

Piping Plover Nesting Results in New Jersey: 2012

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One hundred twenty-one (121) pairs of piping plovers nested in New Jersey in 2012, a 9% increase compared to 2011 (111 pairs). The statewide population trend had been flat over the previous four years (111, 105, 108, and 111 pairs from 2008-2011, respectively). Despite the increase in nesting pairs in 2012, the population remained about average for the years since federal listing (119 pairs) and substantially below the peak of 144 pairs in 2003.

The total number of adults recorded for the entire nesting season (243) was nearly the same as the count during the date-restricted survey conducted June 1-9 (236). However, the number of pairs tallied during the entire nesting season (121) was higher than those counted during the date-restricted census (106), which is a typical survey result in New Jersey. Variations in the methodologies used by the U.S. Fish and Wildlife Service – Edwin B. Forsythe NWR in tabulating breeding pairs during the date-restricted survey account for nearly all the difference between the final season and the census pair counts. Most (19 of 24) of the “unpaired” piping plovers recorded during the census survey were reported from Holgate and Little Beach.

Although the percentage of pairs nesting in Northern Monmouth County dropped slightly in 2012 compared to recent years, that region, by far, still accounted for the most pairs in the state (52 pairs or 43% of the statewide total). Nearly all of those pairs nested at Sandy Hook (50 pairs or 41% of the statewide total). The region comprised of Holgate, Little Beach, and North Brigantine Natural Area accounted for the next highest concentration of nesting pairs (40 pairs or 33% of the statewide total). That region accounted for nearly all of the increase in nesting pairs in 2012. Little or no change was recorded in the other regions of the state in 2012.

There were a few small gains and losses of nesting pairs at individual sites in 2012 compared to 2011, but little significant change. The one exception was Holgate, which jumped to 14 pairs in 2012 (from 6 pairs in 2011). Combined with a modest increase at North Brigantine Natural Area (8 pairs in 2012 vs. 5 in 2011), those two sites accounted for nearly all of the increase in nesting pairs in 2012.

Pairs nested at 22 sites, down slightly from 2011 (24 sites) and well below the peak count of 30 sites recorded in both 2004 and 2005. New Jersey Division of Fish and Wildlife (NJDFW) monitored 12 of the active nesting sites (55% of the sites statewide), accounting for 36 nesting pairs (30% of the nesting pairs statewide). NJDFW typically monitors about half of the state's active sites (i.e. sites where nests are located), but the total number of active pairs monitored at NJDFW sites remained low in 2012, the third consecutive year that trend occurred. The low percentage of pairs monitored by NJDFW is the result of less suitable habitat conditions at sites they monitored and the higher percentage of pairs now present at Sandy Hook and Holgate/Little Beach (which are not monitored by NJDFW). NJDFW also regularly monitored 16 other potential breeding sites; although breeding behavior of various levels was observed at about half (7) of those sites, no nests were located or pairs did not persist for a significant portion of the breeding season.

Other sites in the state were monitored by various cooperators, including the National Park Service (Gateway National Recreation Area-Sandy Hook Unit); the U.S. Fish and Wildlife Service-Edwin B. Forsythe National Wildlife Refuge (Holgate and Little Beach) and Cape May National Wildlife Refuge (Two-Mile Beach and Coast Guard LSU); the U.S Coast Guard (Coast Guard LSU and Cape May Training Center); The Nature Conservancy (Cape May Migratory Bird Refuge), and the Conserve Wildlife Foundation of New Jersey (various sites throughout the state in conjunction with NJDFW). These cooperators provided population and reproductive success data from their sites to NJDFW so that we could compile and analyze nesting data for the entire state.

Statewide pair-nest success (the percentage of pairs that successfully hatch at least one nest) was down in 2012 compared to 2011 (67% vs. 77%, respectively), but average for the period since federal listing (67%). Looking at just NJDFW-monitored sites, pair-nest success was also down in 2012 compared to 2011 (56% vs. 63%, respectively), and was below average for NJDFW-monitored sites for the period since federal listing (66%).

The statewide fledgling rate, which includes data collected and provided by all the state cooperators, was 0.72 fledglings per pair. It was sharply down from the 2011 rate (1.18 fledglings/pair), only about half of the record 2010 level (1.39 fledglings/pair), and well below both the 1.50 fledglings per pair recovery goal and the 1.24 fledglings per pair range-wide threshold for population maintenance established in the USFWS Recovery Plan for the Atlantic Coast population of piping plovers (USFWS, 1996). Productivity at NJDFW-monitored sites (0.44 fledglings/pair for 36 pairs) was well below the 2012 statewide average, as well as below the rate for NJDFW-monitored sites in 2011 (0.77 fledges/pair).

Productivity varied considerably by individual site and region. The Northern Monmouth County region fledged 0.98 chicks per pair (52 pairs), one of the highest levels in the state (for areas where any significant portion of the population was located). However, this year's rate was notably below the high productivity levels in that region the past several years, which had driven a regional population increase in recent years. The region comprised of Holgate, Little Beach, and North Brigantine Natural Area, although representing a third of the state's 2012 breeding population (40 pairs), only recorded productivity of 0.50 fledglings per pair. Notably in that region, North Brigantine Natural Area did not fledge any chicks (8 pairs) and Holgate only fledged 3 chicks (14 pairs), driving down regional productivity. The southern region of the state (Stone Harbor Point to Cape May Point) recorded even lower productivity, just 0.22 fledglings per pair (18 pairs). Stone Harbor Point, in particular, contributed to the low productivity in that region (0.11 fledglings/pair for 9 pairs).

Flooding was the leading cause of nest failure statewide, accounting for just over a third (35%) of the overall failed nests (74). Abandonment and predation each accounted for about a quarter of the nest failures (24% and 23%, respectively). The exact cause of failure could not be determined for 18% of the failed nests. Nest abandonment was relatively high – there was no apparent pattern as to the causes on a statewide basis, but the majority of the abandonments occurred at Sandy Hook (10 of 18 or 56% of the statewide total). Of those abandoned nests at Sandy Hook, half were associated with exclosed nests and half with non-exclosed nests, so the predator exclosures themselves were not the key factor. Significant crow harassment was observed and was reported as a possible cause. Brood loss was difficult to determine, which is typical for piping plovers monitoring, so little data were collected and no statewide trend could be reported.

New Jersey's piping plover breeding population recorded its first significant statewide increase in five years in 2012. The increase came in response to two consecutive years of above average productivity, including record levels for the state in 2010. Because piping plover populations, for the most part, are closely correlated to productivity in the prior year or two, the population increase in 2012 followed the expected trend. Nonetheless, because the statewide population has been low the past four years, it is now just climbing back to the average level for the period since federal listing, and is still well below the peak of 144 pairs in 2003. Furthermore, productivity fell off significantly in 2012 to about half of the USFWS recovery goal and below levels that are believed necessary to maintain the population. Therefore, it is not clear if the increase in the piping plover breeding population seen in New Jersey in 2012 will be part of a long-term trend needed to contribute to range-wide recovery or is just a short-term upwards bump.

Literature Cited

U.S. Fish & Wildlife Service. 1996. Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan. Hadley, MA. 258 pp.

Table 1. Number of pairs of piping plovers at New Jersey nesting sites: 2003-2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<i>Sandy Hook NRA</i>	38	32	22	22	30	32 ¹	35	45	49	50
<i>Coast Guard</i>	8	7	3	4	4	4	4	5	4	4
<i>North Beach</i>	9	10	6	4	8	8	9	13	14	14
<i>North Gunnison</i>	5	3	2	3	4	7	9	9	9	13
<i>South Gunnison</i>	1	1	0	0	1	2	5	5	4	5
<i>D-Lot</i>	0	0	0	0	0	0	0	0	1	0
<i>Skeleton Hill Island</i>	0	0	0	0	0	0	0	0	1	0
<i>Critical Zone</i>	4	3	3	3	4	4	2	6	5	6
<i>Hidden Beach</i>	4	3	3	3	4	2	3	3	5	4
<i>Fee Beach</i>	6	4	4	4	4	5 ¹	3	3	5	3
<i>South Fee Beach</i>	1	1	1	1	1	2 ¹	0	1	1	1
Sea Bright North	7	5	7	7	8	8	6	3	2	2
Monmouth Beach North	2	4	3	3	1	1	1	2	0	0
Seven Presidents Park	1	1	1	2	3	3	2	2	2	0
Long Branch	1	0	0	0	0	0	0	0	0	0
Region 2 subtotal	49	42	33	34	42	44	44	52	53	52
Sea Girt - Wreck Pond	1	1	1	0	1	0	1	0	0	1
Sea Girt - NGTC	0	0	0	0	1	0	0	0	0	0
Island Beach SP - Dike	2	3	2	0	0	0	0	0	0	0
Barnegat Light	3	3	4	3	4	3	1	3	3	1
Region 3 subtotal	6	7	7	3	6	3	2	3	3	2
<i>Holgate</i>	13	16	13	16	14	11	7	10	6	14
<i>Little Beach</i>	19	19	11	12	17	12	10	13	17	18
North Brigantine NA	17	8	8	8	8	8	6	3	5	8
Region 4 subtotal	49	43	32	36	39	31	23	26	28	40
Seaview Harbor Marina	0	0	1 ¹	0	0	0	0	0	1	1
Ocean City - North	2	1	1 ¹	0	0	0	0	0	0	0
Ocean City - Center	8	8	5	7	4	3	1	0	1	0
Region 5 subtotal	10	9	6	7	4	3	1	0	2	1
Corson's Inlet SP	2	3	2	2	2	1	2	0	0	0
Strathmere NA	0	0	1	1	0	0	0	1	1	1
Strathmere (Upper Twp.)	1	1	1	0	0	0	0	1	2	2
Townsend's Inlet	1	1	1	0	0	0	0	0	0	0
Avalon - Dunes	8	8	5	4	5	4	4	5	5	5
Region 6 subtotal	12	13	10	7	7	5	6	7	8	8
Stone Harbor Point	6	9	10	17	17	11	15	9	10	9
Champagne Island	0	1	1	2	1	0	0	0	0	0
N. Wildwood - Hereford	3	4	3	3	2	1	2	2	1	1
<i>Two-Mile Beach</i>	2	1	1	1	2	0	0	1	0	0
<i>Cape May NWR</i>	0	0	0	0	1	0	0	0	0	0
<i>Coast Guard - LSU</i>	2	1	1	1	1	0	0	1	0	0
Coast Guard - TRACEN	4	1	3	0	2	1	0	0	0	2
Cape May City	0	1	0	0	0	1	1	0	0	0
Cape May Meadows	3	4	5	6	7	11	11	8	6	6
<i>The Nature Conservancy</i>	2	1	4 ¹	3	4	7	7	5	4	3
Cape May Point SP ¹	1	3	2 ¹	3	3	4	4	3	2	3
Region 7 subtotal	18	21	23	29	31	25	29	20	17	18
Total Pairs	144	135	111	116	129	111	105	108	111	121
Pairs at NJDFW sites	70	66	61	62	62	49	46	34	35	36

¹ The same pair nested at two nearby sites. Therefore "subtotals" and "totals" will be less than sum of individual sites.

Note: Sites in italics were monitored by agencies other than NJDFW: Sandy Hook NRA by the National Park Service, Holgate and Little Beach by USFWS - Edwin B. Forsythe NWR, Two-Mile Beach by USFWS - Cape May NWR, Cape May Meadows-TNC by The Nature Conservancy - Delaware Bayshores Office.

Table 2. New Jersey piping plover window census results: June 1-9 2012.

	State Census Count			Final Season Count		
	# Pairs	# Unpaired Adults	# Total Adults	# Pairs	# Unpaired Adults	# Total Adults
Sandy Hook Coast Guard	4	0	8	4	0	8
Sandy Hook North Beach	14	0	28	14	0	28
Sandy Hook North Gunnison	13	0	26	13	0	26
Sandy Hook South Gunnison	5	0	10	5	0	10
Sandy Hook Critical Zone	4	0	8	6	0	12
Sandy Hook Hidden Beach	4	0	8	4	0	8
Sandy Hook Fee Beach	3	0	6	3	0	6
Sandy Hook South Fee Beach	1	0	2	1	0	2
Sea Bright North	1	0	2	2	0	4
Monmouth Beach North	0	0	0	0	0	0
Monmouth Beach South	0	0	0	0	0	0
Seven Presidents Park	0	1	1	0	0	4
Long Branch	0	0	0	0	0	0
Region 2 subtotal	49	1	99	52	0	104
Belmar - Shark River Inlet	0	0	0	0	0	0
Sea Girt - Wreck Pond	1	0	2	1	0	2
Sea Girt - NGTC	0	0	0	0	0	0
Island Beach SP - Dike	0	0	0	0	0	0
Barneгат Light	1	1	3	1	1	3
Region 3 subtotal	2	1	5	2	1	5
Holgate	5	9	19	14	0	28
Little Beach	16	10	42	18	0	36
North Brigantine NA	7	1	15	8	0	16
Region 4 subtotal	28	20	76	40	0	80
Brigantine Beach	0	0	0	0	0	0
Brigantine - Inlet (Cove)	0	0	0	0	0	0
Seaview Harbor Marina	1	0	2	1	0	2
Ocean City - North	0	0	0	0	0	0
Ocean City - Center	0	0	0	0	0	0
Region 5 subtotal	1	0	2	1	0	2
Corson's Inlet SP	0	0	0	0	0	0
Strathmere Natural Area	2	0	4	1	0	2
Strathmere (Upper Twp.)	2	0	4	2	0	4
Townsend's Inlet	0	1	1	0	0	0
Whale Beach	0	0	0	0	0	0
Sea Isle	0	0	0	0	0	0
Avalon - North	0	0	0	0	0	0
Avalon - Dunes	5	0	10	5	0	10
Stone Harbor - Oceanfront	0	0	0	0	0	0
Region 6 subtotal	9	1	19	8	0	16
Stone Harbor Point	9	0	18	9	0	18
N. Wildwood - Hereford Inlet	1	0	2	1	0	2
2-Mile Beach - USFWS	0	0	0	0	0	0
2-Mile Beach - LSU	0	1	1	0	0	0
Coast Guard - TRACEN	2	0	4	2	0	4
Cape May City	0	0	0	0	0	0
Cape May Meadows - TNC	2	0	4	3	0	6
Cape May Meadows - CMPSP	3	0	6	3	0	6
Cape May Point Borough	0	0	0	0	0	0
Region 7 subtotal	17	1	35	18	0	36
Total	106	24	236	121	1	243

Table 3. New Jersey piping plover nesting summary by sites: 2012.

SITE	2012					
	Pairs	Pairs Hatched	Chicks Fledged	Pair Success	Fledge Rate	SP Fledge Rate
Sandy Hook NRA	50	43	51	0.86	1.02	1.19
<i>Coast Guard</i>	4	4	4	1.00	1.00	1.00
<i>North Beach</i>	14	13	13	0.93	0.93	1.00
<i>North Gunnison</i>	13	11	16	0.85	1.23	1.45
<i>South Gunnison</i>	5	5	6	1.00	1.20	1.20
<i>Critical Zone</i>	6	5	7	0.83	1.17	1.40
<i>Hidden Beach</i>	4	1	0	0.25	0.00	0.00
<i>Fee Beach</i>	3	3	5	1.00	1.67	1.67
<i>South Fee Beach</i>	1	1	0	1.00	0.00	0.00
Sea Bright North	2	0	0	0.00	0.00	0.00
Region 2 Subtotal	52	43	51	0.83	0.98	1.19
Sea Girt – Wreck Pond	1	1	2	1.00	2.00	2.00
Barnegat Light	1	1	1	1.00	1.00	1.00
Region 3 Subtotal	2	2	3	1.00	1.50	1.50
Holgate	14	6	3	0.43	0.21	0.50
Little Beach	18	10	17	0.56	0.94	1.70
North Brigantine NA	8	3	0	0.38	0.00	0.00
Region 4 Subtotal	40	19	20	0.48	0.50	1.05
Seaview Harbor Marina	1	1	0	1.00	0.00	0.00
Region 5 Subtotal	1	1	0	1.00	0.00	0.00
Strathmere NA	1	1	3	1.00	3.00	3.00
Strathmere (Upper Twp)	2	2	3	1.00	1.50	1.50
Avalon Dunes	5	4	3	0.80	0.60	0.75
Region 6 Subtotal	8	7	9	0.88	1.13	1.29
Stone Harbor Point	9	3	1	0.33	0.11	0.33
N. Wildwood - Hereford	1	0	0	0.00	0.00	0.00
Coast Guard - TRACEN	2	1	1	0.50	0.50	1.00
Cape May Meadows	6	5	2	0.83	0.33	0.40
<i>The Nature Conservancy</i>	3	2	0	0.67	0.00	0.00
Cape May Point SP	3	3	2	1.00	0.67	1.00
Region 7 Subtotal	18	9	4	0.50	0.22	0.44
All NJ sites TOTAL	121	81	87	0.67	0.72	1.07
NJDFW sites TOTAL	36	20	16	0.56	0.44	0.80
# Active Sites	22					

Data for Sandy Hook NRA provided by the National Park Service.

Date for Holgate and Little Beach provided by U.S. Fish and Wildlife Service - Edwin B. Forsythe NWR.

Data for Cape May Meadows-TNC provided by The Nature Conservancy - Delaware Bayshores Office.

All other data provided by N.J. Division of Fish and Wildlife - Endangered and Nongame Species Program.

Pair Success equals the percentage of pairs that hatched young (at least one chick observed).

Fledge Rate equals the number of chicks fledges per pair.

Successful Pair (SP) Fledge Rate equals the number of chicks fledged per pair that successfully hatched young.

Figure 1. New Jersey piping plover population and productivity: 1987-2012.

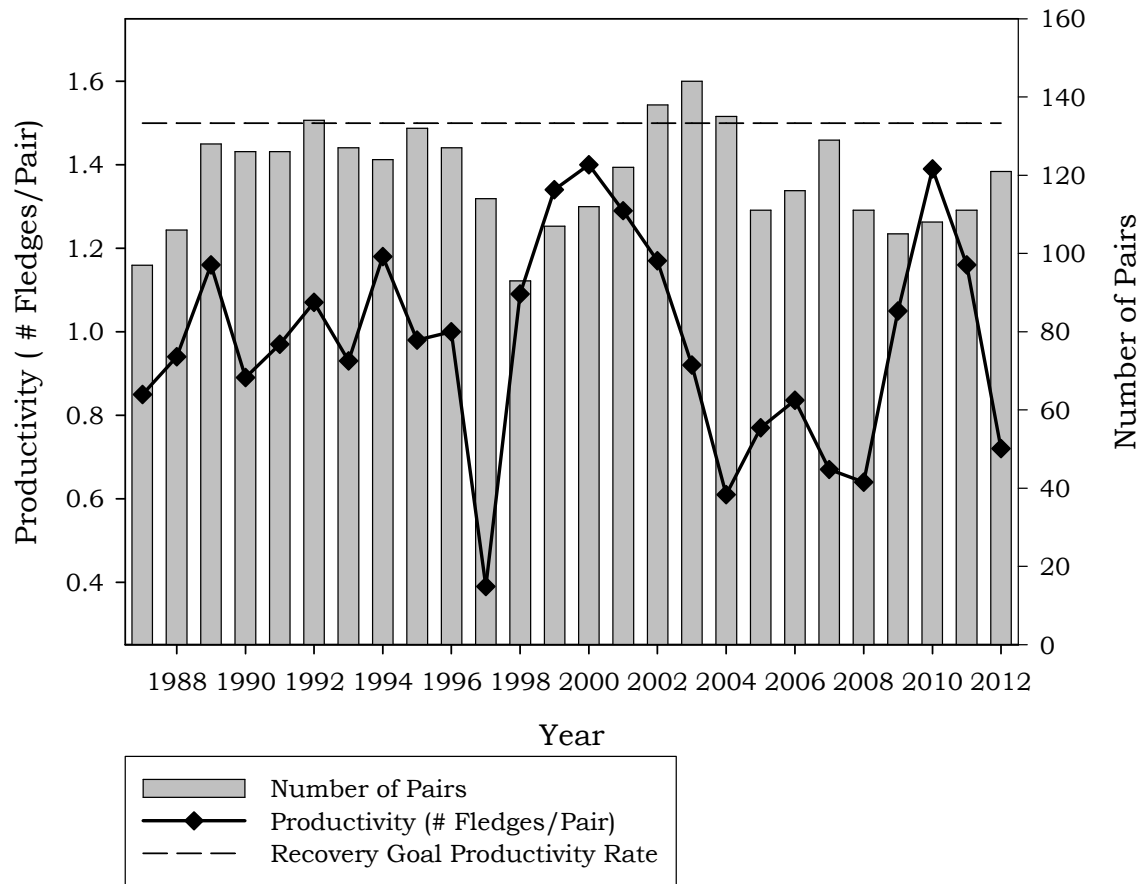


Figure 2. Causes of piping plover nest failure in New Jersey: 2012.

N=74

