

Piping Plover Nesting Results in New Jersey: 2013

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Photo Courtesy of Tom Reed

SUMMARY OF FINDINGS:

One hundred eight (108) pairs of piping plovers nested in New Jersey in 2013, an 11% decrease compared to 2012 (121 pairs). Discounting the increase in 2012, the population trend has been flat over the past six years, ranging from just 105-111 pairs. Furthermore, the 2013 nesting pair count was below the average for the years since federal listing (119 pairs) and substantially below the peak tally of 144 pairs in 2003.

The total number of adults recorded for the entire nesting season (221) was greater than the count during the date-restricted survey conducted June 1-9 (203). Likewise, the number of pairs tallied during the entire nesting season (108) was more than the pairs recorded during the date-restricted census (85), which is a typical survey result in New Jersey. Nearly all of the discrepancy between the final and date-restricted counts originated from Holgate and Little Beach, due to variations in the methodologies used by the USFWS – Edwin B. Forsythe NWR in tabulating breeding pairs during the date-restricted survey. Twenty-six (26) of the 33 “unpaired” adults recorded statewide on the date-restricted survey were reported at Holgate and Little Beach, and less than half of their final season pairs were detected (as pairs) during the date restricted survey.

Northern Monmouth County, as a region, continues to account for the most pairs in the state (45 pair or 42% of the statewide total). Nearly all of those pairs nested at Sandy Hook (43 pairs or 40% of the statewide total). However, Sandy Hook had the biggest drop in pairs (7) in 2013 compared to 2012 (43 vs. 50 pairs, respectively). The region comprised of Holgate, Little Beach, and North Brigantine Natural Area accounted for the next highest concentration of nesting pairs (41 pairs or 38% of the statewide total). The lower Cape May County region, consisting of Stone Harbor Point to Cape May Point, accounted for the rest of the decrease in statewide pairs recorded in 2013 (11 pairs vs. 18 in 2012).

Looking at the individual sites, overall, there were just minor fluctuations in pairs in 2013 versus 2012. A modest gain was recorded at Little Beach (23 pairs vs. 18 in 2012). A notable drop was recorded at Sandy Hook – North Gunnison (8 pairs vs. 13 in 2012). Stone Harbor Point fell to just six active pairs, continuing a long-term drop from its peak of 17 pairs in 2006 and 2007. Likewise, Cape May Meadows had only 3 pairs, down from its recent peak of 11 pairs in 2008 and 2009. Sea Bright North had no active pairs in 2013, down from a peak of 8 pairs in 2007 and 2008.

Pairs nested at 21 sites, about the same as in 2012 (22 sites), but well below the peak count of 30 sites recorded in both 2004 and 2005. The New Jersey Division of Fish and Wildlife-Endangered and Nongame Species Program (ENSP) monitored and managed just over half (12 or 57%) of the state's 21 active piping plover nesting sites. They also monitored 12 additional sites on a regular basis and several others less regularly, although no nests were found at those sites. 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 ENSP).

Statewide pair-nest success (the percentage of pairs that successfully hatch at least one nest) was the same in 2013 compared to 2012, as well as the average for the period since federal listing (67%). Sandy Hook was notably successful, with nearly all (95%) of its 43 pairs hatching young.

The statewide fledgling rate, which includes data collected and provided by all the state cooperators, was 0.85 fledglings per pair. This is a modest increase from 2012 (0.72 fledglings/pair), but still 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 (0.69 fledglings/pair for 29 pairs) rose compared to 2012 (0.44 fledglings/pair), but those sites continue to be less productive than the state as a whole.

As is typical, productivity varied considerably by individual site and region. The Northern Monmouth County region fledged 1.22 chicks per pair (45 pairs), continuing the recent trend of that being the most productive region in the state, largely as a result of strong productivity at Sandy Hook (1.23 fledglings/pair). Within Sandy Hook, the North Beach site was particularly productive (1.92 fledglings/pair based on 13 pairs). The region comprised of Holgate, Little Beach, and North Brigantine Natural Area, recorded only 0.59 fledglings per pair in 2013, similar to its low productivity in 2012 (0.50 fledglings/pair). Most striking in that region, Little Beach fledged just 7 chicks from 23 pairs, largely due to a very low hatch success rate (17% of pairs hatched young). The lower Cape May County region continued its recent low output with just 0.36 chicks fledged per pair (11 pairs). Of note, no chicks fledged from Cape May Meadows in 2013, a site which recorded robust productivity for several years after a habitat restoration was completed, but has suffered the past several years due to persistent crow activity and observed predation of piping plover eggs and chicks.

Predation was the leading known cause of nest failure statewide, accounting for about half (49%) of the failed nests (53). Of the nests destroyed by predators (26), just over half (54%) were attributed to mammals and 19% to avian species, with the remainder (27%) being undetermined. Flooding and abandonment were the next leading causes of nest failure (17% and 7%, respectively). The probable cause of nest failure could not be determined for about a quarter of the failed nests (23%).

CONCLUSION:

After a promising increase in New Jersey's piping plover breeding population recorded in 2012, the number of nesting pairs dropped in 2013, in line with the levels recorded in other recent years. Statewide counts ranged from 105-111 pairs in 2008-2011 and 2013; below the long-term average since federal listing (119 pairs). The long-term statewide population trend has been flat, but recent totals suggest the state may be experiencing a decline. Moreover, productivity has been weak the past two years, and because piping plover population is closely correlated to productivity in the prior year or two, a reversal of the decline should not be expected until productivity is significantly increased within the state. The low number of nesting pairs in 2013 was especially frustrating because Superstorm Sandy had enhanced habitat suitability at a number of locations along the New Jersey coast, creating an expectation that the population might rebound as new sites were colonized. Post-storm population increases for piping plovers are sometimes seen over a two-year period, so New Jersey might still see some recruitment benefit from the storm next year, although our relatively small state population and poor productivity over the past two years makes that possibility seem less likely.

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: 2004-2013.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<i>Sandy Hook NRA</i>	32	22	22	30	32 ¹	35	45	49	50	43
<i>Coast Guard</i>	7	3	4	4	4	4	5	4	4	3
<i>North Beach</i>	10	6	4	8	8	9	13	14	14	13
<i>North Gunnison</i>	3	2	3	4	7	9	9	9	13	8
<i>South Gunnison</i>	1	0	0	1	2	5	5	4	5	7
<i>D-Lot</i>	0	0	0	0	0	0	0	1	0	0
<i>Skeleton Hill Island</i>	0	0	0	0	0	0	0	1	0	0
<i>Critical Zone</i>	3	3	3	4	4	2	6	5	6	5
<i>Hidden Beach</i>	3	3	3	4	2	3	3	5	4	3
<i>Fee Beach</i>	4	4	4	4	5 ¹	3	3	5	3	4
<i>South Fee Beach</i>	1	1	1	1	2 ¹	0	1	1	1	0
Sea Bright North	5	7	7	8	8	6	3	2	2	0
Monmouth Beach North	4	3	3	1	1	1	2	0	0	2
Seven Presidents Park	1	1	2	3	3	2	2	2	0	0
Region 2 subtotal	42	33	34	42	44	44	52	53	52	45
Sea Girt - Wreck Pond	1	1	0	1	0	1	0	0	1	0
Sea Girt - NGTC	0	0	0	1	0	0	0	0	0	0
Island Beach SP - Dike	3	2	0	0	0	0	0	0	0	0
Barnegat Light	3	4	3	4	3	1	3	3	1	2
Region 3 subtotal	7	7	3	6	3	2	3	3	2	2
<i>Holgate</i>	16	13	16	14	11	7	10	6	14	12
<i>Little Beach</i>	19	11	12	17	12	10	13	17	18	23
North Brigantine NA	8	8	8	8	8	6	3	5	8	6
Region 4 subtotal	43	32	36	39	31	23	26	28	40	41
Seaview Harbor Marina	0	1 ¹	0	0	0	0	0	1	1	1
Ocean City - North	1	1 ¹	0	0	0	0	0	0	0	0
Ocean City - Center	8	5	7	4	3	1	0	1	0	0
Region 5 subtotal	9	6	7	4	3	1	0	2	1	1
Corson's Inlet SP	3	2	2	2	1	2	0	0	0	0
Strathmere NA	0	1	1	0	0	0	1	1	1	2 ¹
Strathmere (Upper Twp.)	1	1	0	0	0	0	1	2	2	4 ¹
Townsend's Inlet	1	1	0	0	0	0	0	0	0	0
Avalon - Dunes	8	5	4	5	4	4	5	5	5	3
Region 6 subtotal	13	10	7	7	5	6	7	8	8	8
Stone Harbor Point	9	10	17	17	11	15	9	10	9	6
Champagne Island	1	1	2	1	0	0	0	0	0	0
N. Wildwood - Hereford	4	3	3	2	1	2	2	1	1	1
<i>Two-Mile Beach</i>	1	1	1	2	0	0	1	0	0	0
<i>Cape May NWR</i>	0	0	0	1	0	0	0	0	0	0
<i>Coast Guard - LSU</i>	1	1	1	1	0	0	1	0	0	0
Coast Guard - TRACEN	1	3	0	2	1	0	0	0	2	1 ¹
Cape May City	1	0	0	0	1	1	0	0	0	1 ¹
Cape May Meadows	4	5	6	7	11	11	8	6	6	3
<i>The Nature Conservancy</i>	1	4 ¹	3	4	7	7	5	4	3	1
Cape May Point SP	3	2 ¹	3	3	4	4	3	2	3	2
Region 7 subtotal	21	23	29	31	25	29	20	17	18	11
Total Pairs	135	111	116	129	111	105	108	111	121	108
Pairs at NJDFW sites	66	61	62	62	49	46	34	35	36	29

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, and Cape May Meadows-TNC by The Nature Conservancy - Delaware Bayshores Office.

Table 2. New Jersey piping plover window census results: June 1-9 2013.

	State Census Count			Final Season Count		
	# Pairs	# Unpaired Adults	# Total Adults	# Pairs	# Unpaired Adults	# Total Adults
Sandy Hook Coast Guard	3	0	6	3	0	6
Sandy Hook North Beach	12	0	24	13	0	26
Sandy Hook North Gunnison	8	0	16	8	0	16
Sandy Hook South Gunnison	7	0	14	7	0	14
Sandy Hook Critical Zone	5	0	10	5	0	10
Sandy Hook Hidden Beach	3	0	6	3	0	6
Sandy Hook Fee Beach	4	0	8	4	0	8
Sandy Hook South Fee Beach	0	0	0	0	0	0
Sea Bright North	0	0	0	0	0	0
Monmouth Beach North	0	1	0	2	0	4
Monmouth Beach South	1	0	3	0	0	0
Seven Presidents Park	0	0	0	0	0	0
Long Branch	0	0	0	0	0	0
Region 2 subtotal	43	1	87	45	0	90
Belmar - Shark River Inlet	0	0	0	0	0	0
Sea Girt - Wreck Pond	0	1	1	0	1	1
Sea Girt - NGTC	0	0	0	0	0	0
Island Beach SP – Northern NA	0	0	0	0	0	0
Island Beach SP – Southern NA	0	1	1	0	1	1
Barneгат Light	2	0	4	2	0	4
Region 3 subtotal	2	2	6	2	2	6
Holgate	5	13	23	12	0	24
Little Beach	11	13	35	23	0	46
North Brigantine NA	5	0	10	6	0	12
Region 4 subtotal	21	26	68	41	0	82
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
Malibu WMA	0	0	0	0	0	0
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	1	0	2	2 ¹	0	4 ¹
Strathmere (Upper Twp.)	3	1	7	4 ¹	0	8 ¹
Townsend's Inlet	0	0	0	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	4	0	8	3	2	8
Stone Harbor - Oceanfront	0	0	0	0	0	0
Region 6 subtotal	8	1	17	8	2	18
Stone Harbor Point	6	0	12	6	0	12
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	0	0	0	1 ¹	0	2 ¹
Cape May City	1	0	2	1 ¹	0	2 ¹
Cape May Meadows - TNC	1	1	3	1	1	3
Cape May Meadows - CMPSP	1	1	3	2	0	4
Cape May Point Borough	0	0	0	0	0	0
Region 7 subtotal	10	3	23	11	1	23
Total	85	33	203	108	5	221

Table 3. New Jersey piping plover nesting summary by sites: 2013.

2013						
SITE	Pairs	Pairs Hatched	Chicks Fledged	Pair Success	Fledge Rate	SP Fledge Rate
Sandy Hook NRA	43	41	53	0.95	1.23	1.29
<i>Coast Guard</i>	3	3	2	1.00	0.67	0.67
<i>North Beach</i>	13	12	25	0.92	1.92	2.08
<i>North Gunnison</i>	8	8	9	1.00	1.13	1.13
<i>South Gunnison</i>	7	7	4	1.00	0.57	0.57
<i>Critical Zone</i>	5	5	3	1.00	0.60	0.60
<i>Hidden Beach</i>	3	2	4	0.67	1.33	2.00
<i>Fee Beach</i>	4	4	6	1.00	1.50	1.50
Monmouth Beach North	2	1	2	0.50	1.00	2.00
Region 2 Subtotal	45	42	55	0.93	1.22	1.31
Barnegat Light	2	1	3	0.50	1.50	3.00
Region 3 Subtotal	2	1	3	0.50	1.50	3.00
Holgate	12	9	12	0.75	1.00	1.33
Little Beach	23	4	7	0.17	0.30	1.75
North Brigantine NA	6	3	5	0.50	0.83	1.67
Region 4 Subtotal	41	16	24	0.39	0.59	1.50
Seaview Harbor Marina	1	1	2	1.00	2.00	2.00
Region 5 Subtotal	1	1	2	1.00	2.00	2.00
Strathmere NA	2 ¹	1	1	0.50	0.50	1.00
Strathmere (Upper Twp)	4 ¹	3	1	0.75	0.25	0.33
Avalon Dunes	3	3	2	1.00	0.67	0.67
Region 6 Subtotal	8	7	4	0.88	0.50	0.57
Stone Harbor Point	6	1	0	0.17	0.00	0.00
N. Wildwood - Hereford	1	1	1	1.00	1.00	1.00
Coast Guard - TRACEN	1 ¹	0	0	0.00	0.00	0.00
Cape May City – Poverty	1 ¹	1	3	1.00	3.00	3.00
Cape May Meadows	3	2	0	0.67	0.00	0.00
<i>The Nature Conservancy</i>	1	1	0	1.00	0.00	0.00
Cape May Point SP	2	1	0	0.50	0.00	0.00
Region 7 Subtotal	11	5	4	0.45	0.36	0.80
All NJ sites TOTAL	108	72	92	0.67	0.85	1.28
NJDFW sites TOTAL	29	17	20	0.59	0.69	1.18
# Active Sites	21					

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 the N.J. Division of Fish and Wildlife – Endangered & 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 fledged per pair.

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

¹ The same pair nested at two nearby sites. Therefore “subtotals” and “totals” will be less than individual sites.

Figure 1. Piping plover population and productivity in New Jersey: 1987-2013

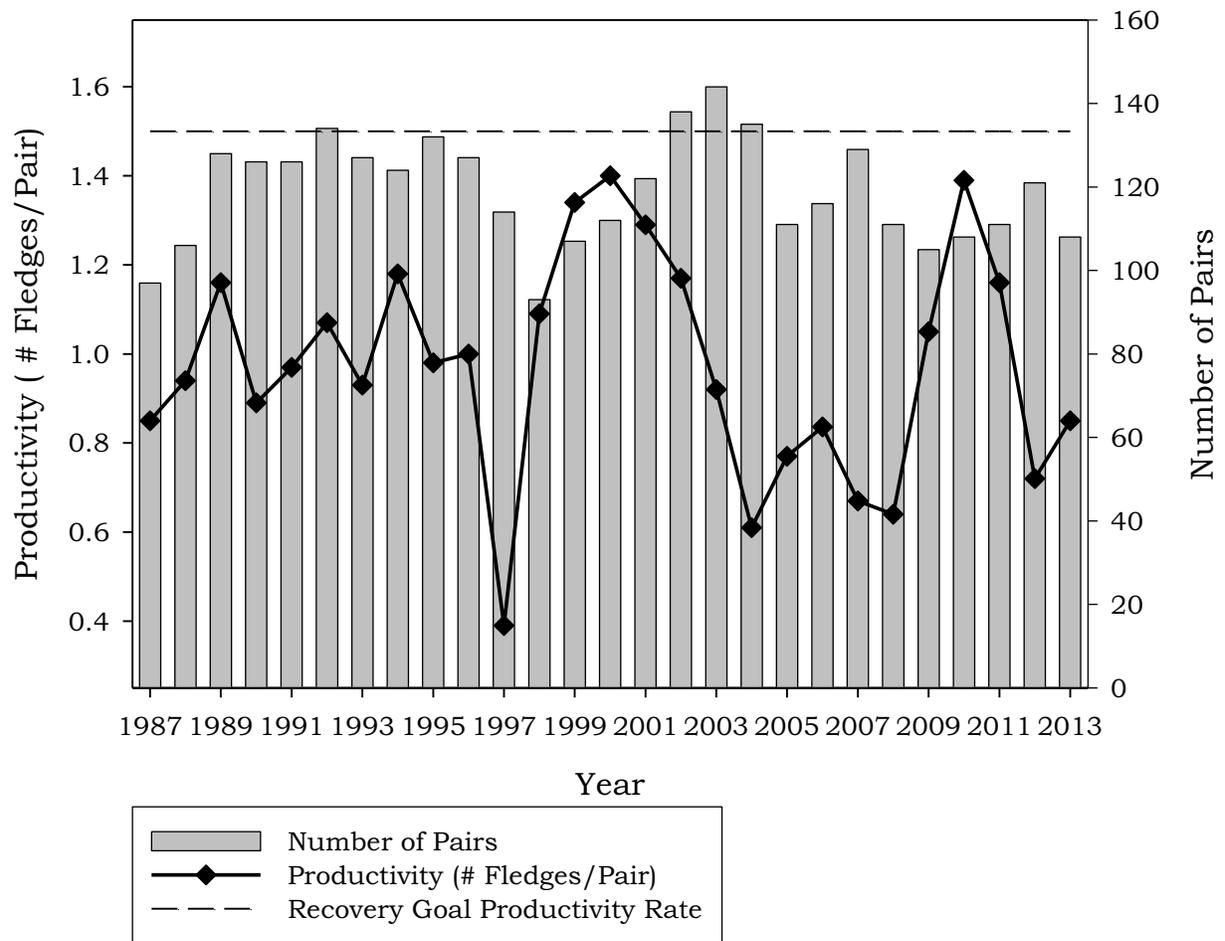


Figure 2. Causes of piping plover nest failure in New Jersey: 2013

