DWG FILE:	SCALE: 1" = 300'	DATE: 4/12/21	SHEET: 1 of 3

2015-0121_Dewatering.dwg

Atlantic Ocean

MLW

MHW

Coastal Beach

Proposed Dewatering Basin

Transect 1

Transect 2

Transect 3

Transect 4

Transect 5

Barrier Beach

Proposed Secondary Dune to Remain

Proposed Temporary Berm

Coastal Dune

Approximate Property Line (MassGIS)

Existing Path

NHESP Priority Habitat for Rare Species boundary

Paved Parking

#7 Surf Path
N/F
United States Government

#17 Surf Path
N/F
Daniel P. Coursey

#19 Surf Path
N/F
Paul L. Gossling, Tr.

#15 Surf Path
N/F
United States Government

#239 Beach Road
N/F
Town of Orleans

Bordering Vegetated Wetland

Proposed Dewatering Pipe Route

ASPINET ROAD

SURF PATH

Graphic Scale

100 50 0 100

1" = 100'

LEGEND

Existing topographic contours

Mean Low Water (El. -0.5)

Mean High Water (El. 2.5)

WOODS HOLE GROUP
A CLS COMPANY
107 WATERHOUSE ROAD, BOURNE, MA 02532
TELEPHONE: (508) 540-8080 FAX: (508) 540-1001

REVISIONS:	DATE:

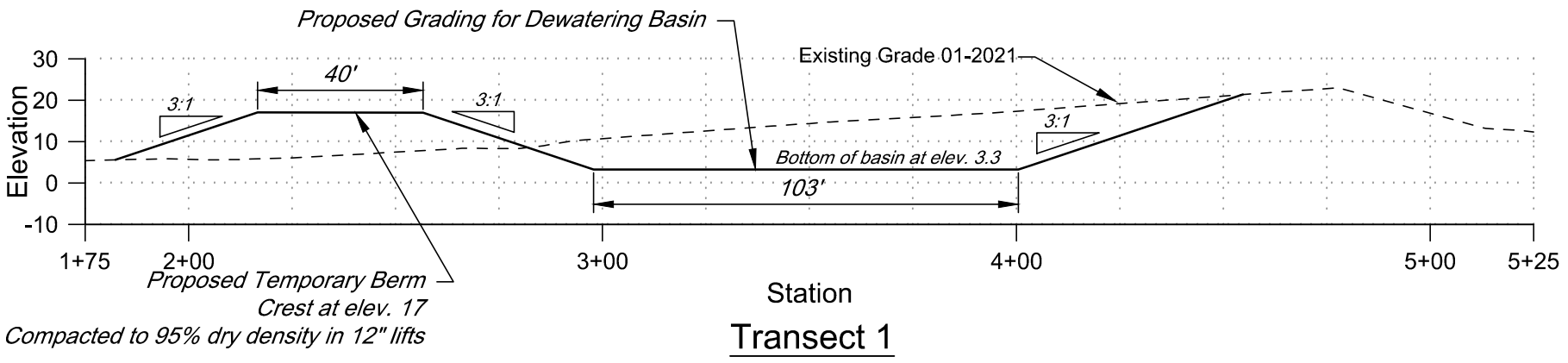
TITLE:

Nauset Estuary
Dredge Material Management Area

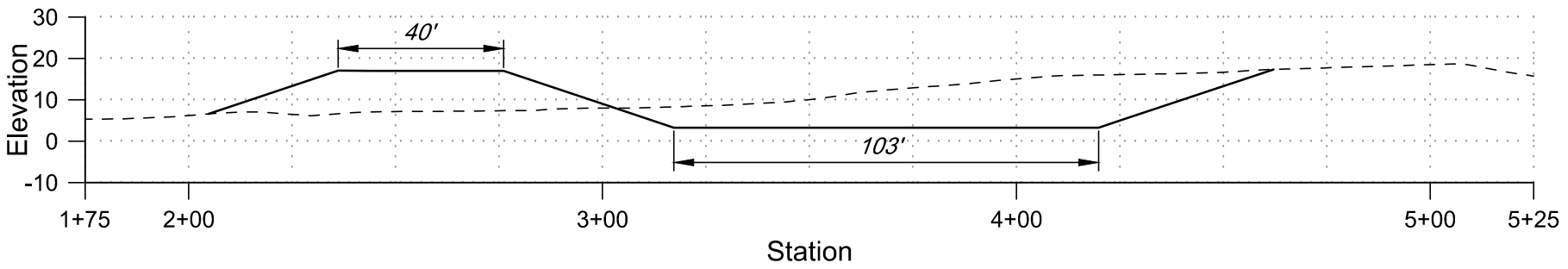
Orleans, MA

DRAWN BY: JRK	APPROVED BY:	PROJECT NO.: 2015-0121	
DWG FILE:	SCALE: 1" = 100'	DATE: 3/26/21	SHEET: 2 of 3

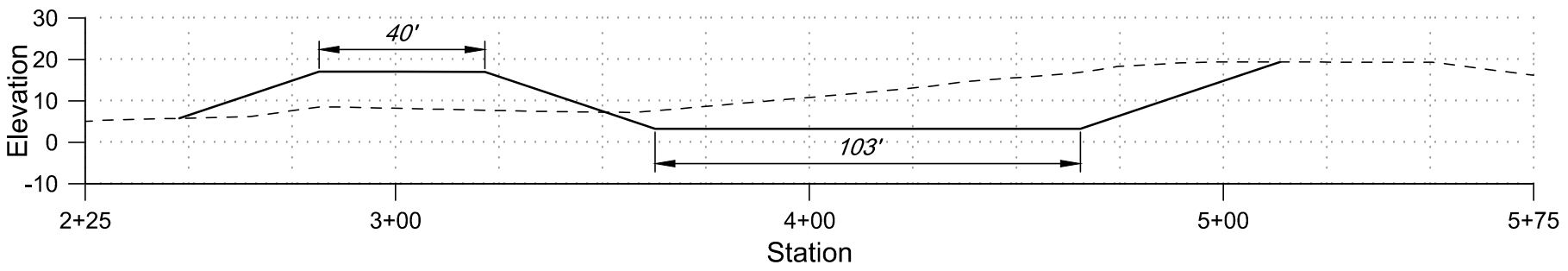
2015-0121_Dewatering.dwg



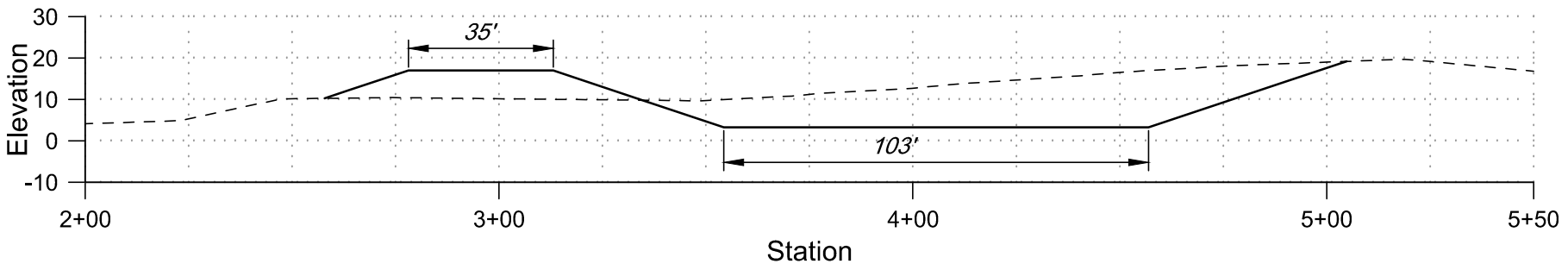
Transect 1



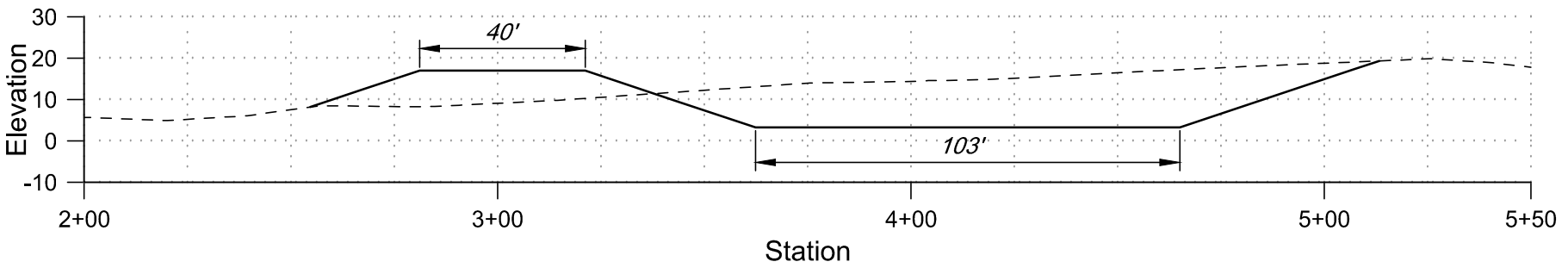
Transect 2



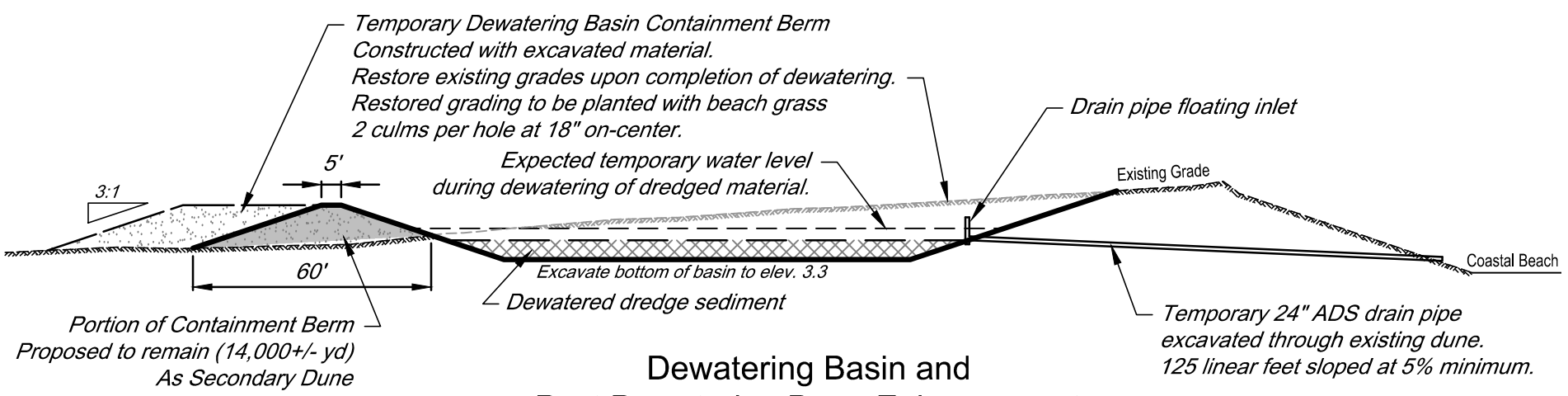
Transect 3



Transect 4



Transect 5



Dewatering Basin and Post Dewatering Dune Enhancement Typical Cross Section

Scale: 1" = 40'

Graphic Scale

40 20 0 40

1" = 40'

WOODS HOLE GROUP
A CLS COMPANY
107 WATERHOUSE ROAD, BOURNE, MA 02532
TELEPHONE: (508) 540-8080 FAX: (508) 540-1001

REVISIONS:	DATE:

TITLE:
Nauset Estuary
Dredge Material Management Area

Orleans, MA

DRAWN BY: JRK	APPROVED BY:	PROJECT NO.: 2015-0121	
DWG FILE:	SCALE: 1" = 40'	DATE: 4/12/21	SHEET: 3 of 3

2015-0121_Dewatering.dwg