# SUMMARY OF THE 2023 MASSACHUSETTS PIPING PLOVER CENSUS



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Prepared by:

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# ABSTRACT

This report summarizes data on abundance, distribution, and reproductive success of Piping Plovers (*Charadrius melodus*) in Massachusetts during the 2023 breeding season. Observers reported breeding pairs of Piping Plovers present at 210 sites; 158 additional sites were surveyed at least once, but no breeding pairs were detected at them. The population increased 14.0% relative to 2022. The *Index Count* (statewide census conducted 1-9 June) was **1,163.5 pairs**, and the *Adjusted Total Count* (estimated total number of breeding pairs statewide for the entire 2023 breeding season) was **1,178 pairs**. A total of 1,295 chicks was reported fledged in 2023, for an overall productivity of **1.11 fledglings per pair**, based on data from 99.0% 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 [USFWS] 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 2023, 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 368 sites in Massachusetts in 2023 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. 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 2023, 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 period of time. 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. To be included in the *Total Count*, a pair must have exhibited territoriality and pair bonding for a minimum of two 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 renested at another. We then derive an *Adjusted Total Count* by 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

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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 the 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 did not appear to lay eggs, 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 in calculations, 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. All nests with the aforementioned data were used to calculate both the median estimated date for the first egg laid and hatch date.

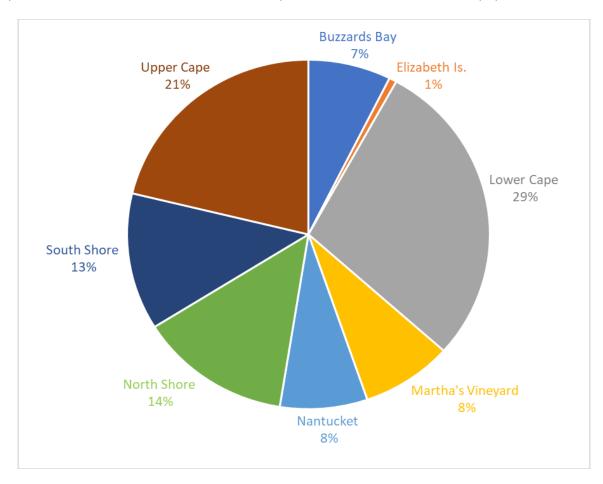
#### Data reporting and quality control

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 (PIPLODES). 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 fle dged; 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 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 Appendix 1.

# RESULTS

Observers reported breeding Piping Plovers at 210 sites in Massachusetts in 2023. An additional 158 sites were surveyed one or more times during May and June, but no breeding pairs were detected at them (Appendix 1). The *Unadjusted Total Count* of the number of breeding pairs of Piping Plover was 1,192.5 pairs (vs. 1,053 in 2022). The *Adjusted Total Count* was 1,178 pairs, a 14.0% increase over 2022 (1,033 pairs). The *Index Count* was 1,163.5 pairs (vs. 1,013 pairs in 2022), 98.8% of the *Adjusted Total Count*.

Distribution of breeding pairs by region (Figure 1) was similar to 2022, with slight increases on the Lower Cape (29%; vs. 27% in 2022), Martha's Vineyard (8%; vs. 7% in 2022) Nantucket (8%; vs. 7% in 2022), and slight decreases on the North Shore (14%; vs. 15% in 2022) and Buzzards Bay (7%; vs. 9% in 2022). Thirty sites with ten or more breeding pairs accounted for 54.9% of the Massachusetts breeding population, while 117 sites with three or fewer pairs accounted for 17.4% of the population.



*Figure 1.* Distribution of Piping Plover breeding pairs by Massachusetts region in 2023, based on Adjusted Total Counts for each region.

In total, 1,295 chicks were reported fledged, resulting in overall productivity of **1.11 fledglings/pair**, based on data from 1,180.5 of 1,192.5 pairs (99.0%; the *Adjusted number of pairs with fledge data* divided by the *Unadjusted total count*).<sup>1</sup> This represents a 15.3% decrease in productivity relative to 2022 (1.31 fledglings/pair). Productivity varied by region, ranging from a high of 1.43 on the Upper Cape down to 0.81 fledglings/pair on Martha's Vineyard **(Table 1).** Productivity data were not available for the Elizabeth Islands due to limited survey effort.

Table 1. Productivity (fledglings per pair) of Piping Plovers in Massachusetts by region in 2022-2023.

Region	2023	2022
Buzzards Bay	0.95	0.92
Elizabeth Islands	NA	NA
Lower Cape	0.96	1.32
Martha's Vineyard	0.81	0.91
Nantucket	1.01	0.96
North Shore	1.01	1.15
South Shore	1.21	1.38
Upper Cape	1.43	1.60

<sup>&</sup>lt;sup>1</sup> The Unadjusted number of pairs with fledge data was 1,180.5 (out of 1,192.5 Unadjusted total pairs). The Adjusted number of pairs with fledge data was 1,166.

Nest failure rates were higher in 2023 (51.7%) than in 2022 (47.4%). Causes of nest loss are shown in **Figure 2**. The largest causes of nest loss were predation (likely and suspected) and overwash/flooding. Overwash/flooding accounted for a higher proportion of nest loss in 2023 (25%) than in 2022 (21%), while predation (52%) was lower compared to 2022 (55%). **Figure 3** shows suspected predators of nests likely and suspected to have been depredated.

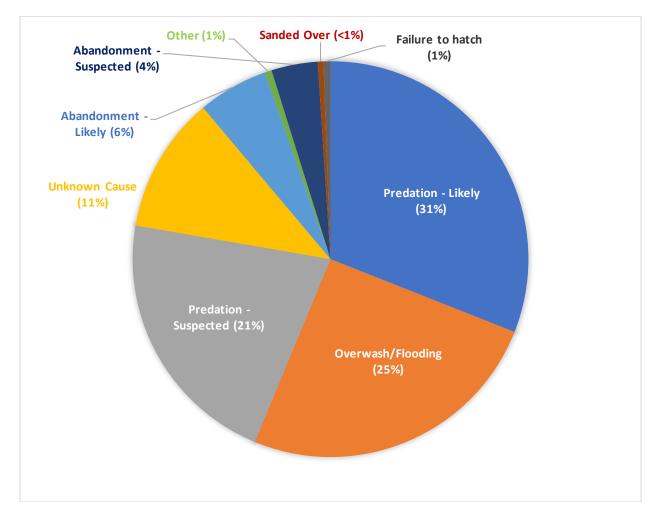
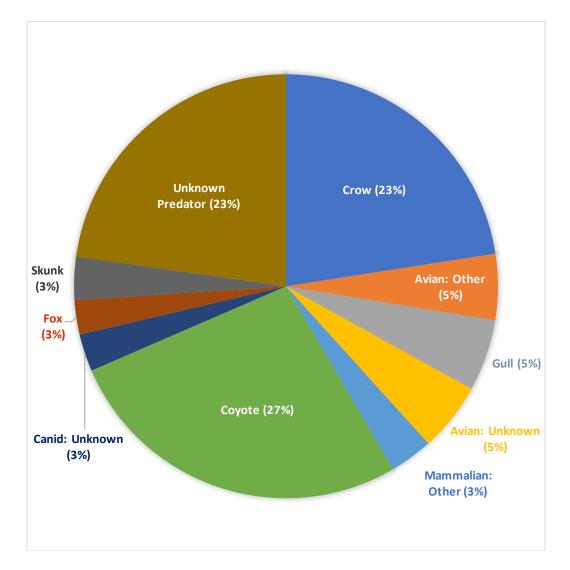
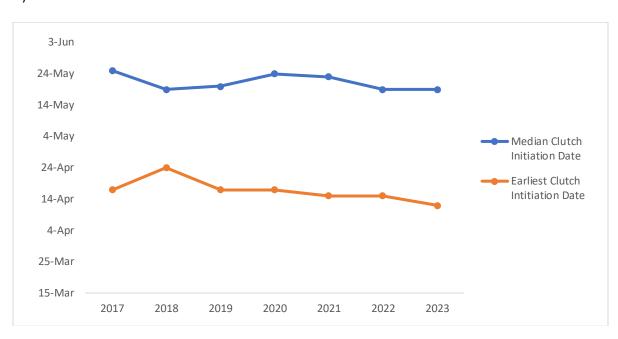


Figure 2. Causes of Piping Plover nest loss in Massachusetts, 2023 (n=873 nest failures).



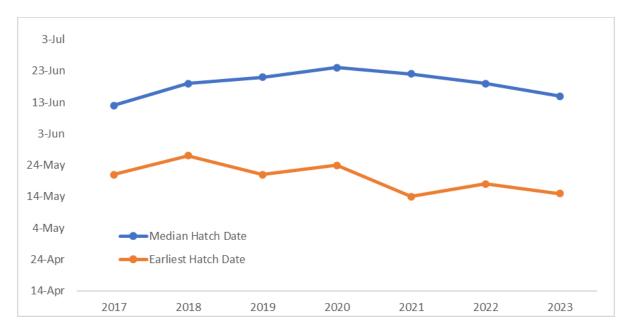
*Figure 3.* Presumed predators of Piping Plover nests likely and suspected to have been depredated in Massachusetts, 2023 (n=457, presumed predated nests).

In 2023, the earliest clutch initiation date was estimated to be 12 April at Low Beach (Nantucket) (15 April in 2022). Statewide, the median clutch initiation date was 19 May (20 May in 2022). The earliest approximate hatch date was 15 May, at Low Beach (Nantucket). The median hatch date statewide was 15 June (19 June in 2022). Trends over time in earliest and median clutch initiation date and earliest and median hatch date are shown in **Figure 4**.



A)



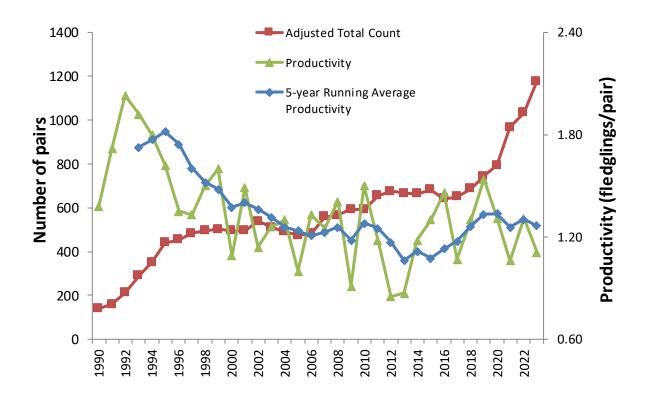


**Figure 4.** Piping Plover earliest and median clutch initiation date (A) and earliest and median hatch date (B) between 2017-2023 in Massachusetts.

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Hatch rates decreased (48.3%; n=1,639 nests with known fates) relative to 2022 (52.6%; n=1,348), and nesting attempts per pair increased to 1.43 vs. 1.34 in 2022 (based on *Adjusted Total Counts*). Hatch rates for exclosed (12.9% of total known-fate nests) and unexclosed (87.1% of total known-fate nests) nests were 65.4% (n=211) and 45.7% (n=1,428), respectively, as compared to 71.3% (n=150) and 50.3% (n=1,198) in 2022. The nest abandonment rate for exclosed nests (10.4%; 22 of 211 nests) was substantially higher than for unexclosed nests (2.5%; 36 of 1,428 nests with known fates), and higher compared to the 7.3% abandonment rate for exclosed nests (11 of 150 nests) but identical to the 2.5% result for unexclosed nests (30 of 1,198 nests) in 2022.

Long-term trends in breeding Piping Plover population size and productivity are shown in **Figure 5**. The five-year running average of productivity declined from its highest point in 1995 to a low point in 2013; it has been increasing ever since. Since 2018, it has been above the approximately 1.2 fledglings/pair thought to be necessary to maintain a stable population (Melvin & Gibbs 1996).<sup>2</sup> The breeding population has increased dramatically over that period. Since statewide monitoring began, 2023 is the first year in which Massachusetts' population has topped 1,100 pairs, far exceeding the USFWS's goal of 625 pairs for the New England recovery unit (USFWS 1996). Although the New England recovery unit has surpassed its recovery goal for abundance, other recovery units along the Atlantic Coast have not.



*Figure 5. Piping Plover abundance (Adjusted Total Count) and productivity (fledglings/pair) in Massachusetts, 1990-2023.* 

<sup>&</sup>lt;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).

## ACKNOWLEDGEMENTS

This report was prepared by Andrew Vitz with assistance from Marcela Liljesthröm, 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 2023. We also thank the more than 20 state and federal agencies, local municipalities and county government, local and regional land trusts, private conservation organizations, volunteers, 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 2023 MASSACHUSETTS PIPING PLOVER CENSUS

Appendix 17 (Banadree, de		) and pro				554611456116) 2	
				No.			
	Index	Total		pairs			
	Count <sup>a</sup>	Count <sup>b</sup>	No. abiata	with	No.		
<b>C</b> '1	(no.	(no.	No. chicks	fledge	unpaired	<b>c</b>	<b>a a f</b>
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
NORTH SHORE		1		1	1		Т
Cape Hedge Beach,	_		_	_			
Rockport	0	0	0	0	0	MAS	Several volunteer monitors
Carson Beach, Boston	0	0	0	0	0	DCR	
Coffins Beach	4	5	8	5	0	ECGA	
Constitution Beach, East Boston	0	ND	ND	0	ND	MAS	
Crane Beach, Ipswich	51	51	53	51	0	TTOR	
Good Harbor Beach,							
Gloucester	3	3	4	3	0	MAS	
L Street Bathhouse,							
Dorchester	4	4	6	4	1	MAS	Single unpaired male replaced dead male (5/3)
Logan Airport, Boston	0	0	0	0	0	USDA	
Lovell's Beach, Boston	0	0	0	0	0	MAS	
Nahant State Beach, Nahant	8	8	4	8	0	DCR	
Newbury Town Beach,							
Newbury	7	7	16	7	0	MAS	
Newburyport Beach,							
Newburyport	2	2	4	2	0	MAS	
Parker River NWR,							
Newbury/Rowley	44	44	46	44	0	USFWS	
Rainsford Island, Boston	0	0	ND	0	ND	MAS	
Revere Beach-North,							
Revere	7	7	6	7	0	DCR	
Revere Beach-South,							
Revere	5	5	0	5	0	DCR	
Salisbury Beach, Salisbury	4	3	1	4	0	DCR	
Sandy Point, Ipswich	13	13	9	13	0	DCR	
Snake Island, Winthrop	0	0	ND	0	ND	MAS	
Two Penny Loaf, Gloucester	0	0	0	0	0	ECGA	
West Beach, Beverly	0	0	0	0	0	ECGA	

**Appendix 1.** Abundance, distribution, and productivity of Piping Plovers in Massachusetts, 2023.

	Index Count <sup>a</sup> (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired					
Site	pairs) 0	pairs) 0	fledged <sup>c</sup>	datac	adults <sup>d</sup>	Source <sup>e</sup> MAS	Notes <sup>f</sup>			
Wingaersheek, Gloucester	-	-	0	0	0	_				
Winthrop Beach, Winthrop	7	8	5	8	0	DCR				
Yirrell Beach, Winthrop	2	2	Z	2	0	Winthrop				
SOUTH SHORE       Boathole, Plymouth     2     2     7     2     0     DBR										
Bumpkin Island, Hull	0	0	, ND	0	ND	MAS				
Duxbury Beach, Duxbury	46	46	51	46	0	DBR				
East Beach, New Bedford	46	40	0	40	0	MAS				
Ellisville Harbor State Park,	1	1	0	1	0	IVIAS				
Plymouth	0	0	0	0	0	MAS				
Ellisville Shifting Lots	0	0	0	0	0	IVIAS				
Preserve, Plymouth	5	5	12	5	0	MAS				
Fourth Cliff, Scituate	3	3	9	3	0	MAS				
Grape Island, Weymouth	0	ND	ND	0	ND	MAS				
Green Harbor, Marshfield	1	1	4	1	0	MAS	See Pleasant Beach			
Humarock, Scituate	0	 ND	ND.	0	ND	MAS				
Nantasket Beach, Hull	10	10	1	10	0	MAS				
Nantasket DCR, Hull	0	0	0	0	0	MAS				
Peddock's Island, Hull	0	ND	0	0	ND	MAS				
Pleasant Beach, Cohasset	0	1	0	1	0	MAS	Suspect pair moved to/nested at Green Harbor Beach			
Plymouth Long Beach,										
Plymouth	50	50	51	50	0	Plymouth				
Rexhame Beach, Marshfield	1	1	0	1	0	MAS				
Sagamore Beach, Bourne	5	5	0	5	0	MAS				
Sagamore Beach, Plymouth	0	ND	ND	0	ND	MAS				
Sandy Beach, Cohasset	ND	1	3	1	0	MAS	Site wasn't checked until 6/20			
Saquish, Plymouth	5	5	13	5	0	R. Gosselin				
Saquish, Plymouth	1	1	0	1	0	DBR				
The Glades, Scituate	3	3	5	3	0	MAS				
Third Cliff, Scituate	12	12	18	12	0	MAS				

	Index Count <sup>a</sup>	Total Count <sup>b</sup>		No. pairs with	No.		
Site	(no. pairs)	(no. pairs)	No. chicks fledged <sup>c</sup>	fledge data <sup>c</sup>	unpaired adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
White Horse Beach,	pail 37	pail 37	neugeu	uata	auuits	Jource	
Plymouth	1	1	3	1	0	Plymouth	Limited surveys
Wollaston Beach, Quincy	4	4	6	4	0	DCR	
UPPER CAPE			-	-			
Acapesket Beach, Falmouth	0	0	0	0	0	MAS	
Bank Street Beach, Harwich	2	2	7	2	0	Harwich	
Bass River Beach, Yarmouth	0	ND	ND	0	ND	MAS	
Bassetts Island, Bourne	1	1	0	1	0	MAS	
Bayview Ave/Howe's,							
Dennis	3	3	2	3	0	MAS	
Bayview, Dennis	0	0	0	0	0	Dennis	
Belmont Condos, Harwich	1	1	2	1	0	MAS	
Black Beach, Falmouth	2	3	0	3	0	MAS	
Bone Hill Road, Barnstable	0	ND	ND	0	ND	MAS	
Chapin Beach, Dennis	2	2	4	2	0	Dennis	
Cold Storage Beach, Dennis	0	0	0	0	0	Dennis	
Corporation Beach, Dennis	0	0	0	0	0	Dennis	
Craigville Beach, Barnstable	1	1	2	1	0	MAS	Male also territorial at Memorial/Covell's Beach
Crosby Landing, Brewster	4	4	9	4	0	MAS	
Crowes Pasture (Cole's							
Pond) / Quivett Neck,							
Dennis	4	5	8	5	0	Dennis	
Dead Neck Sampsons							
Island, Barnstable	25	27	36	27	0	MAS	
Depot Street, Dennis	0	ND	ND	0	ND	Dennis	
Dowses Beach, Barnstable	1	1	4	1	0	Barnstable	
Dr. Botero, Dennis	2	2	0	2	0	MAS	
East Sandwich Beach, East							
Sandwich	3	4	4	4	0	Sandwich	
Falmouth Harbor Jetty,							
Falmouth	1	1	4	1	0	MAS	

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>
Flume Pond, Falmouth	0	0	0	0	0	MAS	
Fortes Beach, Barnstable	1	1	2	1	0	MAS	
Glendon Beach, Dennis	0	ND	ND	0	ND	Dennis	
Gray's Beach, Yarmouth	3	1	ND	0	0	MAS	Not surveyed enough to determine if any chicks fledged
Great Island Causeway,							
Yarmouth	3	4	3	4	0	MAS	
Great Island - Smith Point,	-						
Yarmouth	9	9	8	9	0	MAS	
Haigis to Inman Rd., Dennis	0	ND	ND	0	ND	Dennis	
Harbor View, Dennis	0	0	0	0	0	Dennis	
Howe's St. Beach, Dennis	0	0	0	0	0	Dennis	
Inman Beach, Dennis	0	ND	ND	0	ND	Dennis	
Kalmus Beach, Barnstable	4	4	1	4	0	Barnstable	
Linnell Landing Beach,	0	ND	ND	0	ND	MAS	
Brewster							
Little Island Beach,	0	ND	ND	0	ND	MAS	
Falmouth							
Long Beach, Barnstable	8	9	6	9	0	MAS	
Mashnee Dike, Bourne	2	2	2	2	0	USACOE	
Mayflower Beach, Dennis	0	0	0	0	0	Dennis	
Memorial Beach/Covell's,							
Barnstable	0	ND	ND	0	ND	MAS	
Menauhant Beach,							
Falmouth	1	1	2	1	0	MAS	Brood moved to Menauhant Yacht Club (6/5)
Menauhant Yaucht Club,							
Falmouth	0	0	0	0	0	MAS	See Menauhant Beach
Metcalf Memorial, Dennis	0	0	0	0	0	Dennis	
Mussel Point, Barnstable	0	ND	ND	0	ND	MAS	
New Seabury, Mashpee	5	5	8	5	0	MAS	
Paine's Creek, Brewster	0	ND	ND	0	ND	MAS	
Popponesset Spit, Mashpee	7	7	16	7	0	MAS	

	Index Count <sup>a</sup>	Total Count <sup>b</sup>		No. pairs with	No.		
	(no.	(no.	No. chicks	fledge	unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Radio City Beach, Yarmouth	1	1	0	1	0	MAS	
Raycroft Beach, Dennis	0	ND	ND	0	ND	Dennis	
Red Jacket Inn, Yarmouth	1	1	0	1	0	MAS	
Red River Beach, Harwich	2	2	3	2	0	Harwich	
Rushy Marsh Pond,							
Barnstable	0	0	0	0	0	MAS	
Sagamore Beach –							
Sandwich, Sandwich	7	7	10	7	0	MAS	
Sandy Neck Beach Park,							
Barnstable	55	57	89	57	0	Barnstable	
Scorton Neck (Torrey),							
Sandwich	7	7	7	7	0	MAS	
Scorton Shores, East							
Sandwich	1	1	0	1	0	Sandwich	
Scorton Shores, Sandwich	3	3	6	3	0	MAS	
Scusset Beach State							
Reservation, Sandwich	2	2	0	2	0	MAS	
Sea St./ Keyes Beach,							
Barnstable	ND	1	3	1	0	MAS	Site not surveyed until July
Sea Street, West Dennis	0	ND	ND	0	ND	Dennis	
Sea Street Beach, Dennis	0	0	0	0	0	Dennis	
Seagull Beach, Yarmouth	9	10	11	10	0	MAS	
Sesuit Harbor Beach, Dennis	0	0	0	0	0	Dennis	
Sippewisset, Falmouth	2	2	2	2	0	MAS	
South Cape Beach,							
Mashpee	5	5	10	5	0	MAS	
South Village (private)							
Dennis	1	1	0	1	0	MAS	
							Non-nesting pair at this site is probably same that
South Village Beach, Dennis	0	0	0	0	0	Dennis	nested at South Village
Spring Hill Beach, Sandwich	8	8	10	8	0	Sandwich	
Squaw Island, Barnstable	10	10	19	10	0	MAS	

	Index Count <sup>a</sup>	Total Count <sup>b</sup>	No. objeto	No. pairs with	No.		
Site	(no. pairs)	(no. pairs)	No. chicks fledged <sup>c</sup>	fledge data <sup>c</sup>	unpaired adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Squaw Island Road,	panoy	pan 3/	neugeu	uutu	uuuts	500100	
Barnstable	1	1	0	1	0	MAS	
Standish Way/Colonial	0	- ND	ND	0	ND	MAS	
Acres, Yarmouth	-			-			
Stone Horse Yacht Club,				_			
Harwich	0	ND	ND	0	ND	MAS	
Surf Drive, Falmouth	0	0	0	0	1	MAS	
Swan River/Miramar,							
Dennis	2	2	5	2	0	MAS	
Town Neck Beach,							
Sandwich	2	2	1	2	0	Sandwich	
Trunk River/Moors,							
Falmouth	2	2	3	2	0	MAS	
Washburn Island, Falmouth	4	5	13	5	0	MAS	
West Dennis Beach, Dennis	12	12	25	12	0	Dennis	
Wings Island, Brewster	2	3	0	3	0	MAS	
Winstead Inn, Harwich	1	1	4	1	0	MAS	
Woodneck Beach, Falmouth	0	0	0	0	0	MAS	
Wychmere, Harwich	5	5	12	5	0	MAS	
24 Willis Lane, Falmouth	0.5	1	0	1	1	MAS	Unpaired male from Index Count later formed pair
LOWER CAPE		<b>I</b>		1	1		
Armstrong Beach,							
Provincetown	15	14	5	15	0	NPS	
Ballston Town Beach,							
Chatham	0	0	0	0	0	MAS	
Ballston, Truro	4	5	4	5	0	NPS	One pair had first nest at Newcomb Hollow
Beach Point, Truro	3	3	7	3	0	MAS	
Between Corn Hill Beach	0	ND	ND	0	ND	MAS	
and Beach Point, Truro							
Boat Meadow, Eastham	0	0	ND	0	ND	MAS	
Bound Brook, Wellfle.et	3	3	4	3	0	NPS	
Cahoon Hollow, Wellfleet	2	2	0	2	0	NPS	One pair had a first nest at Newcomb Hollow

	Index Count <sup>a</sup> (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Chatharbor Lane, Chatham	0	ND	ND	0	ND	MAS	
Claflin Landing/Chatham Bars Inn, Chatham	0	ND	ND	0	ND	MAS	
Coast Guard Beach,							
Eastham	7	7	6	7	0	NPS	
Coast Guard Beach, Truro	0	ND	ND	0	ND	MAS	
Coast Guard Truro, Truro	7	7	8	7	0	NPS	
Cockle Cove, Chatham	0	0	0	0	0	MAS	
Corn Hill Beach, Truro	2	2	3	2	0	MAS	
Duck Harbor, Wellfleet	9	9	5	9	0	NPS	
Dyer Prince Beach, Eastham	0	ND	ND	0	ND	MAS	Not surveyed after Index Count period
Exit 9, Provincetown	3	4	1	4	0	NPS	
Field Point/Fox Is. WMA,							
Wellfleet	1	1	0	1	0	MAS	
First Encounter Beach,							
Eastham	1	1	0	1	0	MAS	
Fisher Beach, South Truro	2	3	5	3	0	MAS	
Fisher Beach, Truro	2	2	3	2	0	MAS	
Forest Beach, Chatham	2	2	3	2	0	MAS	
Great Is., Wellfleet	7	7	13	7	0	NPS	
Harding Beach, Chatham	5.5	5.5	9	5.5	1	MAS	
Harding Shores, Chatham	0	ND	ND	0	ND	MAS	Not surveyed after Index Count period
Hatches Harbor,							
Provincetown	4	4	4	4	0	NPS	
Head of the Meadow, Truro	5	5	6	5	0	NPS	
Herring Cove, Provincetown	2	2	2	2	0	NPS	
Head of the Meadow, Truro							
(Town Beach)	0	ND	ND	0	ND	MAS	
High Head, Truro	10	10	13	10	0	NPS	
Indian Neck, Wellfleet	0	ND	ND	0	0	MAS	Site surveyed 1x after Index Count period
Jeremy Point, Wellfleet	10	10	7	10	0	NPS	

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>
Lecount Hollow, Wellfleet	1	1	0	1	0	NPS	
Lieutenant Island – SW, Wellfleet	1	1	0	1	0	MAS	
Lieutenant Island-NW,							
Wellfleet	2	2	4	2	0	MAS	
Lieutenant Island - The Hook, Wellfleet	1	0	0	0	0	MAS	
Linnell Lane, Chatham	2	2	0	2	0	Chatham	
Longnook, Truro	3	3	3	3	0	NPS	
Marconi Beach, Wellfleet	3	3	0	3	0	NPS	One pair also nested at Nauset Light Beach
Marconi Station, Wellfleet	6	6	9	6	0	NPS	
Minimoy Island, Chatham	0	1	0	1	0	USFWS	
Mission Bell, Provincetown	6	6	13	6	0	NPS	
Morris Island, Chatham	1	0	0	1	0	USFWS	
Morris Island Dike/							
Hardings Beach Point, Chatham	0	ND	ND	0	ND	MAS	
Mouth of Herring River -	0	ND	ND	0	ND	MAS	
Mayo Beach, Wellfleet	0	ND	ND	0	ND	MAS	
Nauset Light Beach,							
Eastham	0	1	0	1	0	NPS	One pair also nested at Marconi Beach
Newcomb Hollow, Wellfleet	4	4	4	4	0	NPS	One pair also nested at Ballston and another also nested at Cahoon Hollow
North (Nauset) Beach,							
Chatham	23	23	51	23	0	Chatham	
North Beach Island,							
Chatham	22	23	14	23	0	Chatham	
North Monomoy Island,							
Chatham	1	1	3	1	0	USFWS	Limited surveys
North Spit, Orleans	22.5	22	24	22	1	Orleans	
Old Wharf, Wellfleet	0	ND	ND	0	ND	MAS	

	Index Countª (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Pleasant St. Beach,							
Chatham	1	1	4	1	0	MAS	
Quitnesset, Chatham	11	11	8	11	0	MAS	
Rock Harbor/Dyer Prince	0	ND	ND	0	ND	MAS	
Rd, Eastham							
Rock Harbor, Orleans	0	ND	ND	0	ND	MAS	
Race Point Beach,							
Provincetown	7	7	4	7	0	NPS	See Race Point South
Race Point North,							
Provincetown	11	10	16	11	0	NPS	
Race Point South,							
Provincetown	4	3	5	4	0	NPS	One pair thought to have nested at Race Point Beach
Ridgevale Beach, Chatham	3	3	5	3	0	MAS	
Ryder Beach, Truro	0	ND	ND	0	ND	MAS	
Skaket Beach, Orleans	1	1	0	1	0	Orleans	
Scatteree Landing, Chatham	0	ND	ND	0	ND	MAS	
South Beach - Middle							
Island, Chatham	8	9	0	1	0	MAS	
South Beach (Nauset),							
Orleans	22	22	15	22	0	Orleans	
South Beach (North of							
Break), Chatham	3	4	2	4	0	MAS	
South Beach (South of							
Break), Chatham	18	18	8	18	0	MAS	
South Monomoy Island,							
Chatham	41	41	16	41	0	USFWS	
South Sunken Meadow,							
Truro	1	1	0	1	0	MAS	
Tern Island, Chatham	2	2	5	2	0	MAS	
White Crest Beach,							
Wellfleet	0	ND	ND	0	ND	NPS	Limited surveys

	Index Count <sup>a</sup> (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Wood End/Long Point,			7		0	NDC	
Provincetown BUZZARDS BAY	14	14	7	14	0	NPS	
Acoaxet Beach, Westport	ND	ND	ND	0	ND	LCES	Limited surveys
· ,	2	2	3	2	0	LCES	
Baker's Beach, Westport	Ζ	Z	3	2	0	LUES	
Barney's Joy/Little Beach, Dartmouth	23	24	20	24	0	MAS	
Beach Ave, Westport	0	0	20	0	0	MAS	
Blankenship Cove, Marion	0	ND	ND	0	ND	MAS	
Bourne Cove, Wareham	0	ND	ND	0	ND	MAS	
Brandt Island, Mattapoisett	0	ND	ND	0	ND	DFW	Only surveyed during Index Count period
Cedar Island, Wareham	0	ND	ND	0	ND	MAS	Only surveyed during Index Count period
,	0	ND	ND	0	ND	MAS	
Cromeset, Wareham	4		0	4	0	DCR	
Demarest Lloyd, Dartmouth	4 2	4	0	2	0		
East Beach, Westport	_	_	0		0	MAS	
Elephant Rock Westport Fish Island Fairhaven	1 ND	1 ND	ND	1	0 ND	LCES DFW	Only symposic on E /22
	0	ND		0	ND	MAS	Only surveyed on 5/23
Gravel Island, Marion	17		ND 7		0	DCR	
Horseneck Beach, Westport	17	18	/	18	0	DCR	
Little Harbor Beach,	-	-	45	-	0		
Wareham	5	5	15	5	0	MAS	
Little Island, Marion	0	ND 3	ND 7	0	ND 0	MAS	
Long Beach Point, Wareham		-		3	-	MAS	Circle company subside bades. Count readed
Long Island, Fairhaven	ND	ND	ND	0	ND	DFW	Single survey outside Index Count period
Meadow Island, Marion	0	ND	ND	0	ND	MAS	
Nonquitt, Dartmouth	2	2	7	2	0	MAS	
Onset Beach, Wareham	0	ND	ND	0	ND	MAS	
Padanaram Harbor, South	-		-	-			
Dartmouth	2	2	4	2	0	MAS	

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Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Pine Island (Angelica Point							
and Strawberry Point),				_			
Mattapoisett	1	1	ND	0	0	DFW	Site surveyed 1x
Planting Island, Marion	0	ND	ND	0	ND	MAS	
Ram Is., Marion	1	ND	ND	0	ND	MAS	Only surveyed during Index Count period
Ram Is. Mattapoisett,							
Mattapoisett	0	0	0	0	0	DFW	
Richmond Pond, Westport	1	1	3	1	0	LCES	
Round Hill Beach,							
Dartmouth	0	0	0	0	0	MAS	Territorial birds observed intermittently
Round Is., Fairhaven	ND	ND	ND	0	ND	DFW	Single survey outside Index Count period
Salters Pond, Dartmouth	7	7	3	7	0	LCES	
South Shore Marshes,							
Fairhaven	ND	ND	ND	0	ND	DFW	Single survey outside Index Count period
Stewart's Island, Marion	0	ND	ND	0	ND	MAS	
Stony Point Dike, Wareham	3	3	4	3	0	USACOE	
Swift's Beach, Wareham	0	ND	ND	0	ND	MAS	
Ward's Rock, Fairhaven	ND	ND	ND	0	ND	DFW	Single survey outside Index Count period
West Island, Fairhaven	1	3	0	3	0	DCR	Two pairs moved to West Island Town Beach
West Island Town Beach,							
Fairhaven	5	5	4	5	0	LCES	See West Island
Westport Town Beach,							
Westport	5	6	4	6	0	MAS	
Winsegansett Heights,							
Fairhaven	1	1	3	1	0	LCES	
ELIZABETH ISLANDS							
Church's Beach, Gosnold	0	ND	ND	0	ND	MAS	
Copicut Neck, Gosnold	0	ND	ND	ND	ND	MAS	
Cuttyhunk, Gosnold	5	5	4	5	0	MAS	
Nashawena Island-							
Canapitsit, Gosnold	ND	ND	ND	ND	DFW	ND	Site not surveyed

	Index Count <sup>a</sup>	Total Count <sup>b</sup>		No. pairs with	No.		
	(no.	(no.	No. chicks	fledge	unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Nashawena Island Quicks							
Hole, Gosnold	4	4	ND	0	ND	DFW	Single survey during Index Count period
Naushon Is Crescent							
Beach, Gosnold	0	ND	ND	0	ND	DFW	Single survey during Index Count period
Naushon Is French							
Watering Hole, Gosnold	0	ND	ND	0	ND	DFW	Single survey during Index Count period
Naushon Is Kettle Cove,							
Gosnold	0	ND	ND	0	ND	DFW	Single survey during Index Count period
Naushon Is Tarpaulin							
Cove, Gosnold	2	2	ND	0	ND	DFW	Single survey during Index Count period
Naushon Is West Beach,							
Gosnold	0	ND	ND	0	ND	DFW	Single survey during Index Count period
Pasque Island-Cobbly,				_			
Gosnold	0	ND	ND	0	ND	DFW	Single survey during Index Count period
Pasque Island-Quicks Hole,							
Gosnold	1	1	ND	0	ND	DFW	Single survey during Index Count period
Pasque Island-Robinson's							
Hole, Gosnold	1	1	ND	0	ND	DFW	Single survey during Index Count period
West Pond, Gosnold	0	ND	ND	ND	0	MAS	
MARTHA'S VINEYARD		Γ		1			
Arruda's Point / The Jetties,							
Edgartown	2	2	0	2	0	TTOR	
Beach Rd. Causeway,							
Tisbury	0	0	0	0	0	MAS	
Bend-in-the-Road Beach,	0	0	0	0	0	MAS	
Edgartown							
Big Gravel Is., Oak Bluffs	0	0	0	0	0	MAS	
Black Point Pond, Chilmark	0	0	0	0	0	BW	
Caleb's Pond, Edgartown	ND	ND	ND	0	ND	BW	Not surveyed during Index Count and only 1x after
Caleb's Pond Preserve,							
Edgartown	0	0	0	0	0	MVLBC	
Cape Higgon, Chilmark	0	ND	ND	0	ND	BW	Single survey during Index Count period

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Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Cape Pogue Elbow / The	C	7	1	7	0		
Narrows, Edgartown	6	7	1	7	0	TTOR/BW	
Cedar Tree Neck, West	0	0	0	0	0	DIA	
Tisbury Channenwiddials Daint	0	0	0	0	0	BW	
Chappaquiddick Point	0	0	0	0	0		
Beach, Edgartown	0	0	0	0	0	MVLBC	
Chilmark Pond, Chilmark Chilmark Pond Preserve,	U	U	U	0	U	BW	
	0	0	0	0	0		
Chilmark	0	0	0	0	0	MVLBC	
Cove Meadow Preserve,	0	0	0	0	0		
Edgartown	0	0	0	0	0	MVLBC	
Cow Bay, Edgartown	0	0	0	0	0	MAS	
Cracktuxet Trust Beach,	1	1	1	1	0	DIA	
Edgartown	1 8	1	1 6	1	0	BW	
Dogfish Bar, Aquinnah	8	8	6	8	0	BW	
Dougs Cove Preserve, Oak Bluffs	0	0	0	0	0		
	0	0	0	0	0	MVLBC	
East Tashmoo, Tisbury		0		0	0	MAS	
Eastville Beach, Oak Bluffs	1	1	1	1	0	MAS	
Edey's Island, Chilmark	0	0	0	0	0	MAS	
Edgartown Great Pond		_					
(Job's Neck), Edgartown	4	7	8	8	0	BW	
Edgartown Great Pond			<u> </u>				
Beach, Edgartown	1	1	0	1	0	MVLBC	
Great Rock Bight Preserve,	•						
Chilmark	0	0	0	0	0	MVLBC	
Harthaven, Oak Bluffs	1	1	0	1	0	MAS	
Haystack Island, Edgartown	0	0	0	0	0	MAS	
James Pond Preserve, West							
Tisbury	0	0	0	0	0	MVLBC	

	Index Count <sup>a</sup>	Total Count <sup>b</sup>	No. detaile	No. pairs with	No.		
Site	(no. pairs)	(no. pairs)	No. chicks fledged <sup>c</sup>	fledge data <sup>c</sup>	unpaired adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Lagoon Pond-Maciel	pan 3j	pan 3/	neugeu	uutu	dudits	564160	
Marine/Ferry Boat Island,	0	0	0	0	0	MAS	
Tisbury	-		-	-			
Lamberts Cove West,							
Tisbury	1	1	3	1	0	BW	
Leland / East Beach,							
Edgartown	6	6	2	6	0	TTOR	
Lighthouse Beach,							
Edgartown	3	3	10	3	0	BW	
Little Beach / Eel Pd.,							
Edgartown	10	10	8	10	0	BW	
Little Gravel Is., Oak Bluffs	0	0	0	0	0	MAS	
Little Neck, Edgartown	0	0	0	0	0	TTOR	
Lobsterville Beach,							
Aquinnah	5	5	6	5	0	MAS	
Long Point, West Tisbury	1	1	0	1	0	TTOR	
Joseph Sylvia State Beach,							
Edgartown	0	0	0	0	0	MAS	
Lucy Vincent Beach,							
Chilmark	1	1	4	1	0	BW	
Menemsha Neck Preserve,	_	_	_				
Aquinnah	0	0	0	0	0	MVLBC	
Mink Meadows, Tisbury	2	2	2	2	0	MAS	
Moshup Beach, Aquinnah	0	0	0	0	0	MVLBC	One non-territorial unpaired adult
Nomans Land Island NWR,	ND			<u> </u>	NE		Circle concerns a tride to day Constantial I
Chilmark	ND	ND	ND	0	ND	USFWS	Single survey outside Index Count period
North Neck Highlands	ND		ND		ND		Single survey systemeter landsy County as yield
Preserve, Edgartown	ND	ND	ND	0	ND	MVLBC	Single survey outside Index Count period
Norton Point Beach, Edgartown	16	16	4	16	0	MAS	
-	-	16	4		0		
Oyster Pond, Edgartown	0	-	0	0	0	BW	
Paqua Pond, Edgartown	0	0	0	0	0	BW	

	Index Count <sup>a</sup> (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	datac	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Paul's Point, West Tisbury	1	1	0	1	0	BW	
Pease's Pond, Edgartown	ND	ND	ND	0	ND	BW	Limited surveys
Philbin Beach, Aquinnah	1	1	1	1	0	BW	
Quammox Preserve,			_	_			
Edgartown	0	0	0	0	0	MVLBC	
Quansoo, Chilmark	4	4	5	4	0	MAS	
Quenomica Preserve South							
Edgartown	0	0	0	0	0	MVLBC	
Sarson Is., Oak Bluffs	0	0	0	0	0	MAS	
Sepiessa Point Reservation,							
West Tisbury	0	0	0	0	0	MVLBC	
Seven Gates, West Tisbury	1	1	2	1	0	BW	
Short Cove Preserve, West							
Tisbury	0	0	0	0	0	MVLBC	
South Beach, Edgartown	0	ND	ND	0	ND	BW	Single survey during Index Count period
Spring Point, Chilmark	0	ND	ND	0	ND	BW	Single survey during Index Count period
Squibnocket Beach/Long							
Beach, Chilmark	2	2	2	2	0	BW	
Squibnocket Pond							
Reservation, Aquinnah	3	3	2	3	0	MVLBC	
Stonewall Beach, Chilmark	0	0	0	0	0	BW	
Sylvia State Beach							
Edgartown, Edgartown	0	0	0	0	0	MAS	
Sylvia State Beach Oak							
Bluffs, Oak Bluffs	2	2	0	2	0	MAS	
Tashmoo Preserve, Tisbury	0	0	0	0	0	MVLBC	
Tisbury Great Pond Beach,							
West Tisbury	0	0	0	0	0	MVLBC	
Wasque, Edgartown	2	2	0	2	0	TTOR	
Watcha Pond, West Tisbury	0	0	0	0	0	BW	
West Tashmoo, Tisbury	3	3	7	3	0	BW	

	Index Count <sup>a</sup>	Total Count <sup>b</sup>		No. pairs with	No.		
Cite	(no.	(no.	No. chicks	fledge	unpaired adults <sup>d</sup>	Course	Nexes
Site Wilfrids Pond Preserve,	pairs)	pairs)	fledged <sup>c</sup>	datac	adults	Source <sup>e</sup>	Notes <sup>f</sup>
,	0	0	0	0	0		
Tisbury Yorke - Allen Point,	0	0	0	0	0	MVLBC	
Edgartown	0	0	0	0	0	MAS	
NANTUCKET	0	0	0	0	0	IVIAS	
40th Pole, Nantucket	3	3	3	3	0	Nantucket	
Capaum Pond, Nantucket	1	1	0	1	0	NCF	Pair also nested at Washing Pond East
Chase Links, Nantucket	ND	ND	ND	ND	ND	MAS	Not surveyed in 2023
Coatue, Nantucket	16	17	20	17	0	NCF	
Coatue, Nantucket	0	0	20	0	0	TTOR	
Coskata-West Beach,	0	0	0	0	0	TIOK	
Nantucket	4	4	4	4	0	TTOR	
Coskata-East Beach,	4	4	4	4	0	TIOK	
Nantucket	0	0	0	0	0	TTOR	
Dionis Beach, Nantucket	3	3	10	3	0	Nantucket	
Eel Point, Nantucket	11	14	9	14	0	NCF	
Great Point, Nantucket	2	3	1	3	0	TTOR	One pair renested at The Galls
Hallowell Lane Beach,		5	<b>±</b>	5	Ŭ	Hok	
Nantucket	3	3	5	3	0	Nantucket	
Hither Creek, Nantucket	0	0	0	0	0	MAS	
Hoicks Hollow, Nantucket	ND	ND	ND	0	ND	MAS	Not surveyed in 2023
Hummock and West Hummock Ponds,							
Nantucket	0	0	0	0	0	NCF	
Jetties Beach, Nantucket	1	1	4	1	0	Nantucket	
Little Neck, Nantucket	0	0	0	0	0	NCF	
Long Pond, Nantucket	0	0	0	0	0	NCF	
Low Beach, Nantucket	4	4	5	4	0	Nantucket	
Madaket Beach, Nantucket	1	1	0	1	0	Nantucket	
Millie's Bridge, Nantucket	0	0	0	0	0	MAS	
Monomoy Creeks,							
Nantucket	0	ND	ND	0	ND	NCF	Limited surveys

	Index Count <sup>a</sup> (no.	Total Count <sup>b</sup> (no.	No. chicks	No. pairs with fledge	No. unpaired		
Site	pairs)	pairs)	fledged <sup>c</sup>	data <sup>c</sup>	adults <sup>d</sup>	Source <sup>e</sup>	Notes <sup>f</sup>
Muskeget Island, Nantucket	7	7	9	6	0	Nantucket	
Polpis Harbor (Medouie							
Creek and Pocomo	0	0	0	0	0	NCF	
Meadows), Nantucket	0	0	0	0	0		
Quaise Point, Nantucket	0	0	0	0	0	Nantucket	
Quidnet/Sesachacha	1	2	0	2	0	MAS	
Pond/Greenhills, Nantucket	1	2	0	2	0	NCF	
Sheep Pond, Nantucket	0	-	0	0			
Smith's Point, Nantucket	U	0	0	0	0	MAS	
Smith Point / Esther Is., Nantucket	4	4	11	4	0	Nantucket	
South Pastures	4	4	11	4	0	Nantucket	
(Madequecham Valley to							
Tom Nevers), Nantucket	0	ND	ND	0	ND	NCF	Limited surveys
Squam Pond, Nantucket	0	0	0	0	0	NCF	
Squam Pond, Nantucket	2	2	0	2	0	MAS	
Surfside/Western Ave.,	2	Ζ	0	2	0	IVIAS	
Nantucket	1	1	2	1	0	Nantucket	
The Galls, Nantucket	2	2	1	2	0	TTOR	One pair first nested at Great Point
The Glades, Nantucket	0	0	0	0	0	TTOR	
The Haulover, Nantucket	1	0	0	1	0	NCF	
Tom Nevers, Nantucket	0	0	0	0	0	Nantucket	
Tuckernuck Is Bigelow's	0	0	0	0	0	Nantucket	
Point, Nantucket	2	4	0	4	0	TLT	
Tuckernuck Is. – Charlie's					-		
Point/South Beach,							
Nantucket	2	2	2	2	0	TLT	
Tuckernuck Is East Pond,							
Nantucket	0	0	0	0	0	TLT	
Tuckernuck Is North							
Pond2, Nantucket	3	3	3	3	0	TLT	

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>
Tuckernuck Is Whale							
Point, Nantucket	9	9	2	9	0	TLT	
UMass Field Station,							
Nantucket	0	0	0	0	0	NCF	
Washing Pond, Nantucket	1	2	0	2	0	Nantucket	One pair first nested at Capaum Pond
Wauwinet, Nantucket	0	0	0	0	0	MAS	
187 Eel Point, Nantucket	2	3	3	3	0	Nantucket	

<sup>a</sup> Index Count = number of pairs counted between 1-9 June 2023, 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  $\geq$  35 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, 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, TTO R = 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.