

Location	Number of pairs		No. chicks fledged ^c	No. pairs with fledge data ^c	Source ^d
	Index Count ^a	Total Count ^b			
Dionis Beach	0	0	0	0	VT
Jetties Beach	1	1	0	1	VT
Quaise Point	0	0	0	0	VT
Ram Island	0	0 ^v	0	0	KB, JL
Tuckernuck Island	4	4	6	4	RV
Muskeget Island	7 ^w	7 ^w	14	7 ^w	RV, SA, SZ
UNADJUSTED TOTALS	522	555^x	612	552^y	
ADJUSTED TOTALS	-	538^z	-	535^{aa}	

^a Index Count = number of territorial pairs counted between 1-9 June, 2002, the standardized Index Count period for the Atlantic Coast population.

^b Total Count = total number of territorial pairs present during all or a portion of the breeding season.

^c Chicks fledged are defined as chicks ≥ 25 days of age or observed in flight, whichever occurs first. Number of pairs with fledge data includes all pairs for which it was determined how many chicks fledged; includes pairs that did not nest, pairs that nested unsuccessfully, and pairs with broods from which no chicks fledged.

^d Key to sources: AA = Alyson Arnold, AD = Adam DiNuovo, AW = Anthony Waring, BC = Brendon Courtot, BP = Bruce Perry, BW = Barbara Walsh, CD = Cathy Davis, CE = Chris Egan, CM = Carolyn Mostello, CS = Cheryl Swinconeck, CSI = Cynthia Slaughter, DG = David Gould, DM = Deborah Melvin, DS = Debra Swanson, DSc = Don Scott, DSe = Dick Seed, DW = Don Wardwell, ES = Eric Schneider, FI = Franz Ingelfinger, FZ = Francoise Zurif, GP = Grier Potter, HB = Holly Busse, JB = Jennifer Benson, JBo = Jamie Bogart, JHa = Jeremy Hatch, JI = Joe Iafrate, JL = Jerome Light, Jr., JLe = Jessica Lerner, JM = James Marcellos, JMa = John Maclaine, JP = James Patterson, JPa = Jim Panaccione, JPl = Jennifer Pleasant, JR = Julie Russell, KB = Karen Beattie, KC = Kate Conde, KK = Katy Kughen, KL = Katie L'Heureaux, KP = Kate Porter, KPa = Kelly Pawluczzonek, KS = Karrie Silva, KW = Keith Williams, LA = Lou Allard, LB = L. Bourret, LJ = Luanne Johnson, LR = Lloyd Raleigh, MB = Matt Bailey, MH = Mary Hake, MJ = Martha Jason, MJa = Matt James, ML = M. Lane, MM = Mike Magnifico, MQ = Marie Quintin, MR = Melissa Rechner, MZ = Margo Zdravkovic, NB = Nathaniel Bellinger, ND = Nathan Durawa, NDo = N. Donkin, PC = Phoebe Costensan, PF = Paul Fulcher, RCu = Robert Culbert, RK = Russ Keyes, RV = Richard Veit, SA = Sasha Auer, SD Sarah Delaney, SHo = Sharyn Hood, SJ = Susan Jones, SKo = Stephanie Koch, SL = Steve Liptay, SLe = Sam Lewis, SM = Scott Melvin, SMA = Sharon Marino, SvO = Susi von Oettingen, SZ = Soheil Zendehe, SZa = Sarah Zastrow, TC = Tracy Curley, VT = Vincent Todd

^e Salisbury Beach –North is the section of Salisbury Beach from the New Hampshire border south to the center of the town of Salisbury Beach. Salisbury Beach-South is the section of beach from the center of the town of Salisbury Beach south to the Merrimac River.

^f nd = no data available

^g Saquish Beach was reported as part of Duxbury Beach prior to the 2001 report.

^h Ellisville includes both Ellisville State Park and the private beach along the south side of Ellisville Harbor.

ⁱ A pair of plovers was observed scraping at Ridgevale Beach in early May, and a single bird was observed on 9 June, but no nests were found. No pairs were tallied for this site because of lack of evidence of at least 2 weeks of site occupancy with territorial and courtship behavior.

^j The Index Count for Nauset Spit does not include a pair, the male of which was found dead inside a predator enclosure on 29 May.

^k Data for Duck Harbor and Bound Brook were reported as part of Jeremy Point/Great Island prior to 2001.

^l Pair 17 at Race Point –South was present for only 17 days (21 June–7 July), but exhibited territorial and courtship behavior during that time. It is included in the Total Count and count of pairs with fledge data for Race Point-South, but not in regional or state tallies (presumably this late pair had already been counted elsewhere).

^m No plovers were observed at Cobbly Beach or Quicks Hole Beach, on Pasque Island during a visit on 18 June.

ⁿ A single plover was seen at Oyster Pond on 5 June.

^o This site also includes the Lewis property and Long Point Wildlife Refuge.

^p Although a pair of plovers was observed at Moshup Trail/Philbin Beach in mid-May, it was believed to have been present less than 2 weeks and so is not reported in Index Count or Total Count for this site.

^q Observers suspected that pair #1 at the Galls (nest abandoned on 29 May) subsequently moved to Great Point and was present during the Index Count at both locations. Although reported in the Index Count for both sites, this pair is tallied only once in regional and state Index Count totals.

^r Observers suspected that both pairs that nested at The Galls subsequently moved to Great Point and re-nested. Each pair is included in Total Counts for both The Galls and Great Point, but only one is tallied in regional and state Total Counts and counts of pairs with fledge data.

^s Coskata-West Beach refers to the beach along the Nantucket Sound side of Coskata, from the south end of The Galls south and west to the boundary of Coatue. This is the same area that was referenced as Coskata-North Beach in 1993 and as part of The Galls in 1991 and 1992. Census data for Great Point, The Galls, and Coskata-West Beach were not reported separately in 1996 or 1997.

^t Coskata-Inner Trail refers to the inland trail running south and west from Coskata toward Coatue. Coskata-East Beach refers to the beach along the eastern (Atlantic) side of Coskata, including the washover at The Glades. Coskata Inlet is the inlet from Nantucket Harbor into Coskata Pond.

^u Low Beach/Tom Nevers runs from Siasconset south and west and includes the beach in front of Tom Nevers Head. In 1999, this site was split and reported as two sites: Low Beach/Tom Nevers, and Low Beach-Siasconset.

^v One adult was observed feeding at Ram Island (opposite Quaise Point) on 8 July.

^w Incomplete data suggest that 1-2 additional pairs may have been present at Muskeget.

^x The *Unadjusted Total Count* is the sum of the Total Counts reported at each site, not adjusting for potential double-counting.

^y The *Unadjusted total number of pairs with fledge data* is the sum of the values reported at each site, not adjusting for potential double-counting.

^zThe *Adjusted Total Count* is the midpoint between the *Index Count* and the *Unadjusted Total Count*, rounded to the nearest whole number of pairs.

^{aa} The *Adjusted total number of pairs with fledge data* is calculated by multiplying the unadjusted total pairs with fledge data by the ratio of the Adjusted Total Count to the Unadjusted Total Count, and rounding to the nearest whole number of pairs.

Table 2. Comparison of Piping Plover nest success in Massachusetts, 2002, with and without predator exclosures.

Fate of nests	Number of nests (%) ^a	
	With exclosure	Without exclosure
Successful ^b	247 (71)	94 (28)
Unsuccessful	103 (29)	241 (72)
Total	350 (100)	335 (100)

^a Not included in this table are 97 nests lost to flooding (48 exclosed, 49 unexclosed) that presumably would have been lost regardless of whether or not exclosures were used.

^b Nests were considered successful if they hatched ≥ 1 egg.

Table 3. Comparison of Piping Plover hatching success in Massachusetts, 2002, with and without predator exclosures.

Fate of eggs	Number of eggs (%) ^a	
	With exclosure	Without exclosure
Hatched	834 (64)	257 (27)
Depredated/failed	462 (36)	708 (73)
Total	1,296 (100)	965 (100)

^a Not included in this table are 289 eggs lost to flooding (188 exclosed, 101 unexclosed) that presumably would have been lost regardless of whether or not exclosures were used.

Table 4. Reported causes of Piping Plover nest failures (n = 441) in Massachusetts, 2002.

Cause of nest failure	<u>Number of nests</u>		Total
	With exclosure	Without exclosure	
Abandonment	80	36	116
Unknown predator	3	76	79
Overwash/flooding ^a	48	49	97
Crow	1	40	41
Gull	0	19	19
Fox	4	14	18
Skunk	6	4	10
Coyote	1	9	10
Grackle	0	4	4
Opposum	0	4	4
Vandalism	1	2	3
Eggs infertile	2	0	2
Other	4 ^b	18 ^c	22
Unknown	0	16	16
Total	150	291	441

^a Overwash /flooding includes nests lost to overwash from high tides or flooding from heavy rain.

^b Four exclosed nests lost to “other” causes were reported lost to: coyote or fox (n = 1), suspected rat predation (1), and gradual unexplained disappearance of eggs from inside exclosures (2).

^c Eighteen unexclosed nests lost to “other” causes were reported lost to: crow, skunk, or gull (n = 5), coyote or dog (4), skunk or fox (3), coyote or fox (1), crow or gull (1), crow or coyote (1), wind-blown fencing that fell on eggs (1), abandonment or unknown predator (1), and 1 egg disappeared for unknown reasons and the remaining 2 eggs were subsequently lost to overwash (1).

Table 5. Suspected causes of Piping Plover nest abandonments (n = 116) in Massachusetts, 2002.

Cause of nest abandonment	Number of nests		Total
	With enclosure	Without enclosure	
Unknown	35	30	65
Adult killed/died ^a	10	0	10
Predator harassment ^b	15	0	15
Severe inclement weather ^c	10	2	12
Human disturbance/harassment	6	0	6
Territorial dispute with other PIPL pair	3	2	5
Exclosure installation	1	0	1
Other ^d	0	2	2
Total	80	36	116

^a “Adult killed/died” included 1 adult suspected killed by a Northern Harrier, 2 by suspected avian predators, 1 by a fox, 1 by a cat, 2 by unidentified predators, and 3 by unidentified causes.

^b “Predator harassment” included harassment by fox (6 nests), crow (3), coyote or dog (2), skunk (1), cat (1), and unidentified predator (2).

^c “Severe inclement weather” included strong winds and heavy rain.

^d “Other” included 1 unexclosed nest abandoned after partial egg depredation by an unidentified predator, and 1 unexclosed nest where the eggs failed to hatch and were abandoned after 40 days of incubation.

