



## **DCR 2017 Piping Plover Habitat Conservation Plan Annual Report**

In compliance with the General Conditions of Conservation & Management Permit  
# 017-298.DWF; NHESP file #17-36391

---

### **Implementation of Covered HCP Activities, Mitigation Practices, Shorebird Management, Recreational Benefits and Annual Monitoring of Protected Shorebirds on DCR Urban Beaches of Revere and Winthrop**

DCR Ecology Program  
Bureau of Planning, Design and Resource Protection  
Department of Conservation and Recreation  
251 Causeway Street, Suite #700  
Boston, MA 02114

Savannah McInvale, DCR Conservation Biologist II  
[Savannah.McInvale@state.ma.us](mailto:Savannah.McInvale@state.ma.us)

Revised & Approved By  
Jorge J. Ayub, DCR Coastal Ecologist  
[jorge.ayub@state.ma.us](mailto:jorge.ayub@state.ma.us)  
Tel: 617-626-1434

10/31/2017

## INTRODUCTION

On April 18<sup>th</sup>, 2017 the Massachusetts Division of Fisheries & Wildlife (DFW) issued the Conservation and Management Permit (CMP) #017-298.DFW; to the Department of Conservation and Recreation (DCR) for Winthrop Shores State Reservation and Revere Beach State Reservation. This permit and associated DCR Certificate of Inclusion in the Massachusetts Habitat Conservation Plan (HCP) issued in accordance with the Federal Endangered Species Act (ESA) dated April 18, 2017 (COI), authorized the “Take” during any given nesting season to a maximum of 4 Piping Plover (*Charadrius melodus*) and up to 20 Least Tern (*Sternula antillarum*) territories or breeding pairs to be exposed to reduced proactive symbolic fencing.

While the CMP is approved for both Revere Beach and Winthrop Shores, DCR determined there was not need to impact any PIPL pairs nesting at Revere Beach this season, and the covered activities were only implemented on 2 PIPL territories and 8 LETE pairs at Winthrop Shores.

The permit was implemented by removing the symbolic fencing and performing mechanical beach raking every other day until the end of the re-nesting season in early July. Mechanical raking of the selected area, also considered to be the “best” available beach section for public recreational activities, was cleaned and groomed and made available for residents and visitors. DCR recorded in the daily interactions between staff and beachgoers an overall positive feedback from segregation of shorebird habitat and recreational beach. From 2016 to 2017 there was an overall increase in positive versus negative interactions with visitors on site, with negligible or little increase in impact to nesting shorebirds.

The urban breeding sites at Revere and Winthrop beaches are monitored and nesting habitat is protected in accordance with the federal “Guidelines for Managing Recreation in Piping Plover Habitat”. Preliminary symbolic fencing is installed on each site, prior to or at the time of the arrival of the first breeding pairs. Symbolic fencing is added and adjusted as needed for scraping pairs, changing frequently to accommodate nest changes (see Appendix A). When a nest is established, all symbolic fencing is double fenced and tripled lined to further discourage people from entering nesting habitat. Close coordination between DCR Coastal Ecologist, Conservation Biologists and operations staff, helped DCR to ensure that all beach maintenance activities were supervised if they occurred within 200 meters of nesting shorebird habitat.

A seasonal DCR Ranger was hired from April 16<sup>th</sup> to September 1<sup>st</sup> and assisted in the enforcement of beach regulations while also providing authoritative assistance when the voluntary compliance and education approach was not successful. This year, under contract with DCR, Mass Audubon provided an educator for urban beaches as a proactive step towards community support for public compliance with the guidelines. The educator held 17 public programs and events, led numerous beach clean ups and was on site frequently to provide informal education to beachgoers.

A team of four Conservation Biologists were hired for the nesting season and provided daily on site observations and management for shorebirds. All of the north Boston urban nesting sites were monitored daily from dawn to dusk. Data was collected on population size, nest success, fledging success and causes of mortality. All data was collected in field notebooks and compiled in a shared google worksheet. At the end of the season, data was submitted via PIPODES and TERNODES to the Massachusetts Division of Fisheries and Wildlife (DFW).

## IMPLEMENTATION OF COVERED ACTIVITIES

### Winthrop Shores & Recent Nesting History

Winthrop Beach has become an important shorebird breeding habitat in the past decade. The first year that nesting Piping Plover (PIPL), were recorded at Winthrop was 2008. Initially only two pairs nested on site, this population has since quadrupled to eight pairs. Plovers are not the only shorebird species of interest to take advantage of Winthrop, the beach is also home to a colony of roughly 90 pairs of Least Tern (LETE), and provides foraging habitat to a pair of nesting American Oystercatchers (*Haematopus palliatus*). During the spring and fall migrations, the beach is a crucial stopping point for thousands of shorebirds including the federally Threatened Red Knot (*Calidris canutus*).

Visitors come to Winthrop for a number of reasons; the offshore breakwaters enable the rapid accretion of sand in the middle section of the beach, with higher rates of erosion on either side. Visitors utilize the middle sandy area for sunbathing, and the calm waters between the breakwaters and the high tide line for swimming and paddle boarding. This dynamic sandy area that is cherished by beachgoers is also ideal breeding habitat for the LETE and PIPL. As exemplified by nesting activity in the past, if a section of this beach were not reserved for people, the nesting shorebirds would move to utilize it.

### I. Initiation Date and Duration

On April 18, DFW was notified by phone and e-mail of the start date of implementation for CMP 017-36391.DFW. On April 19, a team of three Conservation Biologists, the DCR Coastal Ecologist, a heavy equipment operator and a DCR Ranger began implementation of the aforementioned CMP at the DCR property of Winthrop Beach. The exposed pairs were displaced from their selected nesting sites by the implementation of the “Activities”, however both pairs continued to scrape in these unfenced areas. All fences as defined in Appendix E were removed from the site and beach raking was conducted every other day. Mechanical raking of the “recreational area” continued under the supervision of qualified monitors until July 9<sup>th</sup> after all the nesting birds in the HCP location had departed.

### II. Pairs and Territories Impacted

The pair of plovers in front of Cutler St. nested on 4/25 in the HCP designated raked area. The egg was found before raking began that morning and was fenced allowing 10 meter (M) protection on any side of the nest. This initial nest was lost due to flooding from an intense rainstorm and one egg was found buried on 4/27. The pair continued their nest this same day in a location 15M further back from the high tide line. The required 10M radius fencing was erected at this new nest site, and the nest was completed at four eggs on 5/2. The PIPL pair successfully incubated and hatched their nest. Of the four hatched chicks, only one made it to fledge due to predation by American Kestrel (*Falco sparverius*).

The second pair of displaced plovers had originally preferred a spot between Forrest and Nevada streets. After continuous raking in this area, the birds began to move north towards Dolphin St. Scrapes were seen on a daily basis between Forrest and Dolphin St. Finally, on 5/2 a 1 egg nest was found between the two streets and the pair was seen copulating. The HCP permit fencing was erected with 10M on three sides of the nest, and 40M on the southern side. On 5/3, as recommended by DFW, the southern side of this fence was moved in 30M, allowing 10M between nests and fencing edge. The nest made it to full clutch though was also subject to American Kestrel depredation on the day of hatch. The pair attempted a re-nest within the “Cutler St” fencing on 6/12. Unfortunately, this second attempt was depredated by crows on 7/2, and one depredated egg with obvious crow pecking marks was found outside the fencing.

The total area that the HCP fencing encompassed before and after nests was laid was calculated using a Garmin GPS handheld unit. The initial fencing for the scraping pairs prior to removal on 4/19 covered 0.63 acres of beach. The final fencing erected for these two pairs in accordance with the CMP 017-298.DFW encompassed a total of 0.47 acres. Winthrop Beach was monitored twice daily, and counts were taken of number of adult PIPL on site, to ensure no additional pairs were subject to take by mechanical raking of the area. The area surrounding the two PIPL nests was raked three times a week with qualified monitors, until July 3<sup>rd</sup>, when raking was reduced to an “as needed basis”. The Cutler nest hatched on 5/30 and the brood moved north of their fencing by 6/7 to a better foraging habitat.

In addition to the two PIPL pairs subject to reduced symbolic fencing, 8 pairs of LETE, out of the 90 total nesting pairs, were impacted. These nests were laid in the same area as our target location for human recreational activity, and most were within the PIPL HCP fencing. Three LETE nests were laid outside the already erected PIPL fencing, and were given their own fence with a 5M buffer on any side of the nest, see Appendix E. This fencing was extended as refuge for the wandering semi-precocial LETE chicks during busy days, to prevent accidental take.

#### Habitat Enhancement Map



*Map - Implemented Covered Activities at Winthrop Shores State Reservation in 2017*

### **III. Impact Minimization Measures**

#### **A. Intensive Monitoring**

To minimize the impact of reduced symbolic fencing, DCR Conservation Biologists implemented high intensity monitoring and management (Appendix A). When mechanical raking was performed on site, 1-2 qualified monitors were present to ensure that the rake did not disturb incubating adults or foraging broods. No vehicles were ever allowed on site without a qualified monitor to escort them.

From the time of implementation, until 5/2 when the second pair laid their nest, the two pairs affected under the CMP were flushed a few times by mechanical raking. These disturbances were noted by monitors and compiled in the “Observation Log” (Appendix C). At the occurrence of flushing, monitors immediately moved the rake away from the pairs to prevent prolonged disturbance. Adult counts were taken twice a day, 7 days a week, and unfenced areas of the beach were checked daily for any new nesting activity. The DCR ranger and biologists enforced the DCR “No Pets” rules and regulations of the property, and asked dog owners to leash and remove their pets from the beach.

In the past seasons on these DCR urban beaches, monitors have noted that the PIPL who nest here seem to be more tolerant of human disturbance. This may explain why neither of the pairs exposed to reduced fencing saw any detrimental effects because of it. After the 10M radius fencing was installed, the birds were monitored with binoculars or a scope from a distance. Fencing was only entered when a monitor needed to check for a full clutch. When people walked by or set up their beach chairs just outside the fence, neither of the pairs would flush. Both nests hatched within the normal time frame, around 26 days after full time incubation began. One pair had a five egg clutch, though one of the eggs was lost to a flood rain, and the other pair finished at a normal 4 egg clutch.

#### **B. Predator Control**

Predator control in 2017 became later in the season an important part of impact minimization. Out of the nine potential fledges from the HCP pairs, only one chick fledged. This was not due to reduced symbolic fencing, but to a highly efficient depredating male American Kestrel. On 6/3 the male kestrel was seen taking two chicks from the brood in front of Cutler Street and was observed consuming them while perched on symbolic fencing. On 6/5 the Kestrel was seen at the symbolic fencing for the nest in front of Dolphin Ave., during hatch. The chicks were never seen and were highly likely depredated. The male kestrel was captured and moved to captivity on 6/7, after noted and reported three years of intense depredation of PIPL chicks at Revere and Winthrop beaches.

#### **C. Habitat Restoration**

At Winthrop Beach, portions (approximately 25%-30%) of the surficial tombolo where the listed shorebirds nested have been degraded by accretion of sediments consisting of gravel and cobble ridges that do not provide ideal conditions for nesting. DCR has taken several steps towards improving this nesting habitat in the less recreational areas of Winthrop Beach. Before the beginning of the 2017 breeding season, DCR implemented priority habitat enhancement by removal of cobble larger than 1.5 inches from the southern shorebird nesting area. The large cobbles were placed south of the fencing, on a seaward facing berm above the high tide line to restore previously eroded sections. The removal was effective this year, as two pairs of PIPL, and 20-25 pairs of LETE utilized the newly restored groomed location. In addition to large cobble removal, biologists conducted vegetation surveys for the past two seasons, and will conduct a final survey in 2018. This information will be used to guide a restoration plan that reduces the growth of invasive vegetation, and allows for a vegetation/open sand ratio more suitable to nesting shorebirds.

## MITIGATION

As set forth in HCP, mitigation was provided for the 2017 PIPL nesting season at DCR Sandy Point State Reservation. Mitigation requirements for the four allotted exposed pairs require  $4 \times 2.5 = 10$  PIPL pairs to benefit each season. Since only two pairs of PIPL were impacted by the “Covered Activities” on Winthrop Beach, mitigation requirements equaled to five (5) PIPL pairs. To fulfill these requirements DCR implemented selective predator management at Sandy Point Reservation by subcontracting the United States Department of Agriculture-Wildlife Services (WS). In the 2017 season, thirteen (13) pairs of PIPL nested on Sandy Point with a final productivity of 1.62 fledges/pair. To this extent all mitigation requirements were fulfilled.

Since thirteen (13) pairs of PIPL were provided selective predator management at Sandy Point in the 2017 nesting season, eight (8) mitigation credits may be carried forward to the 2018 nesting season.

### I. Timing and Effectiveness of Predator Management

The subcontractor WS conducted six (6) site visits at DCR Sandy Point Reservation from March 29<sup>th</sup>, 2017 to August 2<sup>nd</sup>, 2017. The site visits were conducted by one or two WS employees conducting sharpshooting and monitoring with Forward Looking Infrared (FLIR) equipment and spotlights. WS also utilized mock exclosures with pre-baited hardboiled chicken eggs, to observe if the target species American Crow (*Corvus brachyrhynchos*) would identify exclosures and feed on the pre-baited eggs. When uptake was documented by non-target species the location of the mock nest was substituted, and when uptake was observed by the target species only, DRC-1339 COR treated boiled chicken eggs were applied. No uptake data was reported on confirmed treated eggs with DRC-1339 COR.

WS documented Great Horned-Owl (*Bubo virginianus*) outside one of the mock exclosures. Next season it may be recommended trapping Great Horned- Owl prior the beginning of the nesting season.

### II. Monitoring and Effectiveness of Mitigation

In addition to USDA WS staffs conducting site visits and placing baited exclosures, predator activity was documented by DCR contracted Mass Audubon staff. Data was collected on all nests determined to be depredated, and information on predator type, date, weather and breeding stage were reported to DFW via PIPODES and TERNODES.

Selective predator management could be helpful in promoting further nesting success for PIPL pairs and LETS colonies. However, this type of mitigation can take multiple seasons of implementation before positive results are seen. DCR is satisfied with predator control activities and the necessary information they provided for future breeding seasons. With a final PIPL productivity of 1.62, Sandy Point Reservation is above the maintenance productivity for sustaining PIPL populations on the east coast of North America. In future seasons, as recommended by USDA-APHIS, DCR may focus on preliminary predator control for Great Horned-Owl, and continued predator management for American Crow. DCR would like to thank USDA WS staff and Mass Audubon Coastal Waterbird Program staff for their contributions and cooperation's with predator management initiatives at Sandy Point Reservation in 2017 and in future seasons.

## RECREATIONAL BENEFITS

The Certificate of Inclusion in the HCP enabled DCR to enhance visitor experience and maintain PIPL hatch success. The highly urban site of Winthrop beach, if not managed closely, would have minimal room for recreational activities due to the increasing intensity of nesting activity. The continued success of the nesting PIPL and LETS on Winthrop Beach is dependent on management techniques and the support of local residents and visitors. For these reasons, the inclusion in the HCP for Massachusetts is a step towards adapting management practices on urban nesting sites. After this years' implementation of covered "Activities" the Coastal Ecology program at DCR has seen improvement in the public relations between recreational beach users and monitoring staff for the nesting shorebirds.

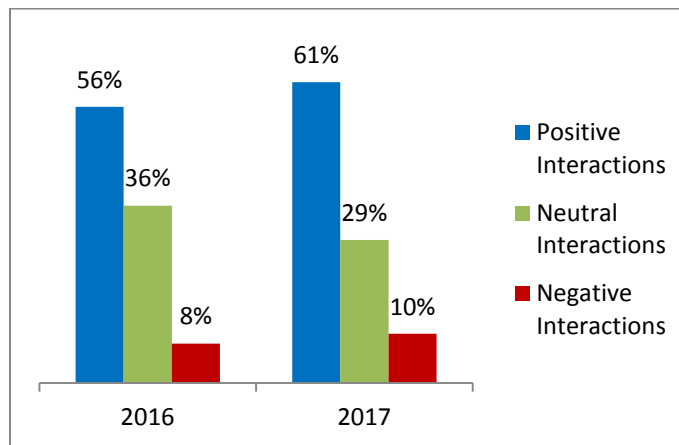
### I. Benefits of Implementing Covered Activities

After the increase in listed shorebird nesting activity at Winthrop Beach, DCR staff members were approached nearly daily by residents and visitors whom disagree with some sections of beach being "taken over" by shorebirds. The small section of beach that remained after fencing off nesting locations, did not allow much room for recreational activities in the sandiest section of the beach. This further compelled the effort by DCR to be included in the HCP for breeding populations of PIPL in Massachusetts. In 2017, with the CMP, the amount of symbolic fencing used was reduced, and biologists reported slightly more favorable interactions with the public.

In accordance with the "Covered Activities" as permitted in the CMP, Winthrop beach was raked with qualified shorebird monitors 3 times a week, outside of the symbolic fencing. Many residents spoke up about how they appreciate the way the beach looked after it was raked. Several residents also mentioned the benefit of mechanical rakes removing unwanted trash and needles from the beach, creating a safer place for their children.

### II. Program Reach and Effectiveness

To assist with strategic planning, biologists collect daily data on the number of positive, negative and neutral public interactions they encountered on site. The following chart shows a two year comparison of the 2016 interactions (169), versus the 2017 interactions (194). There was a 5% increase in positive interactions and a slight increase of 2% on negative interactions as well, allocating the 7% decrease in neutral interactions. This provides some indication of the potential growth of overall public approval of current DCR beach management practices.



*Chart - Two year comparison of interactions between DCR staff and the public on Winthrop Shores*

As evidenced by the recordings of public interactions; raking, reducing fencing and providing onsite informal education has great value in improving the overall experience of visitors. We expect that with the yearly implementation of the HCP on Winthrop, positive feedback will continue to increase. Next year, to further improve the human-wildlife dynamic, raking will be implemented in the recreational area prior to the arrival of shorebirds. This will encourage the PIPL to choose a nesting location less disturbed by visitors, and allow area to be set aside for recreational activities.

In addition to informal interactions, educational bulletins were posted on DCR buildings and facilities in the area. DCR Press Releases went out on Conservation of Shorebirds on Urban Beaches and public officials were updated throughout the season about beach restrictions and management practices by the DCR's office of Government Affairs.

Symbolic fencing violations were down to only a handful this year. Three were noted for being stand out negative offenders, who were aware of the rules. Three other fence violations were people who do not speak English, or young children walking in to fetch a ball. It is likely that there were symbolic fence violations during a time that no monitors were present on site, however, no evidence of destruction of a nest or brood was found to be caused by human disturbance.



## **ADDENDUMS**

## **A WINTHROP BEACH RESERVATION GUIDELINE COMPLIANCE**

<b>Month</b>	<b>Week</b>	<b>Monitor Visits</b>	<b>Fencing Changes</b>	<b>Enforcement</b>	<b>Raking Mon/Wed/Sat</b>
<b>March</b>	19-25	6	none	none	none
	26-1	7	Initial "Bell" fence erected 3/30	1 dog removed from beach.	none
<b>April</b>	2-8	9	none	6 kids walking through fence with dog were removed from beach.	none
	9-15	9	"Cutler" fence erected 4/9	Man golfing on beach was asked to leave. 4 dogs removed from beach.	none
	16-22	13	"Rossettis" fence erected 4/16, extended "Bell" fence 4/18, "Cutler" and "Rossettis" removed under HCP permit 4/19	4 dogs removed from beach. Person removed from fence.	Monitored use of Front end Loader and Mechanical Rake 4/19.
	23-29	18	10M radius HCP fence erected for "Cutler" nest 4/25, New HCP "Cutler" fence erected and old removed 4/27, extended "Bell" fence 4/28.	4 dogs removed from beach. Couple removed from fencing.	Monitored raking 3X/week.
	30-6	14	10M radius HCP fence erected at Dolphin Ave. for Rossettis pair nest 5/2.	3 dogs removed from beach.	Monitored raking 3X/week.
<b>May</b>	7-13	14	none	5 dogs removed from beach.	Monitored raking 3X/week.
	14-20	14	none	3 dogs removed from beach.	Monitored raking 3X/week.
	21-27	15	Extended NE corner of "Bell" fence to encompass new scrapes 5/21. Fencing erected for LETE nest near Rossettis 5/23	3 dogs removed from beach.	Monitored raking 3X/week.
	28-3	14	Pulled out corner of "Rossettis" fence for tern nest 5/28. Pulled out fence in front of new nest at "Bell" 6/2. Extended Cutler fence south for two new LETE nests 6/3.	2 dogs removed from beach.	Monitored raking 3X/week.
<b>June</b>	4-10	14	"Cutler" fence extended to encompass new PIP1 scrapes 6/7, triple lined 6/8.	5 dogs removed from beach.	Monitored raking 3X/week.
	11-17	14	Double fenced "Cutler" fence 6/13.	Walker removed from fencing.	Monitored raking 3X/week.

	18-24	13	none	2 dogs removed from beach.	Monitored raking 3X/week.
	25-1	17	Moved LETE fencing to accommodate chicks 6/29 and 6/30- continuous	1 dog removed from beach.	Monitored raking 3X/week.
<b>July</b>	2-8	15	none	1 dog removed from beach.	Monitored raking 3X/week.
	9-15	15	Removed "Cutler" fence, no activity 7/12.	Asked visitors to remove volleyball net from fence. 3 dogs removed.	none
	16-22	13	Took down north LETE fencing 7/21.	1 dog removed from beach.	none
	23-29	9	none	1 dog removed from beach. Walker removed from fence.	none
	30-5	10	none	1 dog removed from beach.	none
<b>August</b>	6-12	7	none	none	none
	13-19	3	Removed "Bell" fence 8/18, no activity.	none	none

**B- COVERED ACTIVITY INITIATION DATE AND PAIRS AFFECTED**

<b>Date and Location of HCP Implementation</b>	<b>PAIR</b>	<b>1st EGG LAID</b>	<b>FULL CLUTCH</b>	<b>HATCH</b>	<b>FAIL</b>	<b>FLEDGE</b>
<b>April 19, 2017 42.375800, -70.969408</b>	01A - Cutler	4/25	N/A	N/A	4/26 - washed at 1 egg	none
<b>42.375533, -70.969470</b>	01A - Cutler cont.	4/27	5/3-5/4(def. 3 eggs on 5/2) 4th egg surprise	5/30	6/1-6/3 - 3 chicks depredated	6/24 - 1 fledgling
<b>April 19, 2017 42.376405, -70.970709</b>	05A - Rossetti's	5/2	5/8	6/5	6/7 - all 4 chicks likely depredated	none
<b>42.375497, -70.969126</b>	05B - Rossetti's	6/12	6/18	N/A	7/2 - 2 eggs depredated, 7/3 - 2 eggs depredated	none

**C- EXCERPT OF DISTURBANCES: FROM THE 2017 "OBSERVATION LOG"**

<b>Date</b>	<b>Weather</b>	<b>Observations</b>	<b>HCP Area (observations from the area where Cutler and Rossetti's pairs are)</b>
<b>4/19/2017</b>	40-45F, mostly cloudy then clearing up, wind started at S 6 mph, kicked up to 15-20 mph. LT: 12:00	3 PIPL in south end of fence near brick houses and Irwin street. One in Irwin fencing, 2 in bell fence. During "raking" pair observed in NW corner, fighting with third PIPL who was pushed out and foraged with Cutler pair behind their fence. White house's pair not observed. Cutler and Rossetti's pairs seen (see HCP observations).	7 scrapes in Cutler, 6 scrapes in Rossetti's. Pair just north of Rossetti's, cutler pair behind their fence in the old storm wrack line (eating flies). Moved to fencing before it was taken down and began courting, high stepping and eventually mating. While fence was removed, pair moved towards water, and then flew back to old storm wrack line during heavy equipment operation. Eventually flew back down to intertidal. Pair at Rossetti's remained in area and simply pushed further north when heavy equipment came by. No scraping observed, though scrapes were seen. Pictures taken of 3/4 individuals to track where they move to.
<b>4/20/2017</b>	54F, S0, 90%cc, HT:6:32, LT: 12:54	2 PIPL in wrack IFO NW, 1 PIPL in Bell IFO White Houses, 1 PIPL just inside Bell IFO R Brickhouse, 1 PIPL at water IFO Brick Houses, 1 PIPL calling in Irwin fence, Cutler & Rossetti's PAIRS in HCP observations >>>>	Rossetti's PAIR in wrack IFO Forrest St., Cutler PAIR in wrack IFO Cutler St. Both Pairs foraging during raking, no courtship activity observed.
<b>4/22/2017</b>	43F, NE12, 100%cc, light rain, HT:8:24, LT: 14:41	PAIR in Irwin fence, 1PIPL at water IFO NW. HCP Raking 9:30-11:00. HCP PIPL >>>>	2PIPL in wrack IFO Cutler St. 1 scrape seen 10m in from wrack, like pushed towards the water by raking.
<b>4/23/2017</b>	51F, SUNNY, CLEAR, HT: 0918 LT: 1518	1 PIPL pair in rack NW near white houses. 1 pair resting in fencing at Irwin, 1 PIPL in fencing, one in wrack line near white house. 2 birds flew into fencing area near cutler, fighting.	Did not see any new scrapes
<b>4/23/2017</b>	51F, SUNNY, HT: 0918, LT: 1518	No more territory disputes observed or flying, saw 1 PIPL walking in fencing near brickhouse	
<b>4/24/2017</b>	54F, sunny, clear, wind WSW at 6 MPH. HT: 10:10, LT: 16:21	1 scrape and courtship tracks just n of bell fence NE corner. 5-7 scrapes and lots of courtship tracks in old cutler fence area. Scrapes continue to Rossetti's, 4 PIPL seen in area. See pairs for further details ----->>>>>>	PIPL tilting over scrape in front of blue house north of cutler. 3-4 scrapes further north from this. LOTS of courtship tracks. Pair not saw together, POSSIBLY cutler bird. Another PIPL north of Rossetti's near killdeer nest. Scrapes north of raked area. No tilting or territorial peeping. Highly active in raked area today, need to check extremely well over next few days.
<b>4/25/2017</b>	48F, light rain off and on, cloudy, wind NE at 11 mph LT: 4:48, HT: 11:00	Nest 01A found today at 1 egg. 2 PIPL present, broken winging while fencing was erected. Continued incubation after we left. 9 PIPL seen, Rossetti's pair agitated by raking. Raked HCP area besides nest.	Nest 01A found today in Cutler area, fenced 10M radius. The egg was laid while we were there for raking. Rossetti's pair in rocks in front of the area just north of raked area, pushed north by raking.

<b>4/26/2017</b>	53F, E4, light rain, 100%CC, HT:11:48, LT:17:54	Saw 2 PIP1 (Rossettis) foraging; 3 PIP1 observed outside Cutler fence, territorial dispute. Large, fresh dog tracks in the fencing. No sign of nest. new nest directly in front of ocean avenue by fence, 1 egg seen with eyes	Cutler nest not seen. Potentially failed, possibly washed out by rain. 1 PIP1 observed tilting, found fresh scrape in front of Cutler St. SW of fence.
<b>4/27/2017</b>	52-57F, NE6, fog clearing then sunny,	New Nest at NW at 2 eggs	Found buried egg from first cutler nest- washed by rain. Cutler pair continued nest 01A, SW of original nest location; Double fenced 10m radius around new nest
<b>5/2/2017</b>	50F, calm, foggy, slight mist, 100%cc, HT=4:35, LT=21:56 54F	Tough to get a good HC, some battling/flying all over the place centered on Irwin/brick/white house area. Possible new birds. I think Cutler might only be a 3 egger this year	NEST FOUND TODAY----- In front of Dolphin St. 1 egg, fenced with HCP 10m radius fencing.
<b>6/14/2017</b>	67F, NNW5, 0%cc, sunny, LT: 9:23, HT: 15:41	Raking: 6-6:30. Incomplete monitor. Tracking conditions very poor due to rain yesterday	No activity in between fences. Cutler brood up in Rossettis fence area, slightly disturbed by raking- rake was directed further away.

## **D- DOCUMENTATION FORMS AND POSITION DESCRIPTION**

# **Nest Attempt Form DCR 2017 (RBN/RBS/WB/NHT)**

**Site:** \_\_\_\_\_ **Town:** \_\_\_\_\_ **Pair Number** \_\_\_\_\_  
 Nest Attempt: \_\_\_\_\_ 1<sup>st</sup> \_\_\_\_\_ 2<sup>nd</sup> \_\_\_\_\_ 3<sup>rd</sup> \_\_\_\_\_ 4<sup>th</sup> \_\_\_\_\_ (known/suspected/unknown) Lat/Long: \_\_\_\_\_  
 Observer Name: \_\_\_\_\_

## **Dates**

Nest 1<sup>st</sup> Located: \_\_\_\_\_ (known/suspected/unknown)  
 1<sup>st</sup> Egg Laid: \_\_\_\_\_ (known/suspected/unknown)  
 Clutch Completed: \_\_\_\_\_ (known/suspected/unknown)  
 Estimated Hatch Date: \_\_\_\_\_

## **Banded Adults?**

Adult 1: Bands? (y) (n) if yes enter band info \_\_\_\_\_  
 Adult 2: Bands? (y) (n) if yes enter band info \_\_\_\_\_

# of eggs when nest found \_\_\_\_\_ total # of eggs \_\_\_\_\_

## **Nest Location Information**

Nest Location: \_\_\_\_\_ Oceanside \_\_\_\_\_ Bayside \_\_\_\_\_ Interdune \_\_\_\_\_ Marsh \_\_\_\_\_  
 Habitat Type: \_\_\_\_\_ Open beach \_\_\_\_\_  
 \_\_\_\_\_ Toe of dune \_\_\_\_\_  
 \_\_\_\_\_ Dune slope \_\_\_\_\_  
 \_\_\_\_\_ Overwash \_\_\_\_\_  
 \_\_\_\_\_ Other \_\_\_\_\_

Vegetation cover  
 In 1.5 m of nest: \_\_\_\_\_ 0  
 \_\_\_\_\_ 1-8  
 \_\_\_\_\_ 9-20  
 \_\_\_\_\_ 21-72  
 \_\_\_\_\_ Over 73  
 \_\_\_\_\_ Other \_\_\_\_\_

Substrate Type: \_\_\_\_\_ Sand \_\_\_\_\_  
 \_\_\_\_\_ Stone/Sand \_\_\_\_\_  
 \_\_\_\_\_ Stone \_\_\_\_\_  
 \_\_\_\_\_ New nourishment sand (WB) \_\_\_\_\_  
 \_\_\_\_\_ Shell/sand \_\_\_\_\_  
 \_\_\_\_\_ Other \_\_\_\_\_

## **Nest Measurements (in meters)**

Monthly High Tide \_\_\_\_\_  
 Toe of Dune \_\_\_\_\_  
 Nearest Vegetation and Type \_\_\_\_\_  
 Actual Hatch Date: \_\_\_\_\_ Number of Eggs Hatched \_\_\_\_\_ Number Unhatched \_\_\_\_\_

## **Chick Fledge and Loss**

Example Loss Causes: missing/abandonment/depredated/human/vehicle/exposure

	Chick 1	Chick 2	Chick 3	Chick 4
Date of Fledge 35 days or flew 15m				
Date of Loss				
Cause of Loss				
Other comments about chicks				

Estimated fledge date \_\_\_\_\_ Total Number of Fledged Chicks \_\_\_\_\_



**Nest Failed Form DCR 2017 (RBN/RBS/WB/NHT)**

**Date form filled out:** \_\_\_/\_\_\_/\_\_\_ **Time:** \_\_\_\_\_

**Site:** \_\_\_\_\_ **Town:** \_\_\_\_\_

**Pair Number** \_\_\_\_\_

**Nest Attempt:** 1<sup>st</sup> \_\_\_ 2<sup>nd</sup> \_\_\_ 3<sup>rd</sup> \_\_\_ 4<sup>th</sup> \_\_\_

**Discovered by staff:** \_\_\_\_\_

**Date Failed** (give range if needed): \_\_\_/\_\_\_/\_\_\_ - \_\_\_/\_\_\_/\_\_\_ (estimated \_\_\_known\_\_\_unknown\_\_\_)

**Time Failed** (give range if needed): \_\_\_\_\_ (estimated \_\_\_known\_\_\_unknown\_\_\_)

**Nest Loss:**

Predation-likely	sanded over
Predation suspect	overwash/flood
Abandonment likely	fail to hatch
Abandonment suspected	vandalism
Unknown	trampling
Multiple causes	run over
Mortality of both adults	substrate collapse
Other: _____	

**Number of Eggs**

**Found:** abandoned\_\_\_ depredated\_\_\_ washed\_\_\_ buried\_\_\_ unhatched\_\_\_ missing\_\_\_

**Weather at Site When Nest Loss Found**

Temperature\_\_\_ Cloud Cover %\_\_\_ Precip\_\_\_ Wind\_\_\_

**Weather Over Past 24 Hours**

Temperature\_\_\_ Cloud Cover %\_\_\_ Precip\_\_\_ Wind\_\_\_

**Date/Time Eggs last physically seen:** \_\_\_/\_\_\_/\_\_\_ time: \_\_\_\_\_

Name of observer: \_\_\_\_\_

# of eggs seen: \_\_\_\_\_

adults present: \_\_\_\_\_

seen with naked eye (Y/N)

If not, what was used \_\_\_\_\_

**Nest Logistics**

How long has bird been incubating full time: \_\_\_\_\_

Was double fencing used (Y/N)

Was triple lining used (Y/N)

Were predator tracks observed near nest at any point (Y/N)

If yes, when? \_\_\_\_\_

Predator observed near nest (Y/N)

If yes, can you identify predator and

activity? \_\_\_\_\_

Tracking Conditions (1 poor, 5 best)

1 2 3 4 5

Has there been a high tide/heavy rain since nest last observed (Y/N)

Can vehicles drive near this nest (Y/N)

**Other (please describe any pertinent information):** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Last name, first name:

**POSITION DESCRIPTION, DPA-Form 30-State  
Commonwealth of Massachusetts**

POSITION TITLE CODE

1. POSITION TITLE  
Conservation Biologist I – Shorebird Monitor

AGENCY

2. APPROPRIATION/AGENCY CODE

POSITION NO.

REQUISITION NO.

SALARY

DATE PREPARED

3. GENERAL STATEMENT OF DUTIES AND RESPONSIBILITIES

Incumbents of positions in this series collect, analyze, and review biological data through field, and literature work on endangered and threatened species and other features of biological diversity; provide technical assistance and information to public and/or private groups; help the agency in maintaining liaison with various public and private agencies; and perform related work as required.

The basic purpose of this work is to provide professional scientific services regarding the biological monitoring and the protection and management of the state's endangered and threatened species of shorebirds and their habitats.

4. SUPERVISION RECEIVED (Name and title of person from whom incumbent receives direction)

Jorge J. Ayub, Coastal Ecologist

5A. DIRECT REPORTING STAFF

5B. THEIR STAFF

6. DETAILED STATEMENT OF DUTIES AND RESPONSIBILITIES

1. Analyzes data from a variety of sources on endangered and threatened species to assess population trends or to make management recommendations regarding courses of action for the protection and management of these species.
2. Collects and reviews biological data through field work to obtain information relative to population trends and environmental impacts in order to make appropriate recommendations.
3. Provides biological technical assistance and information on such matters as endangered and threatened species conservation, management and research to the agency, for distribution to various local, state and federal agencies and the scientific community.
4. Supports the agency in maintaining liaison with various private, local, state and federal agencies in order to exchange information or to resolve issues related to the biological protection of the state's endangered and threatened species of shorebirds and their habitats.
5. Performs related duties such as preparing general and technical reports and maintaining data and other scientific records.

Incumbents of positions at the Conservation Biologist I level or higher also:

1. Design and implement field research studies relative to endangered and threatened species, including the selection of sampling design, frequency of sampling, and scientific equipment to be used, among others to accomplish research objectives.
2. Review field studies and research projects for compliance with procedures and scientific standards.

7. QUALIFICATIONS REQUIRED AT HIRE (List knowledge, skills, abilities)

1. Knowledge of the principles of ecology and population biology.
2. Knowledge of a specific area of biology (i.e. ornithology) or other conservation science related to assigned responsibilities.
3. Knowledge of research methods and techniques followed in conservation biology.
4. Knowledge of the characteristics and habits of endangered and threatened species.
5. Knowledge of the principles and techniques of endangered and threatened species habitat management.
6. Knowledge of the types and uses of equipment used in conservation biology research and management.
7. Knowledge of the methods used in the preparation of charts, graphs and tables.
8. Ability to read, interpret, apply and explain the policies, procedures, guidelines, laws, rules and regulations governing agency operations and assigned unit activities.
9. Ability to gather information by examining records and documents.
10. Ability to assemble items of information according to established procedures.
11. Ability to determine the proper format and procedure for assembling items of information.
12. Ability to analyze and determine the applicability of conservation biology data, to draw conclusions and make appropriate recommendations.
13. Ability to follow oral and written instructions.

14. Ability to perform arithmetic and statistical computations (addition, subtraction, multiplication and division; and calculate mean, mode, median and standard deviation).
15. Ability to communicate effectively in oral and written expression.
16. Ability to prioritize work assignments.
17. Ability to prepare general and technical reports.
18. Ability to prepare and use charts, graphs and tables.
19. Ability to maintain accurate records.
20. Ability to deal tactfully with others.
21. Ability to establish and maintain professional and harmonious working relationships with others.
22. Ability to exercise sound judgment.
23. Ability to work independently.
24. Ability to operate a motor vehicle.

8. QUALIFICATIONS ACQUIRED ON JOB (List knowledge, skills, abilities)

1. Knowledge of the laws, rules, regulations, policies, and procedures governing assigned activities.
2. Knowledge of the types and uses of state or agency forms.
3. Knowledge of electronic data processing techniques used in solving environmental science problems.
4. Knowledge of the methods and techniques followed in the inspection of environmental, monitoring equipment and projects.

Additional qualifications acquired on job in Conservation Biologist I positions:

1. Ability to coordinate the efforts of others in accomplishing assigned work activities.

Based on assignment, the following additional qualification may be acquired on job in Conservation Biologist I positions:

1. Knowledge of the principles, practices and techniques of supervision.

Additional qualifications acquired on job in Conservation Biologist I and higher positions:

1. Ability to accomplish work objectives when few precedents or guidelines are available.

9. MINIMUM ENTRANCE REQUIRMENTS

Conservation Biologist I:

Applicants must have at least (A) one year of full- time, or equivalent part-time or seasonal, professional or technical experience in work involving the protection, conservation and/or management of endangered and protected species, or (B) any equivalent combination of the required experience and/or the substitution below.

*Substitutions:*

- I. Bachelors or higher degree with a major in biology, ecology, zoology, ornithology and conservation science, or a related field, may be substituted for the required experience. \*Education toward such a degree will be prorated on the basis of the proportion of the requirements actually completed.

10. LICENSE AND/OR CERTIFICATION REQUIRMENTS

Based on assignment, possession of a current and valid Massachusetts Class 3 Motor Vehicle Operator's License.

REMARKS:

\_\_\_\_\_  
SIGNATURE OF APPOINTING AUTHORITY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
AGENCY

\_\_\_\_\_  
PREPARED BY

\_\_\_\_\_  
SIGNATURE OF INCUMBENT

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SIGNATURE OF SUPERVISOR

\_\_\_\_\_  
DATE

**E- MAP OF WINTHROP BEACH 2017 SEASON**

# DCR Winthrop Shore Reservation

## Piping Plover Breeding Season 2017



0 70 140 280 420 560 Feet



● Piping Plover Nest Attempts



American Beach Grass

Symbolic Fencing



LETE, HCP



PIPL, HCP, 4/27



PIPL, Standard, 4/19



PIPL/LETE, HCP



PIPL/LETE, Standard

**\*\*If not noted, fencing was removed July/August (after the departure of nesting birds)**

**USDA-APHIS 2017 PREDATOR REMEDIATION REPORT FOR DCR BEACHES**

**MANAGEMENT OF PREDATORS**  
**AT**  
**THE MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION**  
**OWNED BEACHES**  
**FOR THE ENHANCEMENT AND PROTECTION OF THREATENED AND ENDANGERED**  
**SHORE NESTING BIRDS**  
**APRIL 2017 - June 2017 SUMMARY REPORT**

Submitted to  
The Massachusetts Department of Conservation and Recreation  
And  
The United States Department of the Interior  
Fish and Wildlife Service

Prepared by:  
Michael Parenteau  
USDA, APHIS Wildlife Services  
463 West Street  
Amherst, MA 01002

October 2, 2017

## **Background**

In 2013, the Massachusetts Department of Conservation and Recreation (MA DCR), requested the United States Department of Agriculture (USDA) Wildlife Services (WS) assistance to develop recommendations to reduce the impacts predators were having on federal and state threatened piping plovers and other species of nesting shore birds on MA DCR owned or managed beaches along the coast of Massachusetts. Historically, these areas have been an important shore bird nesting habitat. On 22 January 2013, Wildlife Services met with the MA DCR staff and conducted site visits at Horseneck Beach State Reservation including Gooseberry Neck and Demarest Lloyd State Park.

During these site visits, WS collected information on the history of shore bird nesting and predation to determine the current presence of piping plover and shore bird predators. From these site visits, red fox, Eastern coyote, and American crows were determined to be the predator species having the most significant impact on the nesting success of piping plovers and other shorebirds on the beaches.

Wildlife Services proposed a predator removal program for 2013 targeting mammalian predators to include Eastern coyotes, red fox, raccoons, Virginia opossum, mink and striped skunk, and avian predators to include American and fish crows. WS recommended the use of DRC-1339 COR as a method to manage crows that were targeting shore nesting birds. This management technique had proven to be very effective in targeting specific crows that have learned to predate on nesting shore bird eggs. Other methods recommended included sharpshooting mammals and the use of a shot gun to remove other avian species if necessary. WS had suggested that most of the control efforts be concentrated early in the nesting season due to increasing public access to the beaches.

The Massachusetts Division of Fish and Wildlife (MDFW) requested predator control efforts also occur on Sandy Point State Reservation and South Cape Beach in addition to Horseneck Beach State Reservation, Demarest Lloyd State Park. These sites were chosen because the MDFW felt these sites had the most potential to have high productivity due to the habitat.

In 2015, MA DCR requested that WS begin predator control activities on West Island State Reservation in Fairhaven, MA. This beach had experienced shorebird predation primarily caused by American crows and coyote.

MADCR entered into a Cooperative Service Agreement (CSA) for efforts predator control efforts to be conducted on Sandy Point reservation during the 2017 nesting season.

## **Methods**

WS personnel conducted a total of 45 control visits between 29 March 2017 and 2 August 2017. These visits included nighttime control visits, installation and removal of remote cameras, setup and removal of mock piping plover exclosures, and pre-baiting for and application of DRC-1339 COR to control American crows. Eleven (11) visits in total were conducted at Horseneck Beach, six (6) of these were night visits. Eleven (11) visits were conducted at Demarest Lloyd, two (2) of these night visits. Ten (10) visits were conducted at West Island, six (6) were at Sandy Point State Park, and seven (7) at South Cape Beach. These visits utilized one (1) to two (2) employees to conduct sharpshooting and monitoring using Forward Looking Infrared (FLIR) equipment, night vision, and spotlights.

Mock exclosures are used to target local populations of American and fish crows that have displayed specialized predation behavior. This behavior involves crows keying in on active piping plover exclosures and predating eggs in uncovered exclosures or chicks in covered exclosures. Crow predation at piping plover nest exclosures has proved to be a learned behavior passed on to young crows. Mock exclosures are then pre-baited with hard boiled eggs until full



bait acceptance by target crows is observed by remote cameras and/or monitoring tracks. If non-targets are observed feeding on pre-bait, the site is abandoned. Once full bait acceptance by only target species is established, pre-bait eggs are replaced with DRC-1339 COR treated boiled eggs marked with POISON or a skull and crossbones. Bait uptake is monitored and any unconsumed treated eggs are removed and properly disposed of after seven days.

Because multiple crows may feed on a single egg, adult crows may feed treated eggs to chicks, and one or two crows may remove and cache multiple treated eggs for later consumption, there is no way to determine how many crows are killed with DRC-1339 COR. Because of this, WS estimates one (1) crow killed for each treated egg consumed or removed from an enclosure. However, the number of crows killed could be higher or lower.

On March 29, 2017, WS began constructing mock piping plover nest enclosures and began pre-baiting with untreated hard boiled medium brown chicken eggs. DRC-1339 COR treated eggs were then applied in mock enclosures to alleviate crow predation.

## Results

WS also monitored remote infrared game cameras on each of the beaches, and captured multiple images of American crows eating boiled brown chicken eggs used as pre-bait in mock piping plover enclosures bait stations at Horse Neck Beach State Park, West Island, Demarest Lloyd, South Cape Beach and at Sandy Point State Reservation (See Figures 1 and 2).

WS applied DRC-1339 COR treated boiled brown chicken eggs in bait stations beginning on 24 April 2017. WS removed and estimated twenty five (25) American crows from South Cape Beach, five (5) American crows on Horseneck Beach, and twelve (12) American crows from Demarest Lloyd.

WS personnel conducted sixteen (16) night visits in 2017. Wildlife Services removed one (1) Great Horned Owl at Horseneck Beach, and one (1) Raccoon at West Island through sharpshooting. WS also utilized cage traps to control predators at West Island and Demarest Lloyd. There were twelve (12) trap nights conducted at Demarest Lloyd and thirty-six (36) trap nights conducted at West Island. Wildlife Services removed six (6) Raccoons from West Island but did not remove any predators from Demarest Lloyd.

**Table 1.1 Predators removed by location in 2017**

<b>Location</b>	<b>Raccoon</b>	<b>American Crow</b>	<b>Great Horned Owl</b>
Horseneck Beach	0	5	1
South Cape Beach	0	25	0
West Island	7	0	0
Demarest Lloyd	0	12	0
Sandy Point	0	0	0
<b>TOTAL</b>	<b>7</b>	<b>42</b>	<b>1</b>

## Discussion/Recommendations

WS recommends continuing a predator monitoring and operational management program. These efforts should begin as early as January and continue through April, when human activity on the beach is low. Early control operations are beneficial because the removal of predators increases shorebird productivity. Mammalian predator management is generally more effective when it begins before or early in the nesting season. This is because it removes individuals that have established breeding territories while neighboring predator's territories are away from nesting

areas, essentially creating a temporary predator “vacuum”. This vacuum is usually is not filled until neighboring predators young begin to forage with the adults, often after eggs have hatched or chicks have fledged.

WS suggests being very aggressive in monitoring for Great-horned owls (GHOW) at Sandy Point beach and Horseneck Beach State Reservation in 2018 because of the observation of one outside a mock exclusion at Sandy Point and the successful removal of one at Horseneck Beach. GHOW’s may have been responsible for a portion of predation that could not be identified in 2016. The use of trapping for GHOW’s may be a technique to consider in the future shorebird nesting seasons.

Efforts should continue into June or July, as necessary, based on predation or evidence of nest predators in active nesting areas. However, removal of predators during later months is sometimes more difficult due to increased human activity. However, as plovers nest and eggs hatch, their attraction to predators increases which may result in a either a temporary increase in the predator population on the beach or an increase in predators frequenting nesting areas. .

Predation of eggs, chicks, and adult shorebirds is a dynamic behavior exhibited by a variety of predator species and it is always possible that new predator species will impact nesting shorebirds during the nesting season. This can be due to increasing populations of piping plovers and terns acting as an attractant and due to changes in predator species populations from predator management, local hunting and trapping, and/or natural causes. WS recommends that preparation for such contingencies be prepared in advance. For example, great horned owls have been identified as a predator species on some MA DCR properties. Now that DCR has a USFWS Depredation Permit in place to remove great horned owls found to be causing predation of piping plovers WS can remove any individuals that cause problems.

WS would like to thank all of the MA DCR, MADFW, MA Audubon Society and The Lloyd Center for the Environment staff involved with this project. Their contributions and cooperation now and in the future will help to make this predator control project a successful program for the enhancement of the piping plover population in Massachusetts and in the Northeast.

**Figure 1:** American Crow at Horseneck Beach State Reservation.



**Figure 2:** American crow consuming a toxicant egg at Demarest Lloyd State Park. (Time stamps and dates on photo not accurate)

