

Massachusetts Habitat Conservation Plan for Piping Plover

2020 Annual Report



Bill Byrne/MassWildlife



MASSWILDLIFE

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Massachusetts Habitat Conservation Plan for Piping Plover

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I. Executive Summary

On July 8, 2016, the United States Fish and Wildlife Service (USFWS) issued a 25-year Incidental Take Permit (ITP) to the Massachusetts Division of Fisheries and Wildlife (MassWildlife) in accordance with Section 10(a) (1) (B) of the Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. 1539 (a) (1) (B). Pursuant to the ITP, MassWildlife is responsible for administering the Massachusetts Statewide Habitat Conservation Plan (HCP). The HCP identifies covered activities that are authorized by the ITP that could expose Piping Plovers (*Charadrius melodus*) to “take.” Incidental Take coverage can be extended by MassWildlife to approved landowners and beach managers through Certificates of Inclusion (COIs).

During the 2020 beach season, eight beach operators held valid COIs encompassing ten permit-sites. Covered activities were carried out at seven beaches: Duxbury Beach Reservation, Duxbury; East/Leland Beach, Edgartown; Horseneck Beach State Reservation, Westport; Nauset Beach, Orleans; Plymouth Long Beach, Plymouth; Nahant Beach State Reservation, Nahant; and Sandy Neck Beach Park, Barnstable. Statewide, 22 pairs of Piping Plovers were exposed to covered activities, some of these to multiple activities: 17 broods to the operation of a road or parking lot, 3 broods to recreational oversand vehicle (OSV) use or unescorted essential vehicle use, and 3 pairs to reduced proactive symbolic fencing. Intensive impact avoidance and minimization measures were implemented by COI-holders. Required HCP compliance and effectiveness monitoring were carried out by both MassWildlife and COI-holders.

The 22 pairs exposed to covered activities had excellent productivity, fledging 40 chicks (1.81 chicks per pair). Of the 17 broods exposed to use of roads and parking lots, all but three fledged at least one chick for a total of 28 fledglings. Each of the three broods exposed to OSV use fledged one or more chicks, totaling eight fledglings. All of the three pairs subject to reduced proactive symbolic fencing nested anyway and seven chicks fledged from two pairs.

Participation in the HCP expanded recreational opportunities at all seven beaches where covered activities were implemented.

- **Plymouth Long Beach, Plymouth.** The Town of Plymouth allowed recreational vehicle access to a road and parking areas for 77 days when it might otherwise have been limited by the presence of unfledged plover chicks (50 days) or tern chicks (71 days).

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- **Duxbury Beach, Duxbury.** The Duxbury Beach Reservation operated roads and parking lots over a period exceeding two months.
- **Horseneck Beach, Westport.** The MA Department of Conservation and Recreation (DCR) kept open a major vehicle access point and parking lot for the entire season.
- **Nahant Beach, Nahant.** DCR allowed full access to non-motorized recreational vehicles along a paved road for the entire season.
- **Nauset Beach, Orleans.** Over a period of 8 days when access would otherwise have been restricted, the Town of Orleans allowed a total of 1,775 self-escorted oversand vehicles past chicks.
- **East/Leland Beach, Edgartown.** The Trustees of Reservations conducted 45 vehicle-based tours on the beach during a period spanning 31 days when access would have otherwise been restricted.
- **Sandy Neck Beach Park, Barnstable.** The “Recreation Zone” was open to oversand vehicles for all but three days of the beach season.

On- and off-site mitigation consisted of selective predator management designed to increase productivity and more than offset any harm resulting from exposure to the covered activities. In all, 121 breeding pairs of Piping Plovers benefited from selective predator management under the HCP, substantially more than the minimum benefit of 63 pairs required pursuant to the HCP. This report documents compliance with the HCP and provides information about other state-listed species, Least Terns and Diamond-backed Terrapins, exposed to potential take by the covered activities.

II. Annual Report Requirements

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

The goals of the annual report are as follows:

- To provide the information and data necessary for MassWildlife to demonstrate to the USFWS and the public that the HCP is being implemented properly.
- To disclose any problems with HCP implementation and the corrective measures planned or implemented to address the problems.
- To identify administrative or minor changes to HCP components required to increase the success of conservation actions.
- To identify the results and/or need for adaptive management and changed circumstances, and whether any HCP or ITP changes may be subsequently proposed as a result pursuant to Chapter 3.3.3. of the HCP.

A bulleted list of the required contents of the annual report is provided on pages 5-9 of the HCP. To facilitate review by the USFWS and the public, the remainder of this report systematically addresses each item on the list. Supporting documentation and data are included in the Appendices, which are available upon request.

II.1 Description of All Covered Activities Implemented During the Reporting Period by Activity Type and Location.

Twenty-two pairs of Piping Plovers were exposed to three activities covered under the HCP. **Tables 1a and 1b** provide details of implementation at each site, including duration of covered activities and productivity of exposed pairs.

1. *Use of Roads and Parking Lots in Vicinity of Unfledged Chicks.* Seventeen broods were exposed.
 - a. **Duxbury Beach, Duxbury.** Ten broods crossed between the beachfront and bayside and were exposed to recreational traffic on Gurnet Rd. (Additional broods crossed but were exposed to essential vehicle traffic only.) One of these broods crossed a parking lot multiple times and was exposed to barriers. Of the 32 chicks exposed to recreational traffic, 23 fledged.
 - b. **Plymouth Long Beach, Plymouth.** Three broods crossed or were in close proximity to Ryder Way and parking lots. One brood was exposed to herding with a barrier in place, one brood had a barrier in place but was not herded, and the third brood was not herded and there was no barrier. Four of eleven exposed chicks fledged.
 - c. **Horseneck Beach State Reservation.** Pre-nesting scrapes were hand-raked to successfully deter one territorial pair near the entrance of the main parking lot.
 - d. **Nahant Beach, Nahant.** Three broods hatched and were exposed to non-motorized recreational vehicles (primarily bicycles) on the Healthy Heart Trail, which bisects nesting habitat, as well as barriers. Twelve chicks hatched and were exposed; one fledged.

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2. *Oversand Vehicle Use in Vicinity of Unfledged Chicks.* Three broods were exposed.
 - a. **Nauset Beach, Orleans.** Oversand vehicles, self-escorted through a narrow corridor by passengers walking in front of each vehicle, were allowed past two broods. Six chicks were exposed and all fledged.
 - b. **East/Leland Beach, Edgartown.** One brood was exposed to four vehicles, although the brood quickly relocated away from the OSV corridor. Three chicks were exposed and two fledged.
3. *Recreation and Beach Operations.* Three pairs/broods were exposed.
 - a. *Reduced Proactive Fencing of Habitat.* Three pairs/broods were exposed.
 - i. **Sandy Neck Beach Park, Barnstable.** In all, 3.12 ac of nesting habitat was impacted. Fencing was limited to 5-10 ft-wide strip to protect base of dune over ~754 linear ft in the Recreation Zone (RZ). Beach raking (24 times) and 754 linear ft of coverboards ultimately did not deter two pairs from nesting in the RZ. Four chicks fledged, all from one of the two exposed pairs.
 - ii. **Duxbury Beach.** One pair nested in an overflow parking lot and was exposed, ultimately unsuccessfully, to multiple deterrence activities across 1.5 ac. This pair was also exposed to Use of Roads and Parking Lots. Three chicks fledged.
 - b. *Reduced Fencing Around the Nest.* Not implemented.
 - c. *Nest Moving.* Not implemented.

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Table 1a. Covered activities permitted and implemented in 2020, by location.

Location	Covered Activities Permitted ("X") and Implemented (gray fill)					# Permitted Take Exposures	# Take Exposures Used	% of Total Pairs Exposed	Description of Covered Activity Implementation
	Roads & Parking Lots	Oversand Vehicle Use	Reduced Proactive Symbolic Fencing	Reduced Symbolic Fencing Around Nests	Nest Moving				
Cape Poge Wildlife Refuge, Leland Beach, Wasque Point, & Norton Point, Edgartown (TTOR)		X				2	1	5.3	1 brood exposed to OSV use consisting of 45 trips operated by the beach manager.
Coskata-Coatue, Nantucket (TTOR)		X	X	X		1	0	0	None.
Duxbury Beach, Duxbury (Duxbury Beach Reservation)	X	X	X	X	X	12	10	40	10 broods crossing between beachfront & bayside were exposed to recreational traffic on Gurnet Rd. 2 of these pairs/broods additionally exposed: 1 pair nesting in parking lot was exposed to reduced proactive symbolic fencing & deterrence measures across 1.5 ac; another crossed a parking lot multiple times & was exposed to barriers. IAMP included intensive brood monitoring & traffic restriction when chicks were on or near the road.
Horseneck Beach Reservation, Westport (DCR)	X		X	X		3	1	9.1	Pre-nesting scrapes were hand-raked to deter pair near entrance of the main parking lot.
Nauset Beach (North Beach), Chatham		X	X	X		2	0	0	None.
Nauset Beach, Orleans		X		X	X	2	2	4.8	Oversand vehicles, self-escorted through a narrow corridor by passengers walking in front of each vehicle, were allowed past 2 broods.
Plymouth Long Beach, Plymouth	X	X				5	3	8.8	Multiple broods crossed or were in close proximity to Ryder Way & parking lots. IAMP included a barrier, intensive brood monitoring, recreational traffic restriction when chicks were on or near road, & unescorted access for essential vehicles.
Revere Beach State Reservation, Revere; Winthrop Shore Reservation, Winthrop; Nahant Beach State Reservation, Nahant (DCR)	X			X	X	5	3	11.5	Three broods at Nahant were exposed to non-motorized recreational vehicles (primarily bicycles) along a paved path bisecting nesting habitat along 1.2 mi of beach. 600 linear ft of barriers (wattles) were installed along beach path behind active broods to allow for continued recreational use of the path.
Sandy Neck Beach Park, Barnstable		X	X			2	2	4.3	Proactive symbolic fencing reduced throughout Recreation Zone (RZ), impacting 3.12 ac. Fencing limited to 5-10 ft-wide strip to protect base of dune over ~754 linear ft. Beach raking (24 times, 3.12 ac) & 754 linear ft of coverboards ultimately did not deter 2 pairs from nesting in the RZ.
West Dennis Beach, Dennis	X					2	0	0	None.
Total or Average						36	22	8.4	

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Table 1b. Site productivity and details of take exposures, 2020.

Location	Site Productivity (fledglings/pair)	Pair Identifier	# Chicks Exposed	# Fledged from Exposed Pairs	Start of Implementation	End of Implementation	# Days Pair/Brood Exposed to Covered Activity	Age of Chicks When First Exposed (days)
Cape Poge Wildlife Refuge, Leland Beach, Wasque Pt., & Norton Pt.	0.68	1B	3	2	17-Jul	16-Aug	29	1
Coskata-Coatue, Nantucket	1.67	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Duxbury Beach	2.32	2A	2	2	1-Jul	10-Jul	10	25
		3A	4	2	12-Jun	21-Jun	10	4
		4A	4	3	9-Jun	9-Jul	30	2
		5A	2	1	10-Jun	9-Jul	29	3
		11A	4	2	16-Jun	21-Jun	6	6
		12A	4	3	8-Jun	21-Jun	14	3
		13A	4	4	12-Jun	21-Jun	10	0
		14A	2	1	18-Jun	21-Jun	4	8
		16A	2	2	21-Jun	21-Jun	1	3
		20A	4	3	12-May (deterrence); 7-Jul (road crossing)	26-May (deterrence); 29-Jul (road crossing)	15 (deterrence); 23 (road crossing)	n/a (deterrence); 9 (road crossing)
Horseneck Beach Reservation	1.27	10	0	0	27-Jun	23-Jul	27	n/a
Nauset Beach (North Beach), Chatham	1.95	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Nauset Beach, Orleans	1.98	RW-A	3	3	18-Jul	23-Jul	6	25
		NS-A	3	3	18-Jul	26-Jul	8	22
Plymouth Long Beach	0.91	19/19A	3	1	11-Jun	16-Jul	36	0
		28/27A	4	2	22-Jun	20-Jul	29	0
		36/31A	4	1	30-Jun	31-Jul	31	0
Revere Beach State Res.; Winthrop Shore Res.; Nahant Beach State Res.	0.58	1-Nahant	4	1	12-Jun	15-Jul	33	0
		3-Nahant	4	0	24-Jun	28-Jun	4	0
		4-Nahant	4	0	29-Jun	30-Jun	1	0
Sandy Neck Beach Park	1.04	2	0	4	5-Apr	13-May	39	n/a
		13	0	0	23-Apr	16-May	24	n/a
West Dennis Beach	2.75	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total or Average			64	40			18.1	5.7

II.2 Summary of annual take exposure.

The total allowable take exposure for a given year is based on a three-year rolling average of the statewide Piping Plover breeding population (**HCP Table 3-1**). The average breeding population size for 2017-2019 was 693.8 breeding pairs, based on Adjusted Total Count, resulting in an allowable exposure to covered activities of 7%, or a maximum of 48 territories, pairs, nests, and/or broods that could be exposed to covered activities statewide (**Table 2**). During 2020, 22 territories/pairs/nests/broods were exposed to covered activities, and exposure at each site was <15% of the breeding population size at that site, with the exception of Duxbury Beach (**Table 1**).

The USFWS directly authorized Cape Cod National Seashore through 2020 to expose up to three pairs of Piping Plover to flexible management that could result in take exposure. Flexible management was not implemented, resulting in no additional Massachusetts take exposure (S. von Oettingen, personal communication). Although take exposure for recreational activities on federal properties is not associated with the Massachusetts Piping Plover HCP, MassWildlife is required to subtract these authorizations from the total allowable statewide take exposure available to HCP participants in a given year.

Table 2. Massachusetts Piping Plover Breeding Population, 2017-2019, and Actual and Allowable Take Exposure for 2020 under the Massachusetts Piping Plover HCP.

	YEAR		
	2017	2018	2019
MA Breeding Pairs (Adjusted Total Count)	650.5	688	743
Three-year average (2017 – 2019):	693.8		
Maximum Allowable 2020 Exposure (7%):	48 territories/pairs/nests/broods		
Actual 2020 Exposure:	22 territories/pairs/nests/broods		

II.3 Summary of the annual mitigation implemented, and any mitigation credits or deficits outstanding from previous years.

Offsite mitigation. In 2020, MassWildlife provided \$8,482 to two organizations for selective predator management.

1. **The Trustees of Reservations.** MassWildlife provided \$3,155 (62.8% of the total cost) to The Trustees of Reservations (TTOR), which contracted with USDA APHIS Wildlife Services for work on Crane Beach. The work benefited 47 Piping Plover pairs; 62.8% of the credits (29.5) accrued to the state and the rest to TTOR.
2. **BiodiversityWorks.** MassWildlife awarded \$5,327 to BiodiversityWorks, which conducted selective predator management benefitting 21 pairs at sites on Martha’s Vineyard: Dogfish Bar, Edgartown Great Pond, Squibnocket/Long Beach, and Lighthouse Beach. Non-lethal predator management occurred at Little Beach (5 pairs). Educational signage was installed at Lighthouse

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Beach (2 pairs) and the Eel Pd boat ramp (0 pairs), and beachgoers' reactions to the signage were studied.

Onsite/internal mitigation. Four COI-holders used their own resources to offset take exposures at four sites. In all cases, USDA APHIS Wildlife Services carried out selective predator management in accordance with plans approved by the New England Field Office of the USFWS for the purpose of HCP mitigation. This work was not cost-shared with MassWildlife, except as described for TTOR.

1. **Department of Conservation and Recreation.** Work onsite at Horseneck Beach was limited due to COVID-related issues with contracting, so the benefit was reduced to an estimated 25% of nesting plover pairs (4 of 17 pairs).
2. **Duxbury Beach Reservation.** Work onsite at Duxbury Beach benefitted 25 pairs of plovers.
3. **The Trustees of Reservations.** Work offsite at Crane Beach benefitted 47 pairs of plovers. Cost and credits were shared by TTOR and MassWildlife (37.2%:62.8%)
4. **Town of Plymouth.** Work onsite at Plymouth Long Beach benefitted 34 pairs of plovers.

MassWildlife and the COI-holders implemented more than enough selective predator management to meet 2020 mitigation requirements. Therefore, there is a mitigation credit that carries forward (**Table 3**). At the mitigation ratios of 2.5:1 (OSV Use and Reduced Fencing) and 3:1 (Roads and Parking Lots), selective predator management was required to benefit 63 pairs in order to mitigate for exposures that occurred during 2020. In fact, selective predator management benefitted 121 pairs (40.2 by state mitigation funds provided by COI-holders paying into a mitigation fund and 80.5 by COI-holders implementing on-site/internal mitigation). Including unexpired credits carried forward from previous years (2017 – 2019), at the end of 2020 there were 165 credits statewide and an additional 75 credits allocated to individual sites (*i.e.*, because the COI-holder directly funded mitigation activities). However, credits from 2017 expired after 2020, reducing to 108 the number of statewide credits that will carry into 2021. No individual site credits expired in 2020, so all 75 will carry into 2021.

Tables 3 a-c provide additional detail on mitigation requirements, deficits, and credits.

Table 3a. Predator Management Mitigation Requirements and Credits for COI-holders under the Massachusetts Piping Plover HCP in 2020.

2020 COI Site	No. Authorized Exposures	No. Actual Exposures in 2020	Selective Predator Management Mitigation Required	Site Credits Gained in 2020 ^a	2020 Annual Site Credit Balance ^{ab}	Total Site Credit Balance at End of 2020 ^{ac}	Non-expired Credits Carrying Forward to 2021 ^a	Year Credits Will Expire
Barnstable	2	2	5	5	0	0	0	2023
Chatham	2	0	0	5	5	5	5	2023
Dennis	2	0	0	6	6	6	6	2023
Duxbury	12	10	30	25	-5	-1 ^d	-1 ^d	2021
Edgartown	2	1	2.5	17.5	15	15	15	2023

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2020 COI Site	No. Authorized Exposures	No. Actual Exposures in 2020	Selective Predator Management Mitigation Required	Site Credits Gained in 2020 ^a	2020 Annual Site Credit Balance ^{ab}	Total Site Credit Balance at End of 2020 ^{ac}	Non-expired Credits Carrying Forward to 2021 ^a	Year Credits Will Expire
Nantucket	1	0	0	Same as Edgartown	Same as Edgartown	Same as Edgartown	Same as Edgartown	2023
Horseneck	3	1	2.5	4	-7.5	25	25	2021
Revere/ Winthrop/ Nahant	5	3	9	Same as Horseneck	Same as Horseneck	Same as Horseneck	Same as Horseneck	2023
Orleans	2	2	5	5	0	0	0	2022
Plymouth	5	3	9	34	25	25	25	2023
TOTAL	36	22	63	101.5	38.5	75	75	

^a From selective predator management or escrow/mitigation funds only

^b Annual site credit balance includes site credits and take exposures from the current season only; it does not include credits or deficits from previous years

^c Total site credit balance includes site credits or deficits from previous years in addition to the current season

^d Credit balance reflects predator management credits only; remaining balance has been addressed through other mitigation strategies accepted under MESA, including strategic education and outreach experimental habitat management

Table 3b. Predator Management Mitigation Programs and Credits under the Massachusetts Piping Plover HCP in 2020.

2020 Mitigation site	Total cost	HCP cost (applicant)	HCP cost (DFW)	HCP cost share (applicant)	Actual pairs benefitting	Site credits gained (selective pred. mgmt. only)	State credits gained (selective pred. mgmt. only)	Site credits used	Location(s) of credit use
Crane Beach	5,023.68	1,868.68	3,155.00	37.2%	47	17.5	29.5	2.5	Edgartown
Plymouth	12,285.00	12,285.00	\$0	100%	34	34	0	9	Plymouth
Duxbury	19,900.00	19,900.00	\$0	100%	25	25	0	30	Duxbury
Horseneck	2,189.09	2,189.09	\$0	100%	4	4	0	11.5	Horseneck, Nahant
Various sites, Martha's Vineyard	10,460.00	5,133.00	5,327.00	49.1%	26	n/a	10.7	0	n/a
DFW Subtotal	n/a	n/a	\$8,482	n/a	n/a	21 (escrow)	19.2 (excludes 21 escrow credits)	10	Barnstable, Orleans
TOTAL	\$49,858	\$41,376	\$8,482		136.0	80.5	19.2	63.0	

^a Non-COI-holders do not accrue site credits

^b Mitigation credits derived from escrow agreements are directed to the funding source (COI-holder) rather than the state at a rate of 2.5 credits per \$5,800

Table 3c. Statewide Predator Management Net Mitigation Credits under the Massachusetts Piping Plover HCP in 2020.

2020 Credit Type	Credits at End of 2019	Credits Gained 2020	Credits Used 2020	Net Credits at End of 2020	Credits Expiring 2020	Credits Carrying Forward to 2021
Credits Allocated to Individual Sites (includes escrow credits)	27.5339	101.5	63	75	0	75
Credits Available Statewide	145.388 ^a	19.189	0	164.577	56.25	108.327
TOTAL NET CREDITS	172.9219^a	120.689	63	239.577	56.25	183.327

^a Updates incorrect value from 2019 report

II.4 Summary of exceptions to the restrictions on the number or territories/nests/broods affected (15% vs. 75%) and habitat impacts (2 acres/10% vs. 4 acres/20%) employed for the covered activities (as provided for in the Plan).

- *Restriction on the number of territories/pairs/nests/broods affected (15% vs. 75%)*
 - **Number of exceptions.** One.
 - **Site:** Duxbury Beach
 - **Covered activity.** *Use of Roads and Parking Lots in the Vicinity of Unfledged Chicks.*
 - **Description.** Following an emergency amendment, the COI allowed for exposure of up to 12 broods, although ultimately only 10 broods crossed the road in areas subject to recreational traffic.

- *Restriction on habitat impacts (2 ac/10% vs. 4 ac/20%)*
 - **Number of exceptions.** One.
 - **Site:** Sandy Neck Beach Park, Barnstable
 - **Covered activity.** *Recreation and Beach Operations - Reduced Proactive Symbolic Fencing.*
 - **Description.** This activity impacted 3.12 ac (3.5% of available nesting habitat).

II.5 Year-to-date cumulative summary (i.e., from the start of the permit term) of temporary impacts to Piping Plover habitat resulting from covered activities.

- **2016.** Covered activities were confined to existing roads, parking lots, and OSV corridors, and, therefore, did not result in any additional impacts to habitat.
- **2017.** Covered activities included reduced proactive fencing and beach raking at two sites, resulting in temporary impacts to 0.6 acres of Piping Plover habitat at **Winthrop Shore** and 1.2 acres at **Sandy Neck Beach Park**.
- **2018.** Covered activities impacted potential habitat at **Sandy Neck Beach Park** (1.2 acres), **Revere Beach** (0.96 acres), **Winthrop Shore** (0.44 acres affecting Least terns but not plovers), and **Horseneck Beach** (9.5 acres).
- **2019.** At **Sandy Neck Beach Park**, 1.2 acres of habitat were subject to reduced proactive symbolic fencing, including use of beach raking and coverboards, in order to maintain a groomed “Recreation Zone” for OSV use. Approximately 0.6 acres of habitat at **Revere Beach**

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were subject to reduced proactive symbolic fencing and beach raking in front of the Shirley Ave bathhouse, where one pair of Piping Plovers attempted to nest. At **Horseneck Beach**, beach one pair of plovers was deterred by raking a 0.3-acre area near a major access point. Additional raking on the main beach affected 5.7 acres of least tern habitat.

- **2020.** At **Sandy Neck Beach Park**, 3.12 acres of habitat were subject to reduced proactive symbolic fencing, including use of beach raking and coverboards, in an attempt to deter two pairs of plovers and maintain a groomed “Recreation Zone” for OSV use. At **Horseneck Beach**, one pair of plovers was deterred by hand-raking a 0.3-acre area near a major access point. At **Duxbury Beach**, 1.5 acres in a gravel parking lot were subject to reduced proactive symbolic fencing, including use of tarps, hand raking, and erecting posts with flagging, in an attempt to deter one pair of plovers.

II.6 Year-to-date and cumulative (*i.e.*, from the start of the permit term) quantification of exposure to incidental take of Piping Plover individuals for the purpose of demonstrating compliance with the authorized level of take on the ITP.

Table 4. Cumulative Quantification of Piping Plover Take Exposure under the Massachusetts Piping Plover HCP, 2016 – 2020.

Year	# of Broods/Nests/Territories Exposed	Total Statewide Allowable Take Exposures	% of Statewide Allowable Exposure
2016	3	47	6.4%
2017	5	46	10.9%
2018	19	46	38.8%
2019	19	46	38.8%
2020	22	48	45.8%

II.7 Description of all experimental vegetation management actions implemented during the reporting period including a year-to-date and cumulative summary of the extent and location of land cover types enhanced through vegetation management.

To date, two experimental habitat management projects have been implemented, both in 2017.

1. **Duxbury Beach.** Vegetation in five experimental plots was scraped or buried, creating and maintaining five areas of potential nesting habitat totaling approximately 0.77 acres. Two pairs nested in the replicated habitats in both 2017 and 2018. Duxbury Beach maintained these sites by burying vegetation in February 2019, and three pairs subsequently nested within the experimental plots. In 2020, two pairs nested and each fledged three chicks.
2. **Winthrop Shore Reservation.** Cobble was removed from the southern portion of the shorebird nesting area, where two pairs of Piping Plovers and 20-25 pairs of Least Terns nested in 2017. Plovers and terns continued to nest in this area in 2018, 2019, and 2020.

II.8 Assessment of the efficacy of vegetation management actions in achieving performance objectives and recommended changes to improve the efficacy of the methods.

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Piping Plovers continued to nest in the experimental habitat areas at both Duxbury Beach and Winthrop Shore in 2020.

II.9 List of all plan participants and activities authorized for take coverage.

See **Table 1**.

II.10 Accounting of all mitigation funds collected from plan participants during the previous year, and any unspent funds from previous years.

See **Table 6**.

Table 6. Accounting of Offsite Mitigation Funds

Statewide Mitigation Funds Balance (end of 2020)	
<i>Balance from Previous Years</i>	
\$13,009.00*	Unspent, end of 2019
<i>Income</i>	
\$11,600.00	Barnstable Escrow
\$11,600.00	Chatham Escrow
\$12,300.00	Dennis Mitigation Fund
\$11,600.00	Orleans Escrow
<i>Expenses</i>	
\$3,155.00	USDA APHIS, Crane Beach Predator Management
\$9,000.00	Massachusetts Audubon Society, Selective Predator Management and Strategic Education and Outreach at Allen's Pond Wildlife Sanctuary (implemented in 2019)
\$5,327.00	BiodiversityWorks, Predator Management and Education
<i>Unspent Funds, end of 2020</i>	
\$42,627.00	

*updates incorrect value from 2019 report

II.11 If appropriate, any updates to the mitigation fee as described under the adjustment process in Section 5.2.2.1 and an updated annual budget for DFW's plan implementation.

No adjustments to the mitigation fee or MassWildlife implementation budget are required at this time.

II.12 If available at the time of the annual report, evidence that DFW's needed funding has been assured for the coming year by the State legislature, and the funds have been earmarked or segregated for their intended purpose within DFW's accounting system.

Funding for Massachusetts Fiscal Year 2021 (ending June 30, 2021) has been secured (**Appendix A**). Funding for Fiscal Year 2022 (beginning July 1, 2021) has been requested (**Appendix B**).

II.13 Accounting of the cost of all mitigation measures implemented in the previous fiscal year and the expected cost of mitigation measures in the upcoming fiscal year.

An accounting for the costs of all mitigation measures implemented in 2020 (\$49,858) is provided in **Table 3b**. Additional information on off-site mitigation is provided in **Table 6**. Mitigation is expected to exceed \$80,000 in 2021 of which approximately \$39,000 will be available for off-site mitigation, including selective predator management, experimental habitat management, and education and outreach.

II.14 Record of any grants and Plan implementation contracts awarded to plan participants, other landowners, or implementation partners.

The Massachusetts Division of Fisheries and Wildlife (DFW) used off-site mitigation commitments to fund selective predator management and other activities through two contracts in 2020. The first contract of \$3,155 funded USDA APHIS Wildlife Services at Crane Beach. The second contract of \$5,327 funded BiodiversityWorks to conduct predator management and install and monitor interpretive signage at various sites on Martha's Vineyard (**Table 6**).

II.15 Description of the adaptive management process used during the reporting period, if applicable.

No adaptive management took place during the 2020 reporting period.

II.16 Summary for the reporting period of the monitoring program objectives, techniques, and protocols, including monitoring locations, variables measured, sampling frequency, timing and duration, and analysis methods.

The monitoring program documented implementation of covered activities, compliance with the Guidelines, and mitigation programs. COI-holders kept required logs of initiation 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. MassWildlife was notified at least 24 hours in advance of implementing the covered activities and subsequently conducted COI compliance site visits at each site with a COI. Compliance with the impact avoidance and minimization protocols was documented in logs and summarized in the COI-holder final reports. Final reports and invoices also document implementation of required mitigation, which was also reported by USDA APHIS.

The monitoring program also aimed to assess the impacts of covered activities and effectiveness of impact minimization measures and mitigation programs. 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 in HCP annual site reports and through the PIPODES online database. MassWildlife coordinated the synthesis of 2020 Piping Plover data by cooperators, performed quality control, and finalized the 2020 index count, adjusted total count, and productivity of breeding Piping Plovers.

II.17 Assessment of the efficacy of the monitoring and research program and recommended changes to the program based on interpretation of monitoring results and research findings, if applicable.

Massachusetts Habitat Conservation Plan for Piping Plover

Compliance monitoring occurred at each of the sites that implemented covered activities in 2020, and all sites appeared to be in compliance with the Guidelines. However, making inferences about the effectiveness of mitigation measures and impacts of covered activities on productivity is methodologically challenging and will require larger sample sizes and possibly other methods, such as establishment of predator management control sites. There are no recommended changes to the monitoring program at this time; however, DFW will continue to develop formal methods for assessing efficacy of predator management as required in the HCP.

II.18 Description of all Plan-directed studies undertaken during the reporting period; a summary of study results; and a description of integration with monitoring, assessment, and compliance elements.

No Plan-directed studies were undertaken in 2020.

II.19 Description of any actions taken or expected regarding adaptive management and/or changed circumstances, including remedial actions resulting from any Plan or permit amendments granted in the prior years, if applicable.

No actions were taken or expected regarding adaptive management and/or changed circumstances in 2020.

II.20 Description of any unforeseen circumstances that arose and responses taken, if applicable.

An emergency amendment was issued to the Duxbury Beach Reservation in 2020 to increase allowable take exposures from 10 to 12.

II.21 Summary of any administrative changes, minor modifications, or major amendments proposed or approved during the reporting year (see Section 5.3.3, *Modifications to the Plan*). Any information about mitigation measures other than selective predator management, the associated funding, and monitoring is being provided for informational purposes only, as the USFWS has indicated that these activities do not count as mitigation to offset take associated with the ITP.

No administrative changes, minor modifications, or major amendments were proposed or approved during the reporting year. However, DFW clarified its policy in January 2021 on mitigation credit carryover. With the USFWS's agreement, DFW is now allowing surplus credits to carry over for up to *three* subsequent years, or through the first year of a consecutive permit term (vs. the previous policy of up to *two* subsequent years). This is effective with the 2020 permit season. Any 2020 COI-holder will now be able to carry surplus credits forward into the first year of a consecutive permit term. If a COI-holder elects not to renew their permit consecutively (*i.e.*, if there is a gap of one or more years between permits), any surplus credits from the previous permit term will have expired during the gap and cannot apply to the subsequent permit.

II.22 Other state or federally listed species affected by HCP implementation

Least Tern (*Sternula antillarum*)

- **Sites with coverage for take of Least Terns.** COI-holders for these sites developed impact minimization and mitigation plans for Least Terns and obtained Conservation and Management Permits to ensure Massachusetts Endangered Species Act (MESA) compliance: Nauset Beach, Orleans; Plymouth Long Beach, Plymouth; Sandy Neck Beach Park, Barnstable; Nauset Beach (North Beach), Chatham; Winthrop Shore, Winthrop; Horseneck Beach, Westport; Duxbury Beach, Duxbury; Leland/East Beach, Edgartown; and Coskata-Coatue Wildlife Refuge, Nantucket.
- **Sites with no take exposure.** Nauset Beach, Orleans; Nauset Beach (North Beach), Chatham; Winthrop Shore, Winthrop; Leland/East Beach, Edgartown; Coskata-Coatue Wildlife Refuge, Nantucket. The TTOR- and state-funded (i.e., using escrow funds) off-site mitigation for Least Terns benefitted 149 pairs at Crane Beach (55.4 TTOR credits, 93.6 state credits), so TTOR has a credit balance of 55.4 entering 2021.
- **Sites with take exposure.** There were four sites where take exposure occurred. The Biodiversity Works- and state-funded (i.e., using escrow funds) off-site mitigation for Least Terns benefitted approximately 37 pairs on Martha's Vineyard and earned 18.8 state credits. The other COI-holders conducted on-site mitigation.
 - **Sandy Neck.** *ORV use in the vicinity of unfledged Least Tern chicks.* During 8/21 – 8/23, recreational vehicles were escorted past three unfledged chicks. Barnstable provided mitigation funding via escrow for this activity.
 - **Duxbury Beach.** *Use of roads and parking lots in the vicinity of unfledged Least Tern chicks.* Eleven unfledged chicks within 100 m of a vehicle crossover were exposed during 7/27 – 8/18. No evidence of OSV-related mortality or injury was detected. One unfledged chick was herded off the road on 7/20. In addition to two barriers for plovers, three barriers were installed near vehicle crossovers to prevent Least Tern chicks from entering the OSV corridor. Intensive monitoring occurred as described in the IAMP and presented in **Appendix B**. Mitigation occurred on-site in the form of selective predator management, education, and other activities that benefitted at least 299 pairs. Productivity in the five subcolonies ranged from fair to excellent. Approximately 211 chicks fledged. With 140 credits carrying over from 2019, DBR has a credit balance of 415; this will carry over into 2021 if the permit is renewed.
 - **Horseneck Beach.** *Recreation and beach operations – Reduced proactive symbolic fencing.* During 5/27 – 6/6, the beach was raked to deter four courting pairs of Least Terns from nesting. The affected area totaled 0.25 ac. Mitigation occurred on-site in the form of selective predator management. Although 25 pairs of Least Terns nested, the benefit was reduced to 6 pairs due to infrequency of site visits. Productivity was poor due to predation. With 35 credits carrying over from 2019, DCR has a credit balance of 33; this will carry over into 2021 if the permit is renewed.
 - **Plymouth Long Beach.** *Use of Roads and Parking Lots in the Vicinity of Unfledged Chicks.* A silt fence barrier was installed at the edge of the road along the length of a Least Tern colony during 6/10 – 6/15 to prevent chicks from accessing the road. Unfledged chicks from 32 pairs were exposed to vehicle traffic during 6/17 – 8/27; the maximum number of unfledged chicks observed at once was 32 on 7/6. Intensive monitoring occurred as described in the IAMP and presented in **Appendix B**. No evidence of road-related mortality or injury was detected, and productivity was good. On-site predator management benefitted 59 pairs of Least Terns. 2020 was the first year of Plymouth's

permit, so no credits from the previous permit cycle carried into 2020. Going into 2021, Plymouth has a credit balance of -5.

Diamondback Terrapin (*Malaclemys terrapin*)

- **Sites with coverage for take of Diamondback Terrapins.** COI-holders for these sites developed impact minimization and mitigation plans, including nest protection, for Diamondback Terrapin and obtained CMPs to ensure MESA compliance: Sandy Neck Beach Park, Barnstable; Nauset Beach, Orleans. The Nauset Beach CMP covered limited exposure of terrapins, which sometimes cross the OSV corridor to nest. The Sandy Neck CMP also covered limited exposure of terrapins, which are sometimes found crossing or nesting within the Marsh Trail used by essential vehicles and campers.
- **Sites with no take exposure.** Sandy Neck Beach Park.
- **Sites with take exposure.**
 - **Nauset Beach.** Terrapin nests near the OSV corridor were relocated to the “Pochet Overwash Turtle Garden,” where they were exclosed by a trained staff member from Mass Audubon’s Wellfleet Bay Sanctuary. In total, 60 of 61 terrapin eggs hatched. Hatchlings were released in a variety of locations at the edge of the marshes around Pochet Bay and Pochet and Little Pochet Islands. Additionally, two wild nests were located late in the season with at least 29 hatched eggs, giving a total count of 89 hatchlings. During implementation of the covered activity, there were no observed mortalities or negative impacts to adult or hatchling terrapins.



MASSWILDLIFE

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10 December 2020

Thomas R. Chapman
Supervisor – New England Field Office
US Fish & Wildlife Service
Northeast Region – Ecological Services
70 Commercial St., Suite 300
Concord, NH 03301

RE: Statewide Piping Plover Habitat Conservation Plan
Massachusetts Division of Fisheries and Wildlife Funding Assurances

Dear Mr. Chapman:

I am writing to confirm that the Massachusetts Division of Fisheries and Wildlife has secured adequate funding to fulfill its Habitat Conservation Plan obligations for Fiscal Year 2021 in accordance with the budget presented in the Final HCP.

Sincerely,

Kristin D. McCarthy
Associate Director, Chief Fiscal Officer
Massachusetts Division of Fisheries and Wildlife

cc: Karen Dolan, Finance and Projects Administrator, NHESP
Carolyn Mostello, Coastal Waterbird Biologist, NHESP

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March 22, 2021

David Simmons
Supervisor – New England Field Office
U.S. Fish & Wildlife Service
Northeast Region – Ecological Services
70 Commercial St., Suite 300
Concord, NH 03301

RE: Statewide Piping Plover Habitat Conservation Plan
Massachusetts Division of Fisheries and Wildlife Budget Request Assurance, FY 2022

Dear Mr. Simmons:

I am writing to confirm that the Massachusetts Division of Fisheries and Wildlife has requested from the legislature adequate funding to fulfill its Statewide Piping Plover Habitat Conservation Plan (HCP) obligations for Fiscal Year 2022, in accordance with the budget presented in the Final HCP.

Sincerely,

Mark S. Tisa, Ph.D., M.B.A.
Director

cc: Kristin D. McCarthy, MassWildlife Associate Director, Chief Fiscal Officer
Everose Schlüter, Assistant Director, NHESP
Carolyn Mostello, MassWildlife Coastal Waterbird Biologist, NHESP
Karen Dolan, MassWildlife Finance and Projects Administrator, NHESP

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