

# SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

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Bill Byrne, MassWildlife

Prepared by:

Natural Heritage & Endangered Species Program  
Massachusetts Division of Fisheries & Wildlife  
*March 2021*

ABSTRACT

This report summarizes data on abundance, distribution, and reproductive success of Piping Plovers (*Charadrius melodus*) in Massachusetts during the 2020 breeding season. Observers reported breeding pairs of Piping Plovers present at 180 sites; 156 additional sites were surveyed at least once, but no breeding pairs were detected at them. The population increased 6.9% relative to 2019. The **Index Count** (statewide census conducted 1-9 June) was **779 pairs**, and the **Adjusted Total Count** (estimated total number of breeding pairs statewide for the entire 2020 breeding season) was **794.5 pairs**. A total of 1,034 chicks were reported fledged in 2020, for an overall productivity of **1.31 fledglings per pair**, based on data from 99.4% of pairs.

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### INTRODUCTION

Piping Plovers are small, sand-colored shorebirds that nest on sandy beaches and dunes along the Atlantic Coast from North Carolina to Newfoundland. The U.S. Atlantic Coast population of Piping Plovers has been federally listed as *Threatened*, pursuant to the U.S. Endangered Species Act, since 1986. The species is also listed as *Threatened* by the Massachusetts Division of Fisheries and Wildlife pursuant to the Massachusetts' Endangered Species Act.

Population monitoring is an integral part of recovery efforts for Atlantic Coast Piping Plovers (U.S. Fish and Wildlife Service 1996, Hecht and Melvin 2009a, b). It allows wildlife managers to identify limiting factors, assess effects of management actions and regulatory protection, and track progress toward recovery. In this report, we summarize data on abundance, distribution, and reproductive success of Piping Plovers breeding in Massachusetts in 2020, as observed and reported by a coast-wide network of cooperators.

### METHODS

Monitoring and management of Piping Plovers and other coastal waterbirds in Massachusetts is carried out by wildlife biologists, seasonal shorebird monitors, beach managers, researchers, and volunteers affiliated with over 20 federal and state agencies, local municipalities, local and regional land trusts, private conservation organizations, and universities. Cooperators monitored 336 sites in Massachusetts in 2020 for the presence of breeding Piping Plovers.

#### Abundance

We measure abundance of Piping Plovers in terms of breeding pairs, defined as pairs observed with either a nest or unfledged chicks or that exhibited site tenacity and evidence of pair bonding and territoriality for at least two weeks. We report three different measures of abundance: the *Index Count*, *Unadjusted Total Count*, and *Adjusted Total Count*. The *Index Count*, as reported since 1990, is the total number of pairs tallied statewide each year during a 9-day count period in late May and early June, standardized each year for the entire Atlantic Coast. In 2020, the *Index Count* period was 1-9 June. The objective of the *Index Count* is to estimate population size with minimal double-counting of pairs that may move between or within sites, thereby providing an index to population trends that is likely to be more precise than counts based on observations made over the entire breeding season. The *Index Count* likely minimizes double-counting because it occurs over such a short time period. However, it probably underestimates the actual number of breeding pairs because it does not include pairs that leave the state before, arrive after, or are present but simply go undetected during the 9-day *Index Count* period.

For sites for which "0" is reported for the *Index Count* but "ND" is reported for the *Total Count*, this indicates that the site was surveyed during the *Index Count* period (1-9 June) and no breeding pairs were detected, but during the rest of the breeding season, it was either not surveyed or was surveyed too infrequently during May and June to confidently conclude that no pairs were present for at least 2 weeks.

Since 2000, we have reported two different "Total Counts." The *Unadjusted Total Count* is simply a tally of the total number of pairs reported for all sites over the course of the entire nesting season, with limited effort made to adjust for any pairs that may have been double-counted if they nested unsuccessfully at one location and then re-nested at another. We then derive an *Adjusted Total Count* by

## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

calculating the average of the *Index Count* and the *Unadjusted Total Count*, rounded to the nearest whole number of pairs.

The *Unadjusted Total Count* likely overestimates the actual population by double-counting pairs that establish nesting territories at more than one location in a given year. Without banded birds, however, it is impossible to accurately determine whether late-nesting pairs may have nested earlier at a different site or whether they simply did not arrive or begin breeding activities until June. It is too subjective, and likely inaccurate, to try to adjust the *Total Count* of pairs each year by not tallying late-nesting pairs (*i.e.*, pairs reported as “new” pairs that nested after the first week in June) based on the assumption that these birds were probably already counted earlier in the season. We believe that the *Adjusted Total Count* is the most accurate estimate of the actual number of breeding pairs in Massachusetts because it falls midway between the *Index Count* and *Unadjusted Total Count*, which we suspect slightly underestimate and overestimate, respectively, the actual breeding population.

### Reproductive Success

The primary measure of reproductive success that we report is *Productivity*, measured as number of chicks fledged per pair. The denominator of this ratio is the number of breeding pairs for which fledging data were reported; this includes not only pairs that successfully fledged chicks but also pairs that cooperators believed did not nest, pairs that nested unsuccessfully (eggs did not survive to hatch), and pairs whose chicks failed to fledge. Since 2000, we have reported two different estimates of *Number of pairs with fledge data*. As with counts of breeding pairs, estimates of the number of pairs for which fledging data are reported will be biased if double-counting of pairs occurs. Double-counting will overestimate the number of pairs in the denominator of the productivity ratio, and thereby will underestimate actual productivity. To reduce the potential bias associated with double-counting, we multiply the *Unadjusted number of pairs with fledge data* (a tally of the total number of pairs with fledge data reported for all sites, with limited effort made to adjust for pairs that may have been double-counted) by the ratio of the *Adjusted Total Count* to the *Unadjusted Total Count* to arrive at the *Adjusted number of pairs with fledge data*.

### Median Lay and Hatch Dates

The median estimated date of first egg laid was calculated by using known and estimated dates of first egg laid. Two days were subtracted from Date Clutch Found when the nest was found at two eggs and four days were subtracted from Date Clutch Found when the nest was found at three eggs. For nests that were found at four eggs, only nests that successfully hatched were used and 33 days were subtracted from the hatch date to estimate dates of first egg laid to account for the egg-laying period (6 days) plus the mean incubation period (27 days). The median estimated hatch date was calculated using the known hatch date. For hatch dates that consisted of date ranges, the median date was used as the estimated hatch date.

### Data reporting and quality control

All data were reported by cooperators who filled out a standard Massachusetts Piping Plover Census Form for each site monitored, in most cases using the Piping Plover Online Data Entry System ([PIPODES](#)). These forms are used to report data on number of breeding pairs (*Index Count* and *Total Count*); frequency of site visits; design(s) and installation dates of predator exclosures; dates of nest discovery, completion, and hatching or failure; number of eggs on the date the nest was discovered; total numbers of eggs laid, eggs hatched, and chicks fledged; reasons for egg and chick loss, if determined; and comments regarding census results, limiting factors, and management needs. Maps of sites showing the locations of all nests were submitted with census forms. After reviewing census forms, if necessary, we

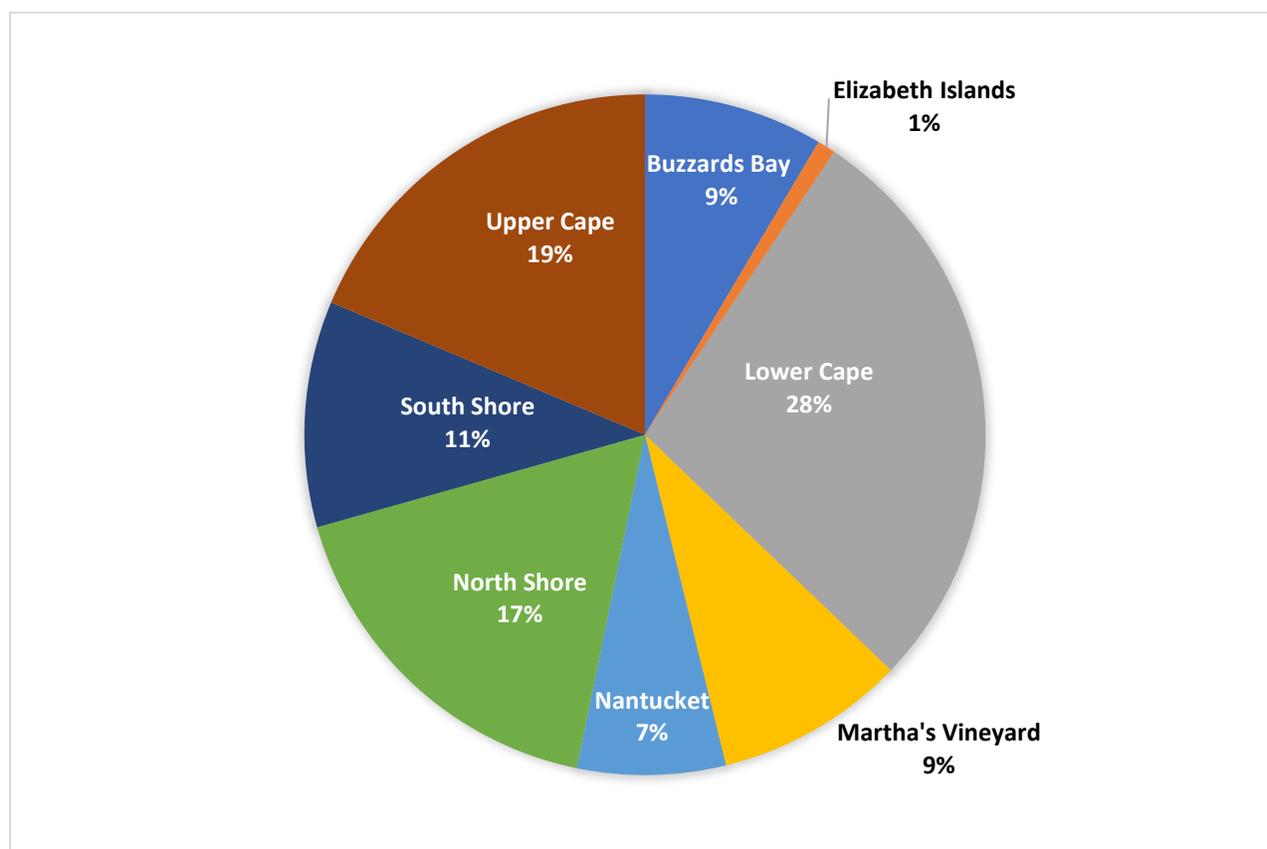
## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

contacted cooperators to obtain missing or incomplete data, resolve inconsistencies, and clarify ambiguities. When we could not obtain the needed information, we used best professional judgment to assign final values or noted data as preliminary; any such instances are noted in Table 1.

### RESULTS

Observers reported breeding Piping Plovers at 180 sites in Massachusetts in 2020. An additional 156 sites were surveyed one or more times during May and June, but no breeding pairs were detected at them (**Table 1**). The **unadjusted total count** of the number of breeding pairs of Piping Plover was **810** (vs. 763 in 2019). The **Adjusted Total Count** was **794.5 pairs**, a 6.9% increase over 2019 (743 pairs). The **Index Count** was **779 pairs** (vs. 724 pairs in 2019), or 98.0% of the **Adjusted Total Count** (**Table 1**). The 2020 pair counts represent a minimum number because South Beach, Chatham (south of the break) was not monitored in 2020 (due to access limitations); it hosted 15 total pairs in 2019.

Distribution of breeding pairs by region (**Figure 1**) was similar to 2019, with slight increases on the Upper Cape (19%), South Shore (11%), and Nantucket (7%; vs. 17%, 10%, and 4%, respectively, in 2019) and a slight decrease on the Lower Cape (28%) and North Shore (17%; vs. 30% and 20%, respectively, in 2019). Sixteen sites with ten or more breeding pairs accounted for 45.3% of the Massachusetts breeding population, while 120 sites with three or fewer pairs accounted for 24.3%.



**Figure 1.** Distribution of Piping Plover breeding pairs by Massachusetts region in 2020, based on Adjusted Total Counts for each region.

## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

In total, 1,034 chicks were reported fledged, resulting in overall productivity of **1.31 fledglings/pair**, based on data from 794.5 of 810 pairs (99.4%; the *adjusted number of pairs with fledge data* divided by the *unadjusted total count*) (**Table 2**).<sup>1</sup> This represents a 15.0% decrease in productivity relative to 2019 (1.54 fledglings/pair). Productivity varied by region, ranging from 1.51 on the South Shore down to 0.82 on Nantucket (**Table 1**). Productivity data were not available for the Elizabeth Islands due to a limited survey effort in that region.

**Table 1.** Productivity (fledglings per pair) of Piping Plovers in Massachusetts by region in 2020.

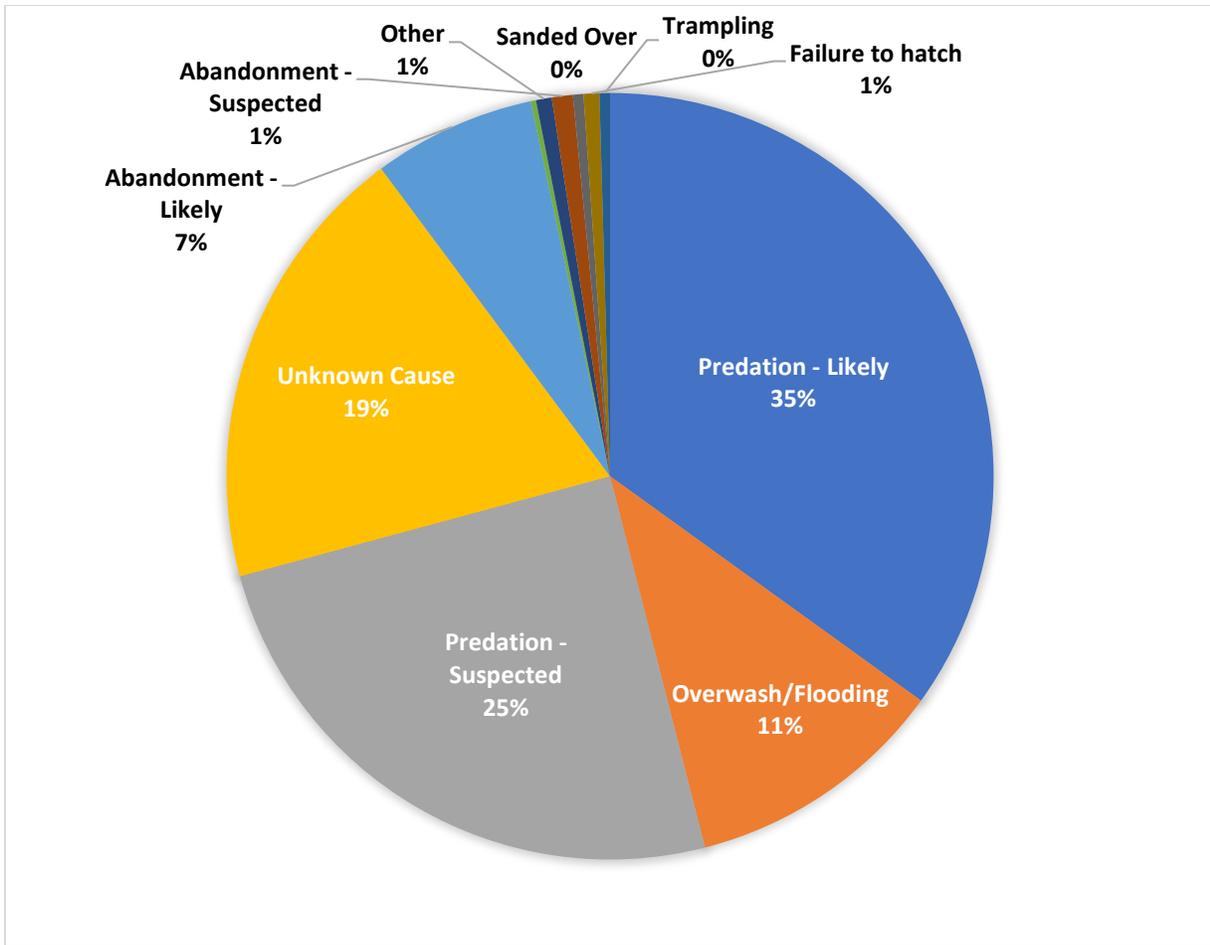
Region	2020	2019
Buzzards Bay	1.04	1.00
Elizabeth Islands	NA	1.00
Lower Cape	1.46	1.70
Martha's Vineyard	1.08	1.00
Nantucket	0.82	1.67
North Shore	1.13	1.53
South Shore	1.51	1.72
Upper Cape	1.44	1.49

Overall, nest failure rates were slightly lower in 2020 (45.1%) than in 2019 (47.8%). Causes of nest loss are shown in **Figure 2**. The largest causes of nest loss were predation (likely and suspected) and overwash/flooding. Predation accounted for approximately the same proportion of nest loss in 2020 (60%) than in 2019 (59%), while overwash (11%) was less compared to 2019 (18%). **Figure 3** shows suspected predators of nests likely and suspected to have been depredated.

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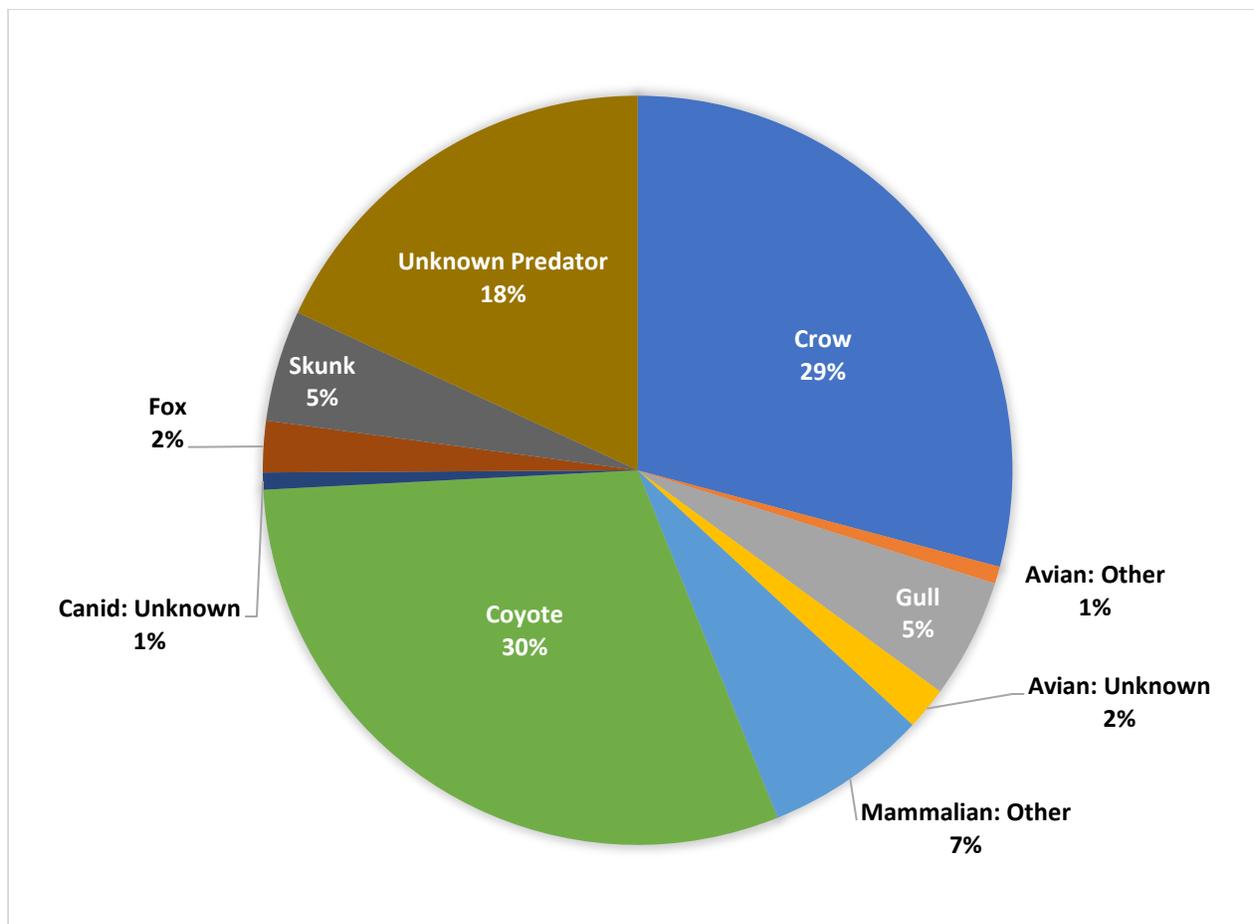
<sup>1</sup> The *unadjusted number of pairs with fledge data* was 805 (out of 810 unadjusted total pairs). The *adjusted number of pairs with fledge data* was 789.6.

SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS



**Figure 2.** Causes of Piping Plover nest loss in Massachusetts, 2020 (n=452 nest failures).

## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS



**Figure 3.** Presumed predators of Piping Plover nests suspected and likely to have been depredated in Massachusetts, 2020 (n=271).

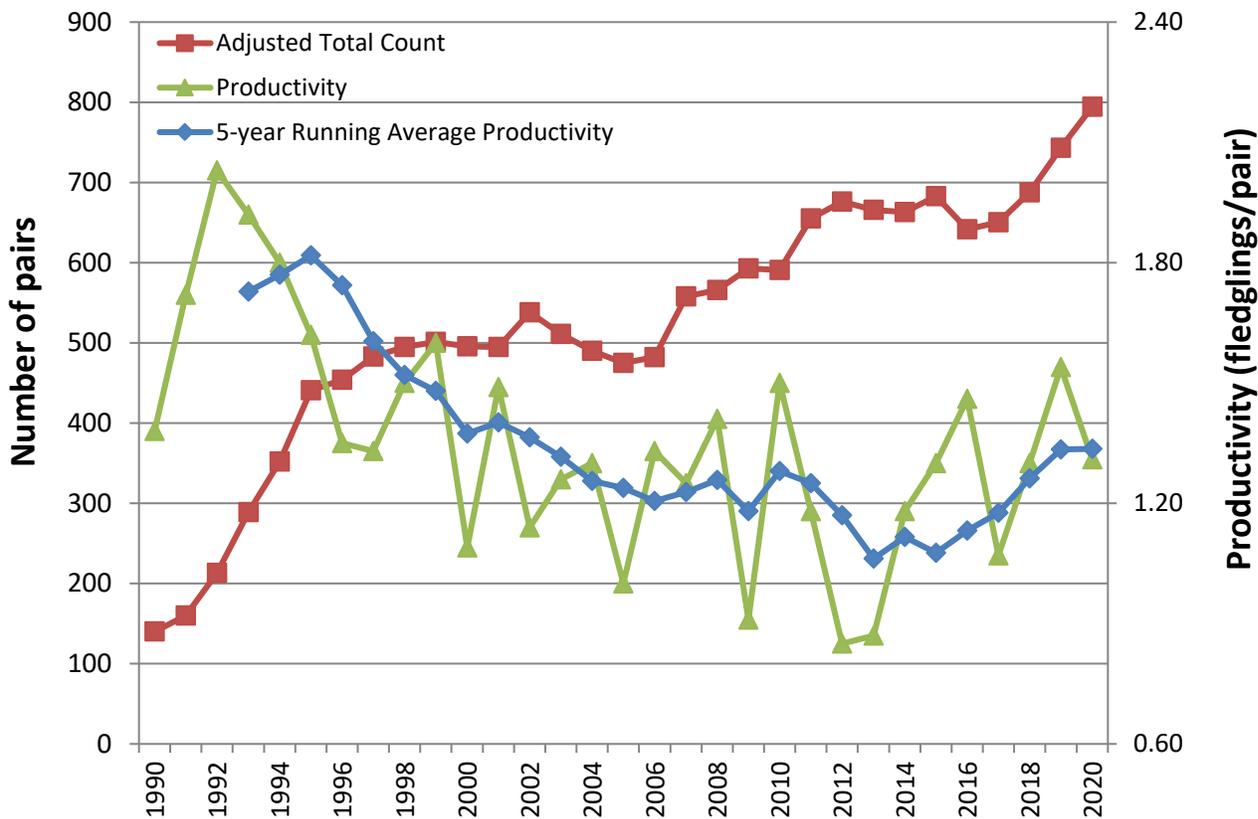
The earliest clutch initiation date was estimated to be 17 April at Winthrop Beach, Winthrop. Statewide, the median clutch initiation date was 24 May (20 May in 2019). The earliest approximate hatch date was 24 May, at Winthrop Beach, Winthrop (21 May in 2019). The median hatch date statewide was 24 June (21 June in 2019).

Hatch rates increased slightly (54.9%; n=1003 nests with known fates) relative to 2019 (51.9%; n=1056) and nesting attempts per pair decreased to 1.26 vs. 1.44 in 2019 (based on *adjusted total counts*). This decline can be at least partially explained by the increase in hatching success and reduced monitoring efforts resulting from limitations imposed by the global pandemic. Hatch rates for exclosed and unexclosed nests were 78.0% (n=159) and 51.5% (n=826), respectively, as compared to 86.1% (n=182) and 44.7% (n=874) in 2019. The nest abandonment rate for exclosed nests (8.8%; 14 of 159 nests) was substantially higher than for unexclosed nests (2.3%; 19 of 826 nests with known fates), compared to 4.9% (9 of 182 nests) and 4.1% (36 of 874 nests), respectively, in 2019.

Long term trends in breeding population size and productivity are shown in **Figure 4**. The five-year running average of productivity has declined overall since 1995. However, there have been successive increases since 2015. For the third year in a row, productivity exceeded the approximately 1.2 fledglings

## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

per pair thought to be necessary to maintain a stable population (Melvin & Gibbs 1996).<sup>2</sup> The population trend, meanwhile, had been relatively stable during 2012 – 2017, but now appears to be increasing. For this report, one caveat to keep in mind is that monitoring was reduced at many sites in 2020 due to limitations resulting from the COVID-19 pandemic.



**Figure 4.** Piping Plover abundance (adjusted total count) and productivity (fledglings/pair) in Massachusetts, 1990-2020.

## ACKNOWLEDGEMENTS

<sup>2</sup> Melvin and Gibbs (1996) suggest that the actual fecundity needed to maintain a stable population may be slightly lower than the estimate derived from their model. Other researchers have also suggested that early estimates of fecundity needed for a stable population may have been high (e.g. Catlin et al. 2015).

## SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS

This report was prepared by Andrew Vitz with assistance from Amanda Veinotte and Carolyn Mostello. We extend our sincere thanks to the many biologists, seasonal shorebird monitors, beach managers, landowners, and volunteers who participated in conservation efforts on behalf of Piping Plovers and other coastal waterbirds in Massachusetts in 2020. We also thank the more than 20 state and federal agencies, local municipalities and county government, local and regional land trusts, private conservation organizations, and universities that supported their efforts. We especially thank all the individuals who participated in population monitoring and submitted the data that are summarized in this report.

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**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

**Table 2.** Abundance, distribution, and productivity of Piping Plovers in Massachusetts, 2020.

Site	Index Count <sup>a</sup> (no. pairs)	Total Count <sup>b</sup> (no. pairs)	No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	No. unpaired adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
<b>NORTH SHORE</b>							
Constitution Beach, East Boston	0	ND	ND	0	ND	MAS	
Carson Beach, South Boston	0	ND	ND	0	ND	MAS	
West Beach, Beverly	0	1	0	1	0	ECGA	
Lovell's Beach, Boston	0	0	0	0	0	MAS	
Rainsford Island, Boston	0	0	0	0	0	MAS	
L Street Bathhouse, Dorchester	1	1	3	1	1	MAS	Single male scraping
Coffins Beach - Bradford, Gloucester	0	0	0	0	0	ECGA	
Coffins Beach - Castles, Gloucester	1	1	3	1	0	ECGA	
Coffins Beach - East End, Gloucester	0	0	0	0	0	ECGA	
Good Harbor Beach, Gloucester	2	2	1	2	0	ECGA	
Two Penny Loaf, Gloucester	0	0	0	0	0	ECGA	
Crane Beach, Ipswich	47	47	68	47	0	TTOR	
Sandy Point, Ipswich	16	16	9	16	0	DCR	
Nahant State Beach, Nahant	6	7	1	7	0	DCR	
Newbury Town Beach, Newbury	5	5	7	5	0	MAS	Male plover found deceased on beach (5/17)
Parker River NWR, Newbury/Rowley	32	35	42	35	0	USFWS	
Newburyport Beach, Newburyport	3	3	8	3	0	MAS	
Revere Beach-North, Revere	8	9	2	9	0	DCR	
Revere Beach-South, Revere	5	5	8	5	0	DCR	
Salisbury Beach, Salisbury	2	2	2	2	2	DCR	2 unpaired males seen sporadically scraping
Winthrop Beach, Winthrop	5	5	4	5	3	DCR	3 unpaired adults scraping in June

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Yirrell Beach, Winthrop	2	2	2	2	1	Winthrop	1 unpaired adult
<b>SOUTH SHORE</b>							
Sagamore Beach - Plymouth, Plymouth	ND	ND	ND	0	ND	MAS	
Sagamore Beach - Bourne, Bourne	2	2	3	2	1	MAS	Unpaired adult present >14 days
Pleasant Beach, Cohasset	1	1	0	1	0	MAS	
Duxbury Beach, Duxbury	25	25	58	25	1	DBR	
Nantasket Beach, Hull	6	6	13	6	0	MAS	One pair double brooded
Nantasket DCR, Hull	1	1	0	1	0	MAS	A pair never nested (came from Nantasket Beach)
Rexhame Beach, Marshfield	1	1	2	1	0	MAS	
East Beach, New Bedford	1	1	0	1	0	LCES	Site only monitored after nest reported
Ellisville Harbor State Park, Plymouth	0	ND	ND	0	ND	MAS	
Plymouth Long Beach, Plymouth	34	34	31	34	0	Plymouth	
Boathole, Plymouth	1	1	3	1	0	DBR	
Saquish, Plymouth	3	3	4	2	0	GSC	Limited data collected at site
Ellisville Shifting Lots Preserve, Plymouth	3	3	4	3	0	MAS	
Wollaston Beach, Quincy	1	1	1	1	0	MAS	
Fourth Cliff, Scituate	2	2	4	2	0	MAS	
Humarock, Scituate	0	ND	ND	ND	ND	MAS	Only surveyed 1x after Index Count
The Glades, Scituate	0	0	0	0	0	MAS	
Third Cliff, Scituate	6	6	8	6	0	MAS	
<b>UPPER CAPE</b>							
Bone Hill Road, Barnstable	0	ND	ND	0	ND	MAS	
Fortes Beach, Barnstable	0	ND	ND	0	ND	MAS	
Memorial Beach/Covell's, Barnstable	0	ND	ND	0	ND	MAS	
Sea St./ Keyes Beach, Barnstable	0	ND	ND	0	ND	MAS	

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Linnell Landing Beach, Brewster	0	ND	ND	0	ND	MAS	
Paine's Creek, Brewster	0	ND	ND	0	ND	MAS	
Little Island Beach, Falmouth	0	ND	ND	0	ND	MAS	
Menauhant Beach, Falmouth	0	ND	ND	0	ND	MAS	
Saquatucket Beach, Harwich	ND	ND	ND	0	ND	MAS	Site not surveyed
Town Beach-Grey Neck Road Beach/Earle Rd. Beach, Harwich	ND	ND	ND	0	ND	MAS	Site not surveyed
Coast Guard Beach, Truro	0	0	0	0	0	MAS	
Red Jacket Inn, Yarmouth	0	0	0	0	0	MAS	
Standish Way/Colonial Acres, Yarmouth	0	ND	ND	0	ND	MAS	
Craigville Beach, Barnstable	1	1	0	1	0	MAS	
Dead Neck Sampsons Island, Barnstable	16	16	17	16	0	MAS	
Dowses Beach, Barnstable	1	1	3	1	0	Barnstable	
Kalmus Beach, Barnstable	4	4	6	4	0	Barnstable	
Long Beach, Barnstable	5	5	5	5	0	MAS	
Sandy Neck Beach Park, Barnstable	41	45	48	45	0	Barnstable	
Squaw Is. Road / Causeway, Barnstable	0	0	0	0	0	MAS	
Squaw Island, Barnstable	7	7	16	7	0	MAS	
Mashnee Dike, Bourne	1	1	0	1	0	USACOE	
Crosby Landing Beach, Brewster	2	2	0	2	0	MAS	
Wings Island, Brewster	0	0	0	0	0	MAS	
Rushy Marsh Pond, Cotuit	0	0	0	0	0	MAS	
Bayview Ave/Howe's Beach (private), Dennis	2	2	2	2	0	MAS	

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Bayview, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Chapin Beach, Dennis	2	2	0	2	0	Dennis	
Cold Storage Beach, Dennis	0	ND	ND	0	ND	Dennis	Not surveyed after Index Count
Corporation Beach, Dennis	0	0	0	0	0	Dennis	
Crowes Pasture (Cole's Pond) / Quivett Neck, Dennis	1	1	2	1	0	Dennis	
Depot Street, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Dr. Botero, Dennis	ND	ND	ND	0	ND	MAS	Only 1 visit after May and not during Index Count
Glendon Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Haigis to Inman Rd., Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Harbor View, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Howe's St. Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Inman Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Mayflower Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Metcalfe Memorial, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Miramar Beach (Swan River), Dennis	1	1	3	1	0	MAS	
Raycroft Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Sea Street (West Dennis), Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
Sea Street Beach, Dennis	0	ND	ND	0	ND	Dennis	Not surveyed after Index Count
Sesuit Harbor Beach, Dennis	ND	ND	ND	0	ND	Dennis	Not surveyed after May
South Village Beach, Dennis	0	0	0	0	0	Dennis	
West Dennis Beach, Dennis	4	4	11	4	0	Dennis	
East Sandwich Beach, East Sandwich	2	2	6	2	0	Sandwich	
Scorton Shores, East Sandwich	0	0	0	0	0	Sandwich	
Black Beach, Falmouth	1	1	0	1	0	MAS	
Flume Pond, Falmouth	0	0	0	0	0	MAS	

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Menauhant Yacht Club, Falmouth	1	1	3	1	0	MAS	
Sippewisset, Falmouth	0	1	0	1	0	MAS	
Washburn Island, Falmouth	2	2	5	2	0	MAS	
Woodneck Beach, Falmouth	0	0	0	0	0	MAS	
Falmouth Harbor Jetty, Falmouth	1	1	1	1	0	MAS	
Trunk River, Falmouth	0	0	0	0	0	MAS	
Belmont Condos, Harwich	1	1	1	1	0	MAS	
Red River Beach, Harwich	ND	ND	ND	0	ND	Harwich	Site not surveyed
Stone Horse Yacht Club, Harwich	0	ND	ND	0	ND	MAS	Site only surveyed 1x
Winstead Inn, Harwich	0	1	0	1	0	MAS	
Wychmere, Harwich	2	3	5	3	0	MAS	
New Seabury, Mashpee	3	3	8	3	0	MAS	
Popponesset Spit, Mashpee	3	3	3	3	0	MAS	
South Cape Beach, Mashpee	5	5	2	5	0	MAS	
Scorton Neck (Torrey), Sandwich	5	5	11	5	0	MAS	
Scorton Shores, Sandwich	2	2	6	2	0	MAS	
Scusset Beach State Reservation, Sandwich	2	2	0	2	0	MAS	
Spring Hill Beach, Sandwich	5	5	7	5	0	Sandwich	
Town Neck Beach, Sandwich	2	2	6	2	0	Sandwich	
Sagamore Beach - Sandwich, Sandwich	5	5	16	5	0	MAS	
Grays Beach, Yarmouth	1	1	0	1	0	MAS	
Great Island Causeway, Yarmouth	3	3	5	3	0	MAS	
Great Island - Smith Point, Yarmouth	4	4	4	4	0	MAS	
Radio City Beach, Yarmouth	1	1	0	1	0	MAS	

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Red Jacket Inn, Yarmouth	0	1	0	1	0	MAS	Scraping pair (>14 days) in May believed to be Pair 06 at Seagull Beach
Seagull Beach, Yarmouth	5	6	15	6	1	MAS	One pair detected scraping early in season and is thought to have moved to Radio City Beach
<b>LOWER CAPE</b>							
Clafin Landing/Chatham Bars Inn, Chatham	0	ND	ND	0	ND	MAS	
Cockle Cove, Chatham	0	0	0	0	0	MAS	
Pleasant St. Beach, Chatham	0	0	0	0	0	MAS	
Boat Meadow, Eastham	0	ND	ND	0	ND	MAS	
Rock Harbor/Dyer Prince Rd, Eastham	0	ND	ND	0	ND	MAS	
Haystack Island, Edgartown	0	0	0	0	0	MAS	
Rock Harbor, Orleans	0	ND	ND	0	ND	MAS	
Skaket Beach, Orleans	0	ND	ND	0	ND	MAS	
Between Corn Hill Beach and Beach Point, Truro	0	ND	ND	0	ND	MAS	
Head of the Meadow, Truro	0	0	0	0	0	MAS	
Ryder Beach, Truro	0	0	0	0	0	MAS	
Field Point /Fox Is. WMA, Wellfleet	ND	ND	ND	0	ND	MAS	Site not surveyed
Indian Neck, Wellfleet	0	ND	ND	0	ND	MAS	
Mouth of Herring River - Mayo Beach, Wellfleet	0	ND	ND	0	ND	MAS	
Old Wharf, Wellfleet	0	ND	ND	0	ND	MAS	
Chatharbor Lane (Mill Ck.), Chatham	0	ND	ND	0	ND	MAS	Only surveyed 1x after Index Count
Forest Beach, Chatham	1	1	0	1	0	MAS	
Harding Beach, Chatham	3	3	5	3	0	MAS	
Harding Shores, Chatham	0	ND	ND	0	ND	MAS	Site only surveyed 1x after Index Count
Linnell Lane, Chatham	ND	ND	ND	0	ND	Chatham	Site not surveyed after May
Minimoy Island, Chatham	1	1	3	1	0	USFWS	

**SUMMARY OF THE 2020 MASSACHUSETTS PIPING PLOVER CENSUS**

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Morris Island Dike/ Hardings Beach Point, Chatham	0	0	0	0	0	MAS	
Morris Island, Chatham	1	1	0	1	0	USFWS	Potential 2nd pair attempted to nest on this beach
North (Nauset) Beach, Chatham	19	19	37	19	0	Chatham	
North Beach Is., Chatham	9	9	0	9	0	Chatham	Limited staffing for monitoring
Quitnesset, Chatham	3	3	8	3	0	MAS	
Ridgevale Beach, Chatham	2	2	2	2	0	MAS	
South Beach - Middle Island, Chatham	9	9	4	9	0	MAS	Limited staffing for monitoring
South Beach (North of Break), Chatham	1	1	1	1	0	MAS	
South Beach (South of Break), Chatham	ND	ND	ND	0	ND	MAS	This site was not monitored in 2020 due to access limitations and had 15 total pairs in 2019
South Monomoy Island, Chatham	26	28	7	28	0	USFWS	Limited staff and survey effort due to Covid-19
Tern Island, Chatham	2	2	0	2	0	MAS	
Coast Guard Beach, Eastham	9	9	10	9	0	NPS	
First Encounter Beach, Eastham	0	0	0	0	0	MAS	
Nauset Light Beach, Eastham	0	0	0	0	0	NPS	
South Sunken Meadow, Eastham	1	1	0	1	0	MAS	
North Spit, Orleans	27	27	48	27	0	Orleans	
South Beach (Nauset), Orleans	15	15	35	15	0	Orleans	Banded PIPL male (Left: Orange Upper / Blue Lower Right: Green Upper / Black Lower)
Armstrong Beach, Provincetown	9	9	16	9	0	NPS	
Exit 9, Provincetown	3	3	5	3	0	NPS	
Hatches Harbor, Provincetown	2	2	2	2	0	NPS	

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Herring Cove, Provincetown	2	2	7	2	0	NPS	
Mission Bell, Provincetown	3	4	9	4	0	NPS	1 pair last seen at site on 5/21
Race Point Beach, Provincetown	4	4	13	4	4	NPS	
Race Point North, Provincetown	14	14	28	14	0	NPS	
Race Point South, Provincetown	2	2	2	2	0	NPS	
Wood End/Long Point, Provincetown	10	10	22	10	0	NPS	
Ballston, Truro	0	1	2	1	0	NPS	
Beach Point, Truro	2	2	3	2	0	MAS	
Coast Guard Truro, Truro	6	7	14	7	0	NPS	3 pairs initially nested at Head of Meadow
Corn Hill Beach, Truro	2	2	0	2	0	MAS	
Fisher Beach South, Truro	1	1	0	1	0	MAS	
Fisher Beach, Truro	3	3	4	3	0	MAS	
Head of the Meadow, Truro	4	6	5	6	0	NPS	3 pairs nested here then moved to Coast Guard Truro
High Head, Truro	4	5	6	5	0	NPS	1 pair failed early and moved to Armstrong
Longnook, Truro	2	2	2	2	0	NPS	One pair left site between 5/28-6/8
Ballston Beach, Truro	1	1	0	1	0	MAS	
Bound Brook, Wellfleet	1	1	4	1	0	NPS	
Cahoon Hollow, Wellfleet	0	1	0	1	0	NPS	After nest failure pair thought to have moved to Newcomb Hollow
Duck Harbor, Wellfleet	4	4	7	4	0	NPS	
Great Is., Wellfleet	3	3	0	3	0	NPS	
Jeremy Point, Wellfleet	3	3	10	3	0	NPS	
Lecount Hollow, Wellfleet	0	0	0	0	0	NPS	
Lieutenant Island - NW, Wellfleet	0	ND	ND	0	ND	MAS	Site visited 1x all season
Lieutenant Island - SW, Wellfleet	ND	ND	ND	0	ND	MAS	Site visited 2x all season

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Lieutenant Island - The Hook, Wellfleet	0	ND	ND	0	ND	MAS	
Marconi Beach, Wellfleet	2	2	0	2	0	NPS	
Marconi Station, Wellfleet	4	4	4	4	0	NPS	
Newcomb Hollow, Wellfleet	2	2	3	2	0	NPS	Pair moved from Cahoon Hollow
White Crest Beach, Wellfleet	1	0	0	1	0	NPS	
<b>BUZZARDS BAY</b>							
Ward's Rock, Fairhaven	ND	ND	ND	0	ND	MAS	Site not surveyed
Meadow Island, Marion	0	ND	ND	0	ND	MAS	
Planting Island, Marion	0	ND	ND	0	ND	MAS	
Stewart's Island, Marion	0	ND	ND	0	ND	MAS	
Cedar Island, Wareham	0	ND	ND	0	ND	MAS	
Cromeset, Wareham	0	ND	ND	0	ND	MAS	
Swift's Beach, Wareham	0	ND	ND	0	ND	MAS	
Barney's Joy/Little Beach, Dartmouth	19	18	8	18	0	MAS	
Demarest Lloyd, Dartmouth	6	6	13	6	0	DCR	
Nonquitt, Dartmouth	4	4	4	4	0	MAS	
Round Hill, Dartmouth	1	1	0	1	0	MAS	
Salters Pond, Dartmouth	1	1	4	1	0	MAS	1 extra pair observed being territorial in area (6/28-7/10)
Pine Island (Angelica Point and Strawberry Point), Mattapoisett	0	ND	ND	0	ND	DFW	Site surveyed only twice
South Shore Marshes, Fairhaven	ND	ND	ND	0	ND	DFW	Site only surveyed 2x and both before Index Count
West Island, Fairhaven	3	4	3	4	0	LCES	
West Island, Fairhaven	5	5	8	5	0	DCR	
Winsegansett Heights, Fairhaven	0	0	0	0	0	LCES	Pair scraping for < 2 weeks after Index Count may be failed pair from West Island
Bird Island, Marion	0	0	0	0	0	DFW	
Ram Is., Marion	ND	ND	ND	0	ND	DFW	Not surveyed

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Brandt Island, Mattapoisett	0	ND	ND	0	ND	DFW	Only surveyed once
Ram Is., Mattapoisett	1	1	0	1	0	DFW	
Padanaram Harbor, South Dartmouth	0	0	0	0	0	MAS	A pair sporadically observed
Little Harbor Beach, Wareham	2	2	4	2	0	MAS	
Long Beach Point, Wareham	1	2	0	2	0	MAS	Non-nesting PIPL present between 6/16-6/26
Stony Point Dike, Wareham	3	3	4	3	0	USACOE	
Baker's Beach, Westport	1	1	2	1	0	LCES	
Beach Ave, Westport	1	1	0	1	0	MAS	
Cockeast Pond (Elephant Rock), Westport	2	2	5	2	0	TNCRI	
East Beach, Westport	2	2	3	2	0	MAS	
Horseneck Beach, Westport	10	11	14	11	0	DCR	
Richmond Pond, Westport	2	2	0	2	0	TNCRI	
Cherry& Webb, Westport	5	5	1	5	0	MAS	
Westport Town Beach, Westport	3	3	0	3	0	MAS	
<b>ELIZABETH ISLANDS</b>							
Cuttyhunk, Gosnold	7	7	1	7	0	MAS	
Naushon Is. - West Beach, Gosnold	1	1	ND	0	ND	DFW	Site surveyed only once (during index count).
Naushon Is. -Robinson's Hole, Gosnold	1	1	ND	0	ND	DFW	Site surveyed only once (during index count).
Pasque Island-Quicks Hole, Gosnold	1	1	ND	0	ND	DFW	Site surveyed only once (during index count).
Nashawena Island-Canapitsit, Gosnold	0	ND	ND	0	ND	DFW	1 adult observed during Index Count
Nashawena Island-Quicks Hole, Gosnold	1	1	ND	0	ND	DFW	Only surveyed for Index Count when 1 pair plus 1 additional adult observed
Naushon Is. - Crescent Beach, Gosnold	1	1	ND	0	ND	DFW	Site only officially surveyed 1x but pair with 4 chicks later reported

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Naushon Is. - French Watering Hole, Gosnold	0	ND	ND	0	ND	DFW	Site only surveyed 1x
Naushon Is. - Kettle Cove, Gosnold	0	ND	ND	0	ND	DFW	Site only surveyed 1x
Naushon Is. - Tarpaulin Cove, Gosnold	2	2	ND	0	ND	DFW	Site only surveyed 1x
Pasque Island-Cobbly, Gosnold	0	ND	ND	0	ND	DFW	Site only surveyed 1x
Pasque Island-Robinson's Hole, Gosnold	0	ND	ND	0	ND	DFW	1 PIPL observed during census period
<b>MARTHA'S VINEYARD</b>							
Edey's Island, Chilmark	0	ND	ND	0	ND	MAS	
Big Gravel Is., Oak Bluffs	0	0	0	0	0	MAS	
Eastville Beach, Oak Bluffs	0	1	3	1	0	MAS	
Little Gravel Is., Oak Bluffs	0	0	0	0	0	MAS	
Sarson Is., Oak Bluffs	0	0	0	0	0	MAS	
East Tashmoo, Tisbury	0	0	0	0	0	MAS	
Lagoon Pond-Maciel Marine/Ferry Boat Island, Tisbury	0	0	0	0	0	MAS	
Dogfish Bar, Aquinnah	7	7	17	7	0	BW	
Lobsterville Beach, Aquinnah	3	3	0	3	0	MAS	
Menemsha Neck Preserve, Aquinnah	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
Moshup Beach, Aquinnah	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
Philbin Beach, Aquinnah	0	ND	ND	0	ND	BW	Not surveyed after Index Count
Black Point Pond, Chilmark	0	0	0	0	0	BW	
Cape Higgon, Chilmark	0	ND	ND	0	ND	BW	Only surveyed 1x entire season - during Index Count
Chilmark Pond Preserve, Chilmark	0	ND	ND	0	ND	MVLBC	Only surveyed 1x after Index Count
Chilmark Pond, Chilmark	2	1	1	1	0	BW	A second pair scraping but present < 2 weeks

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Great Rock Bight Preserve, Chilmark	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
Lucy Vincent Beach, Chilmark	1	1	4	1	0	BW	
Nomans Land Island NWR, Chilmark	ND	ND	ND	0	ND	USFWS	Only surveyed 1x (May 27)
Quansoo, Chilmark	5	6	1	6	0	MAS	
Spring Point, Chilmark	0	ND	ND	0	ND	BW	Site only surveyed 1x - Index Count
Squibnocket Beach/Long Beach, Chilmark	2	2	4	2	0	BW	
Stonewall Beach, Chilmark	0	0	0	0	0	BW	
Arruda's Point/The Jetties, Edgartown	0	0	0	0	0	TTOR	
Bend-in-the-Road Beach, Edgartown	0	0	0	0	0	MAS	
Caleb's Pond, Edgartown	0	0	0	0	0	BW	
Cape Pogue Elbow / The Narrows, Edgartown	5	5	4	5	0	TTOR	
Chappaquiddick Point Beach, Edgartown	0	ND	ND	0	ND	MVLBC	5 unpaired adults documented foraging during Index Count but only 1 survey after Index Count
Cove Meadow Preserve, Edgartown	0	ND	ND	0	ND	MVLBC	Only surveyed 1x after Index Count
Cow Bay, Edgartown	0	0	0	0	0	MAS	
Cracktuxet Trust Beach, Edgartown	0	ND	ND	0	ND	BW	Surveyed 2x all season
Edgartown Great Pond (Job's Neck), Edgartown	9	10	6	10	0	BW	
Edgartown Great Pond, Edgartown	0	0	0	0	0	MVLBC	2 unpaired adults observed foraging only
Leland / East Beach, Edgartown	6	6	4	6	0	TTOR	
Lighthouse Beach, Edgartown	2	2	7	2	0	BW	

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Little Beach / Eel Pd., Edgartown	5	5	11	5	0	BW	
Little Neck, Edgartown	0	0	0	0	0	TTOR	
Norton Point Beach, Edgartown	5	6	8	6	0	TTOR	
Oyster Pond, Edgartown	1	1	0	1	0	BW	
Paqua Pond, Edgartown	1	1	2	1	0	BW	
Pease's Pond, Edgartown	0	ND	ND	0	ND	BW	Only surveyed 1x after Index Count
Quammox Preserve, Edgartown	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
South Beach, Edgartown	0	0	0	0	0	BW	
Sylvia State Beach Edgartown, Edgartown	0	0	0	0	0	MAS	
Wasque, Edgartown	1	1	0	1	0	TTOR	
Yorke - Allen Point, Edgartown	0	0	0	0	0	MAS	
Dougs Cove Preserve, Oak Bluffs	0	ND	ND	0	ND	MVLBC	Site surveyed 1x after Index Count
Harthaven, Oak Bluffs	0	0	0	0	0	MAS	
Sylvia State Beach Oak Bluffs, Oak Bluffs	1	1	0	1	0	MAS	
Mink Meadows /West Chop, Tisbury	1	1	0	1	0	MAS	
Tashmoo Preserve, Tisbury	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
West Tashmoo, Tisbury	2	3	5	3	0	BW	
Wilfrids Pond Preserve, Tisbury	0	ND	ND	0	ND	MVLBC	Index Count 1 adult foraging - site only surveyed 1x after
Cedar Tree Neck, West Tisbury	0	0	0	0	0	BW	
Lamberts Cove, West Tisbury	0	ND	ND	0	ND	BW	Not surveyed after Index Count
Long Point, West Tisbury	1	1	0	1	0	TTOR	
Paul's Point, West Tisbury	0	0	0	0	0	BW	

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Sepiessa Point Reservation, West Tisbury	0	ND	ND	0	ND	MVLBC	Site only surveyed 1x after Index Count
Seven Gates, West Tisbury	0	ND	ND	0	ND	BW	Site only surveyed 1x - Index Count
Short Cove Preserve, West Tisbury	ND	ND	ND	0	ND	MVLBC	Site not surveyed after May
Tisbury Great Pond, West Tisbury	0	0	0	0	0	MVLBC	Pairs observed foraging at site but all nested on adjacent Quansoo Beach.
Watcha Pond, West Tisbury	0	1	0	1	0	BW	
<b>NANTUCKET</b>							
Hoicks Hollow, Nantucket	0	ND	ND	0	ND	MAS	
40th Pole, Nantucket	2	2	3	2	0	Nantucket	
Capaum Pond, Nantucket	1	1	0	1	0	NCF	
Chase Links, Nantucket	1	1	0	1	0	MAS	
Coatue, Nantucket	5	7	5	7	0	NCF	
Coskata-West Beach, Nantucket	0	0	0	0	0	TTOR	
Coskata-East Beach, Nantucket	1	1	1	1	0	TTOR	
Dionis Beach, Nantucket	2	2	2	2	0	Nantucket	
Eel Point, Nantucket	7	7	9	7	0	NCF	
Great Point, Nantucket	1	1	2	1	0	TTOR	
Hallowell Lane Beach, Nantucket	0	0	0	0	0	Nantucket	
Hither Creek, Nantucket	ND	ND	ND	0	ND	MAS	PIPL activity was intermittent
Hummock and West Hummock Ponds, Nantucket	0	0	0	0	0	NCF	
Jetties Beach, Nantucket	1	1	2	1	0	Nantucket	
Little Neck, Nantucket	0	ND	ND	0	ND	NCF	Not surveyed after Index Count
Long Pond, Nantucket	0	0	0	0	0	NCF	
Long Pond, Nantucket	1	1	3	1	0	Nantucket	
Low Beach, Nantucket	3	3	0	3	0	Nantucket	

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Monomoy Creeks, Nantucket	0	0	0	0	0	NCF	
Muskeget Is., Nantucket	2	3	3	3	0	MAS	Infrequent monitoring due to limited access; at least two pairs nested
Nantucket NWR (Great Point), Nantucket	0	0	0	0	0	USFWS	
Nobadeer, Nantucket	1	1	0	1	0	Nantucket	
Polpis Harbor (Medouie Creek and Pocomo Meadows), Nantucket	0	0	0	0	0	NCF	
Quaise Point, Nantucket	0	0	0	0	0	Nantucket	
Quidnet/Sesachacha Pond/Greenhills, Nantucket	2	2	0	2	0	MAS	
Sheep Pond, Nantucket	0	0	0	0	0	NCF	
Smith's Point, Nantucket	1	1	0	1	0	MAS	
Smith Point / Esther Is., Nantucket	5	5	4	5	0	Nantucket	
South Pastures (Madequecham Valley to Tom Nevers), Nantucket	0	0	0	0	0	NCF	
Squam Pond, Nantucket	0	0	0	0	0	NCF	
Squam Pond, Nantucket	1	3	1	3	0	MAS	2 pairs lost nests - departed site before Index Count
Surfside/Western Ave, Nantucket	0	0	0	0	0	Nantucket	
The Galls, Nantucket	1	2	2	2	0	TTOR	
The Glades, Nantucket	0	0	0	0	0	TTOR	
The Haulover, Nantucket	0	0	0	0	0	NCF	
Tom Nevers/Wanoma, Nantucket	0	0	0	0	0	MAS	1 pair observed in May
Tuckernuck Is. - Bigelow's Point, Nantucket	1	2	1	2	0	TLT	Second pair arrived mid-June
Tuckernuck Is. - East Pond, Nantucket	0	0	0	0	0	TLT	

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Tuckernuck Is. - North Pond, Nantucket	1	1	2	1	0	TLT	
Tuckernuck Is. - Whale Point, Nantucket	6	6	8	6	0	TLT	
Tuckernuck Is. -Charlie's Point/ South Beach, Nantucket	1	1	0	1	0	TLT	
UMass Field Station, Nantucket	0	0	0	0	0	NCF	
Washing Pond, Nantucket	0		0	0	0	MAS	1 pair observed between 4/23 - 5/13 but is believed to have nested on NCF property
Wauwinet, Nantucket	2	3	0	3	0	MAS	1 territorial non-nesting pair present between 5/21-5/28
Western Ave, Nantucket	1	1	0	1	0	MAS	Pair scraped but went elsewhere - possibly onto town property
<b>Unadjusted Totals</b>	<b>779</b>	<b>810</b>	<b>1,034</b>	<b>805</b>	<b>14</b>		
<b>Adjusted Totals</b>		<b>794.5</b>		<b>789.6</b>			

<sup>a</sup> *Index Count* = number of pairs counted between 1-9 June 2020, the standardized *Index Count* period for the Atlantic Coast population.

<sup>b</sup> *Total Count* = total number of territorial or breeding pairs present at a site for at least 2 weeks during the breeding season.

<sup>c</sup> *Chicks fledged* are defined as chicks  $\geq$  25 days of age or observed in flight, whichever occurs first. Number of *Pairs with fledge data* includes all pairs for which number of *chicks fledged* was determined; this includes not only pairs that successfully fledged chicks, but also pairs for which no nests were found, pairs that nested unsuccessfully, and pairs whose chicks failed to fledge.

<sup>d</sup> *Unpaired adults* = total number of territorial single adults present at a site for at least 2 weeks during the breeding season.

<sup>e</sup> Source = primary source(s) that provided monitoring data: Barnstable = Town of Barnstable, BW = BiodiversityWorks, Chatham = Town of Chatham, DCR = Department of Conservation and Recreation, Dennis = Town of Dennis, DFW = Massachusetts Division of Fisheries & Wildlife, ECGA = Essex County Greenbelt Association, GSC = Gurnet Saquish Corporation, LCES = Lloyd Center for Environmental Studies, MAS = Massachusetts Audubon Society, MVLBC = Martha's Vineyard Land Bank Coalition, Nantucket = Town of Nantucket, NCF = Nantucket Conservation Foundation, NPS = National Park Service, Orleans = Town of Orleans, Plymouth = Town of Plymouth, TLT = Tuckernuck Land Trust, TTOR = The Trustees of Reservations, USACOE = U.S. Army Corps of Engineers, USFWS = U.S. Fish & Wildlife Service, Winthrop = Town of Winthrop

<sup>f</sup> Pairs that moved between sites (as indicated in "Notes") were not double-counted in tallies.