

Piping Plover Nesting Results in New Jersey:2024

Prepared by

Emily Heiser and Christina “Kashi” Davis

New Jersey DEP Fish and Wildlife

Endangered and Nongame Species Program



Photo by Angela Previte

SUMMARY OF FINDINGS:

Eighty-nine (89) pairs of Piping Plovers nested in New Jersey in 2024, a 25% decrease in population size from 2023 and the lowest recorded pair number in the state since intensive monitoring began in 1987. The pair number in 2024 is well-below both the long-term average (116 pairs) and the state’s peak population of 144 pairs in 2003. Statewide productivity in 2024 (0.54 fledglings/pair) was about the same as 2023’s productivity (0.53 fledglings/pair) but well-below both the long-term average (1.01 fledglings/pair) and the federal recovery goal (1.50 fledglings/pair).

The total number of adults recorded for the entire nesting season (195 adults) was higher than the total number of adults recorded during the date-restricted Atlantic Coast census survey conducted June 1-9 (179 adults). The final number of pairs for the season (89 pairs) was higher than the pair number tallied during the date-restricted census period (76 pairs). Both the increase in the number of pairs and number of adults between the census and the end of the season is typical in New Jersey. Eighteen unpaired adults were recorded this season. It is possible that some of these unpaired adults nested and went undetected, but this is not likely for the majority of the bachelors. All of the marked unpaired adults (6) were known first-year birds that are often outcompeted by more experienced adults for territory and mates.

As has been the case in recent years, the Holgate unit of E.B. Forsythe National Wildlife Refuge remained the stronghold of the state’s population with the largest percentage of pairs (48 pairs or 54%). With the addition of Horseshoe Island (an undeveloped offshore island just east of Little Egg Inlet) as a nesting site in 2024, this area remains critical in the recovery of this species in the state and accounts for the highest proportion of the state’s population (51 pairs or 57%). The northern Monmouth County region (regions defined on Table 1) experienced a drastic 61% decline in population size compared to 2023 (15 pairs in 2024 vs. 38 pairs in 2023). This region accounted for 17% of the statewide total population. This decline was largely due to the loss of pairs at Sandy Hook, and the near total absence of pairs at other municipal beaches in Monmouth County. Sandy Hook, once the premiere nesting spot for Piping Plovers in New Jersey, declined 59% from 34 pairs in 2023 to 14 pairs in 2024 (and from a high count of 53 in 2015). The central Ocean County region accounted for 11% of the statewide total population (10 pairs). Cape May County accounted for 15% of the statewide total (13 pairs).

From a site level perspective, the most significant decline in pair numbers occurred at Sandy Hook’s North Beach. The site decreased 77% from 13 pairs in 2023 to 3 pairs in 2024. North Beach has a long history of hosting a high number of pairs since intensive monitoring of this species began in 1987. Pair numbers have not been this low at that site since 2006 (4 pairs). Other individual sites within Sandy Hook are also declining in

pair numbers. Similarly, Monmouth County had only one active nesting site outside of Sandy Hook that hosted one pair in 2024. A slight increase in pairs was noted at Island Beach State Park (1 pair in 2023, 2 pairs in 2024). Barnegat Light saw a slight decrease in pair numbers (8 pairs in 2023, 7 pairs in 2024). Holgate observed a modest decline in pairs (53 in 2023, 48 in 2024), and Little Beach hosted zero pairs for the first time since federal listing. In the southern portion of the state, Peck's Beach (inclusive of all Ocean City sites and Corson's Inlet State Park), saw a slight decrease in pair numbers (8 pairs in 2023, 6 pairs in 2024). Stone Harbor Point hosted 3 pairs in both 2023 and 2024. An increase in pairs was noted at Two Mile Beach between the Coast Guard's LORAN Support Unit and Cape May National Wildlife Refuge (2 pairs in 2023, 4 pairs in 2024).

Pairs nested at 20 sites statewide in 2024 with two sites gained and six sites lost from 2023. The most notable lost and gained active nesting sites occurred in Atlantic County with the loss of both Little Beach and North Brigantine Natural Area, and the addition of Horseshoe Island (3 pairs in 2024). New Jersey DEP Fish and Wildlife (NJFW) monitored nine active nesting sites (45% of the sites statewide), accounting for 23 nesting pairs (26% of the nesting pairs statewide). Pair dispersal across these state and municipal beaches has maintained some consistency over the last decade but lack of quality, low-disturbance nesting and foraging habitat keeps population levels low at these sites. NJFW also regularly monitored 13 other potential breeding sites with historic nesting records and/or highly suitable habitat; however, none of those sites yielded nests. While the majority of pairs remained on federal property (66 pairs or 74% of the statewide total), there was a significant 27% decline in pair numbers on federal property versus 2023 (90 pairs).

Statewide pair-nest success (the percentage of pairs that successfully hatch at least one nest) was low this year (55%). This is below the state's long-term average (68%) but comparatively higher than 2023 (47%). Pair-nest success was higher in 2024 in northern Monmouth County (40% in 2024, 16% in 2023) but still relatively low when looking at the long-term average for this region (72%). Pair-nest success was high (90%) in central Ocean County due to successes at Island Beach State Park and Barnegat Light. Holgate's pair-nest success (46%) was the lowest it's been since 2015 when the population began to increase at the site due to favorable habitat changes caused by Superstorm Sandy. Cape May County observed a moderately high pair-nest success rate in 2024 at 69%.

The cause of nest failure was determined in 79 of the 103 failed nesting attempts statewide. Depredation was the leading cause of nest failure (71 or 69%) for the twelfth consecutive year. Of those depredated nests, 45% were lost to mammals and half of those were lost to mink (16 or 50%). The remainder of mammalian depredated nest were lost to red fox (12 or 38%), raccoon (2 or 6%), coyote (1 or 3%) and undetermined mammal species (1 or 3%). Avian predators accounted for 9% (6) of depredated nests and 1% of nests were lost to ghost crabs (1). Nest abandonments accounted for 7 nest losses (7%) which is low for the state. Nest abandonment typically indicates adult mortality of one or both adults and is strongly linked to the use of predator exclosures. In 2024, the majority of nest abandonments were at nests that were not exclosed (6 or 86%). Flooding was particularly low in 2024 with only 1 nest lost (1%). The remaining causes of nest failure could not be determined (24 or 23%).

The statewide fledgling rate was 0.54 fledglings/pair, the third lowest recorded since monitoring efforts began in 1987. Productivity dropped well below the range-wide threshold for population maintenance (1.245 fledglings/pair) and the range-wide productivity goal (1.50 fledglings/pair) established in the USFWS Recovery Plan for Atlantic Coast Piping Plovers. The statewide productivity rate fell below the long-term state average (1.01 fledglings/pair 1987-2024). NJFW-monitored sites recorded 0.96 fledglings/pair which is above the long-term average for NJFW-monitored sites (0.94 fledglings/pair).

Productivity varied considerably by individual site and region. Fledge rates in northern Monmouth County increased 62% compared to last year's low productivity (0.29 fledglings/pair in 2023, 0.47 fledglings/pair in 2024). While this is an encouraging sign for the region compared to 2023, northern Monmouth County

underperformed at both municipal and federal sites that have averaged a robust 1.22 fledglings/pair since intensive monitoring began in 1987. The central Ocean County region produced the highest productivity rate in 2024 (1.80 fledglings/pair). All three sites combined in this region (Seaside Park, Island Beach State Park and Barnegat Light) produced the most fledglings in the state (18 fledglings). The most troubling decline in productivity was at Holgate (0.79 fledglings/pair in 2023, 0.35 fledglings/pair in 2024). In the ten years prior to 2023, Holgate averaged 1.38 fledglings/pair and regularly contributed the most fledglings in the state. Cape May County productivity increased (0.15 fledglings/pair in 2023, 0.46 fledglings/pair in 2024) largely due to reasonable successes at nearly every site including Two Mile Beach that has long struggled to recruit pairs and successfully fledge chicks.

DISCUSSION

New Jersey's statewide Piping Plover breeding population reached a historic low of 89 pairs in 2024, as viewed over the period since federal and state listing. Declines were noted in nearly every region in the state outside of southern Cape May County which had a modest two pair increase compared to 2023. The nearly 60% decrease in pair numbers at Gateway National Recreation Area's Sandy Hook Unit was the leading cause of pair loss statewide. The loss of pairs from Sandy Hook is mainly attributed to low productivity in 2023 (0.32 fledglings/pair), the continual decline of habitat suitability, and an overwhelming predator population. Northern Monmouth County (inclusive of Sandy Hook and municipal Monmouth County nesting sites) hosted the largest proportion of the state's population of Piping Plovers for 20 of the 38 years since intensive monitoring began. Additional losses across the state, including the total loss of both Little Beach and North Brigantine Natural Area as active nesting areas, while unsurprising considering years of low pair numbers and low productivity, are devastating for a population already in peril.

The statewide population peaked at 144 pairs in 2003. When looking at statewide pair distribution for that year, the regions of northern Monmouth County and central Ocean/Atlantic Counties held the highest proportion of pairs (49 pairs each) while municipal and state sites carried the remaining population. The distribution in 2024, with nearly every region declining, further highlights that recovery can only be achieved for this species when birds are nesting across all regions of the state.

Federal lands such as Sandy Hook and E.B. Forsythe's Holgate and Little Beach Units have maintained a significant proportion of the state's population over the last two decades. In 2024, these two areas combined held 70% of the state's breeding pairs and fledged 50% of the total chicks statewide. As habitat in these areas continues to decline due to factors such as vegetation and dune succession, rampant predation issues, and erosion, these sites continue to decline in suitability for this species. They remain some of the most critical areas in the state for recovery of Piping Plovers as human disturbance is negligible, which can result in chicks with higher survival rates than other state and municipal sites with higher disturbance rates (Stantial 2020). As Holgate begins to decline in pairs numbers (48 pairs in 2024, 53 pairs in 2023) coupled with the alarming 66% drop in pair numbers at Sandy Hook in 2024, managers are greatly concerned about the status of this species in the state.

State and municipal sites continue to struggle with managing human disturbance, predator issues, and fledging chicks. With recreational pressure increasing on a yearly basis in the most densely populated state in the nation, Piping Plovers are often faced with highly recreated and highly manicured beaches. Without habitat management and improvements as well as increased efforts to protect foraging areas from disturbance, these areas will remain lower-quality habitat and will continue to produce lower fledge rates. For example, for the second consecutive year a pair nested in the center of Ocean City. While the nest hatched, the chick was unable to regularly forage and was found dead. A necropsy of the chick performed by the state's wildlife pathologist revealed that the likely cause of death was starvation. Open space public lands such as Island Beach State Park, Corson's Inlet State Park, North Brigantine Natural Area and Stone Harbor Point provide pairs with some

reprieve from intense recreational pressure but often struggle with producing chicks. These sites lack accessible key foraging habitat and are often under intense predator pressure that is not easily mitigated. With federal sites now beginning to decline, state and municipal beaches must seriously consider and implement habitat modifications, predation management and stronger regulations on recreational pressure.

There is evidence that managers can successfully mimic prime nesting and foraging conditions through habitat restoration efforts. The Barnegat Light Restoration Area has consistently maintained both breeding and foraging habitat for adults and chicks through management. Created in 2019, the Restoration Area's productivity has been above the federal recovery goal (1.50 fledglings/pair) in five of the last six years with an average of 2.02 fledglings/pair. In 2024, of the 82 total brood locations recorded for the five pairs on site, 85% of those were within the Restoration Area. In addition to regular monitoring, managers are committed to long-term maintenance of the Restoration Area to ensure the birds have an area to nest and rear young free from disturbance. The project has largely been a success for this species and managers should focus efforts to duplicate the Restoration Area's success in other areas of the state.

For twelve consecutive years, predators have been the leading cause of nest failure for Piping Plovers in New Jersey. This is a difficult problem to address as nest and chick predators are often elusive and the make-up of predator species changes from year to year. Additionally, the tenuous relationship between predator exclosures and adult mortality remains fraught with challenges. In 2024, NJFW tested a variety of non-lethal predation management techniques on Piping Plovers and other beach-nesting bird species. Fladry is a nonlethal tool consisting of brightly colored flags hung low along a rope or wire used to protect cattle and other livestock from canine predators on western pasturelands. The sample size in 2024 was low (4 Piping Plover nests), but the results were promising as all of the plover nests that had fladry around them hatched. In addition to fladry, modifications to exclosures were made to lower the risk of adult mortality. Some design modifications included an "escape hatch" at the top of the exclosure that would allow the adult to fly out if a predator approached the nest. Other modifications included changes in shape from circle to triangle, and the addition of "wings" to make it difficult for a predator to circle an exclosure (more details on these modifications can be found in the 2024 New Jersey Beach-Nesting Bird Summary Report). Exclosures were used at a much lower rate across the state (11 in 2024 vs 35 in 2023 and 70 in 2022) with a hatch rate of 82%, which is more consistent with hatch rates of exclosed nests in the past. Only one exclosure resulted in an abandonment which typically indicates an adult mortality occurred. Comparatively in 2023, 51% of all exclosed nests were abandoned. Managers across the state should continue to conceptualize novel ideas and adapt to predation issues year-to-year. There will never be a one-size-fits-all solution to predation management. The ability to remain flexible regarding predation issues must remain at the forefront in order to improve hatch and fledge success.

The causes of chick mortality remain vague as scant evidence is typically left behind making it difficult to address. Theories as to the various causes of chick mortality in the state include predators, exposure to the elements, and the ability of chicks to access high-quality foraging areas. Causes of chick predation are likely due to a variety of mammalian and avian species, and ghost crabs. The effect of ghost crabs on chick survival is especially vexing and removal efforts can be extremely time consuming. Managers at the Two-Mile Beach Unit of Cape May National Wildlife Refuge (CMNWR) are attempting to address this issue through a research study looking at ghost crab density and the effectiveness of removal. Novel techniques such as those being utilized at CMNWR should be further considered across the state to begin to address this concern of chick mortality.

CONCLUSION

Piping Plovers in New Jersey face insurmountable pressure that increasingly makes recovery a distant goal. The state is following similar trends as the Southern Recovery Unit (particularly in Maryland, Virginia, and North Carolina) with sharp and troublesome declines. Outside of federal lands in New Jersey, habitat is highly recreated, rife with predators, and too little open space remains for this species to thrive. For recovery to remain

an achievable goal, all areas of the state and all managers must work together to ensure suitable habitat is available in as many areas as possible. Habitat restoration and enhancements like those at Barnegat Light must become more common across the state. Novel predation management techniques that show promise such as fladry and exclosure modifications must continue to be thoroughly investigated. Causes of chick mortality and ways to address them must become a researched-based focus at all sites. NJFW remains committed to working with partners on the state, federal, non-profit, and academic levels to support projects and techniques that work towards stabilizing and recovering the Piping Plover population in New Jersey.

LITERATURE CITED:

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Table 1. Number of Piping Plover pairs at New Jersey nesting sites: 2015-2024

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Sandy Hook NRA	53	51	40	38	41	40	37	33	34	14
<i>Coast Guard</i>	3	5	3	3	3	2	2	1	2	1
<i>North Beach</i>	15	14	13	11	10	11	11	10	13	3
<i>North Beach Recreational</i>	0	1	1	1	3	2	1	0	4	3
<i>North Gunnison</i>	10	8	6	6	8	8	10	7	6	2
<i>South Gunnison</i>	8	7	5	3	3	4	4	4	3	1
<i>D-Lot</i>	0	0	0	0	0	0	0	1	0	0
<i>E-Lot</i>	0	0	0	0	1 ¹	0	0	0	1	0
<i>Visitor Center</i>	0	1	0	0	1 ¹	0	0	0	0	0
<i>Critical Zone</i>	7	6	5	6	6	6	3	5	4	1
<i>Hidden Beach</i>	4	4	3	3	1	0	1	1	0	0
<i>B-Lot</i>	0	0	0	0	1 ¹	0	0	0	0	0
<i>Fee Beach</i>	6	4	3	3	5 ¹	4	3	3	0	2
<i>South Fee Beach</i>	0	1	1	2	1	3	2	1	1	1
Sea Bright - North	1	6	10	10	10	6	7 ¹	1	2	0
Monmouth Beach - North ²	1 ¹	5	3	3	4 ¹	2	5 ¹	3	2	1
Monmouth Beach - South	0	0	0	1	0	0	0	0	0	0
Seven Presidents Park	1 ¹	1	1	0	2 ¹	0	0	0	0	0
Long Branch	0	0	0	0	0	0	0	1	0	0
Deal	0	0	0	0	0	0	0	1	0	0
Region 2 subtotal	55	63	54	52	56	48	48	39	38	15
Belmar – Shark River Inlet	0	0	0	1	1	0	0	0	0	0
Sea Girt – Wreck Pond	0	0	0	0	1 ¹	0	1	1	0	0
Sea Girt – NGTC	0	0	0	0	2 ¹	1	1	1	0	0
Mantoloking	0	0	0	0	0	0	1 ¹	0	0	0
Seaside Park	0	0	0	0	0	0	2 ¹	1	1	1
Island Beach SP NNA	0	0	0	4	4	4	2	3	1	2
Island Beach SP SNA	0	1	1	0	1 ¹	0	0	0	1	0
Barnegat Light	1	3	5	3	3 ¹	2	6	7	8	7
Loveladies	0	0	0	0	1	0	0	0	0	0
Region 3 subtotal	1	4	6	8	11	7	12	13	11	10
Long Beach Township	0	0	1 ¹	0	0	0	0	0	0	0
EB Forsythe NWR	38	37	37	31	40	39	59	54	54	48
<i>Holgate</i>	24	25	22 ¹	18	29 ¹	29	46	48	53	48
<i>Little Beach</i>	14	12	15	13	12 ¹	10	13 ¹	6	1	0
Horseshoe Island	0	0	0	0	0	0	0	0	0	3
North Brigantine NA	5	5	4	2	2	2	3 ¹	1	1	0
Region 4 subtotal	43	42	41	33	42	41	61	55	55	51
Seaview Harbor Marina	1 ¹	0	0	0	0	0	0	0	0	0
Malibu WMA	1 ¹	0	0	0	0	0	1	1	1	0
Ocean City – North	0	0	0	0	0	2	3 ¹	4	3	2
Ocean City - Center	0	0	0	0	0	0	0	0	2	1
Region 5 subtotal	1	0	0	0	0	2	4	5	6	3
Corson's Inlet SP	0	0	0	0	2	2	3 ¹	3	3	3
Strathmere NA	0	0	0	0	0	0	1	1	0	0
Strathmere (Upper Twp.)	0	0	0	0	0	0	1	0	0	0
Avalon - Dunes	2 ¹	1	1	0	0	0	0	0	0	0
Region 6 subtotal	2	1	1	0	2	2	4	4	3	3
Stone Harbor Point	6 ¹	5	3	3	3	2	6	2	3	3
N. Wildwood - Hereford	1	0	0	0	0	0	0	0	0	0
Two Mile Beach	0	0	0	0	0	0	2	0	2	4
<i>Cape May NWR</i>	0	0	0	0	0	0	1	0	1	3
<i>Coast Guard - LSU</i>	0	0	0	0	0	0	1	0	1	1
Coast Guard - TRACEN	0	0	0	0	0	1	0	0	0	0
Region 7 subtotal	6	5	3	3	3	3	8	2	5	7
Total Pairs	108	115	105	96	114	103	137	118	118	89
Pairs at NJFW sites	17	27	29	27	33	24	41	31	28	23

¹ The same pair nested at two nearby sites. Therefore “subtotals” and “totals” are less than sum of individual sites.

² This site includes Sea Bright – South and Monmouth Beach – North

Table 2. New Jersey Piping Plover window census results: June 1-9, 2024

	State Census Count			Final Season Count		
	# Pairs	# Unpaired Adults ¹	# Total Adults	# Pairs	# Unpaired Adults ¹	# Total Adults
Sandy Hook Coast Guard	0	0	0	1	0	2
Sandy Hook North Beach	3	3	9	3	0	6
Sandy Hook North Beach Recreational	3	0	6	3	0	6
Sandy Hook North Gunnison	2	0	4	2	0	4
Sandy Hook Gunnison Recreational	0	0	0	0	0	0
Sandy Hook South Gunnison	1	0	2	1	0	3 ²
Sandy Hook E-Lot	0	0	0	0	0	0
Sandy Hook Visitor Center	0	0	0	0	0	0
Sandy Hook D-Lot	0	0	0	0	0	0
Sandy Hook Critical Zone	1	0	2	1	0	2
Sandy Hook Hidden Beach	0	0	0	0	0	0
Sandy Hook B-Lot	0	0	0	0	0	0
Sandy Hook Fee Beach	1	0	2	2	0	4
Sandy Hook South Fee Beach	1	0	2	1	0	2
Sea Bright North	0	0	0	0	0	0
Monmouth Beach North ¹	1	0	2	1	0	2
Monmouth Beach South	0	0	0	0	0	0
Seven Presidents Park	0	0	0	0	0	0
Long Branch	0	0	0	0	0	0
Deal	0	0	0	0	0	0
Region 2 subtotal	13	3	29	15	0	31
Avon-by-the-Sea	0	0	0	0	0	0
Belmar - Shark River Inlet	0	0	0	0	0	0
Sea Girt - Wreck Pond	0	0	0	0	0	0
Sea Girt - NGTC	0	0	0	0	0	0
Mantoloking	0	0	0	0	0	0
Seaside Park	1	0	2	1	0	2
Island Beach SP – Northern NA	1	1	3	2	1	5
Island Beach SP – Southern NA	0	0	0	0	1	1
Barnegat Light	7	2	16	7	2	16
Loveladies	0	0	0	0	0	0
Region 3 subtotal	9	3	21	10	4	24
Long Beach Township	0	0	0	0	0	0
Holgate	44	2	90	48	2	98 ²
Little Beach	0	3	3	0	0	0
Horseshoe Island	1	1	3	3	0	6 ²
North Brigantine NA	0	1	1	0	1	1
Region 4 subtotal	45	7	97	51	3	103
Brigantine Beach	0	0	0	0	0	0
Brigantine - Inlet (Cove)	0	0	0	0	0	0
Seaview Harbor Marina	0	0	0	0	0	0
Malibu WMA	0	1	1	0	1	1
Ocean City - North	1	1	3	2	0	4
Ocean City - Center	0	1	1	1	0	2
Region 5 subtotal	1	3	5	3	1	7
Corson's Inlet SP	3	2	8	3	3	9
Strathmere Natural Area	0	0	0	0	0	0
Strathmere (Upper Twp.)	0	0	0	0	0	0
Whale Beach	0	0	0	0	0	0
Townsend's Inlet	0	0	0	0	0	0
Sea Isle	0	0	0	0	0	0
Avalon - North	0	0	0	0	0	0
Avalon - Dunes	0	1	1	0	2	2
Stone Harbor - Oceanfront	0	0	0	0	0	0
Region 6 subtotal	3	3	9	3	5	11
Stone Harbor Point	3	3	9	3	2	8
N. Wildwood - Hereford Inlet	0	1	1	0	1	1
2-Mile Beach - USFWS	1	1	3	3	0	6
2-Mile Beach - LSU	1	0	2	1	0	2
Coast Guard - TRACEN	0	3	3	0	0	0
Cape May City	0	0	0	0	0	0
Cape May Meadows - TNC	0	0	0	0	2	2
Cape May Meadows - CMPSP	0	0	0	0	0	0
Cape May Point Borough	0	0	0	0	0	0
Region 7 subtotal	5	8	18	7	5	19
Total	76	27	179	89	18	195

¹This site includes Sea Bright – South and Monmouth Beach – North

²Adults nested at same site with different mates during season or same adults bred at different sites; Therefore “subtotals” and “totals” may be less than the sum of individual sites.

Table 3. New Jersey Piping Plover nesting summary by sites: 2024

SITE	Pairs	Pairs Hatched	Chicks Fledged	Pair Success	Fledge Rate	SP Fledge Rate
Sandy Hook NRA	14	5	7	0.36	0.50	1.40
<i>Coast Guard</i>	1	0	0	0.00	0.00	0.00
<i>North Beach</i>	3	2	4	0.67	1.33	2.00
<i>North Beach Recreational</i>	3	0	0	0.00	0.00	0.00
<i>North Gunnison</i>	2	1	2	0.50	1.00	2.00
<i>South Gunnison</i>	1	1	1	1.00	1.00	1.00
<i>Critical Zone</i>	1	0	0	0.00	0.00	0.00
<i>Fee Beach</i>	2	0	0	0.00	0.00	0.00
<i>South Fee Beach</i>	1	1	0	1.00	0.00	0.00
Monmouth Beach – North ¹	1	1	0	1.00	0.00	0.00
Region 2 Subtotal	15	6	7	0.40	0.47	1.17
Seaside Park	1	1	3	1.00	3.00	3.00
Island Beach SP NNA	2	2	3	1.00	1.50	1.50
Barnegat Light ²	7	6	12	0.86	1.71	2.00
Region 3 Subtotal	10	9	18	0.90	1.80	2.00
EB Forsythe NWR - <i>Holgate</i>	48	22	17	0.46	0.35	0.77
Horseshoe Island	3	3	0	1.00	0.00	0.00
Region 4 Subtotal	51	25	17	0.49	0.33	0.68
Ocean City - North	2	1	1	0.50	0.50	1.00
Ocean City - Center	1	1	0	1.00	0.00	0.00
Region 5 Subtotal	3	2	1	0.67	0.33	0.50
Corson's Inlet SP	3	2	3	0.67	1.00	1.50
Region 6 Subtotal	3	2	3	0.67	1.00	1.50
Stone Harbor Point	3	2	0	0.67	0.00	0.00
Two Mile Beach	4	3	2	0.75	0.50	0.67
<i>Cape May NWR</i>	3	2	1	0.67	0.33	0.50
<i>Coast Guard (LSU)</i>	1	1	1	1.00	1.00	1.00
Region 7 Subtotal	7	5	2	0.71	0.29	0.40
NJFW sites TOTAL	23	19	22	0.83	0.96	1.16
All NJ sites TOTAL	89	49	48	0.55	0.54	0.98
# Active Sites	20					

¹This site includes Sea Bright – South and Monmouth Beach – North

² This site includes Borough of Barnegat Light and Barnegat Light Restoration Area (BLRA). BLRA fledge rate was 2.00 fledglings/pair

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.

Table 4. New Jersey Piping Plover nesting summary: 1987-2024

Site	Pairs	Pairs Hatch	Chicks Fledge	Pair Success	Fledge Rate	SP Fldg Rate
<i>Sandy Hook Coast Guard</i>	4.74	3.55	6.68	0.75	1.38	1.75
<i>Sandy Hook North Beach</i>	10.26	7.66	13.55	0.74	1.32	1.80
<i>Sandy Hook North Beach Recreational</i>	1.78	1.11	1.22	0.69	0.78	0.94
<i>Sandy Hook North Gunnison</i>	5.97	4.56	7.06	0.72	1.09	1.39
<i>Sandy Hook South Gunnison</i>	4.27	3.03	4.76	0.69	1.05	1.39
<i>Sandy Hook - E-Lot</i>	0.33	0.17	0.17	0.25	0.25	0.25
<i>Sandy Hook Visitor's Center</i>	0.22	0.11	0.00	0.20	0.00	0.00
<i>Sandy Hook D-Lot</i>	0.22	0.11	0.22	0.25	0.50	0.50
<i>Sandy Hook Skeleton Hill Island</i>	0.11	0.00	0.00	0.00	0.00	0.00
<i>Sandy Hook Critical Zone</i>	4.09	3.00	3.56	0.71	0.87	1.16
<i>Sandy Hook Hidden Beach</i>	2.90	1.90	3.86	0.57	1.13	1.59
<i>Sandy Hook - B-Lot</i>	0.17	0.00	0.00	0.00	0.00	0.00
<i>Sandy Hook Fee Beach</i>	3.89	2.67	4.11	0.63	1.01	1.33
<i>Sandy Hook South Fee Beach</i>	1.28	1.00	2.06	0.84	1.72	1.97
<i>Sea Bright North</i>	5.00	3.28	6.40	0.51	1.02	1.56
<i>Monmouth Beach North</i>	2.54	1.77	3.00	0.75	1.21	1.51
<i>Monmouth Beach South</i>	0.36	0.36	1.09	0.57	1.71	1.50
<i>Seven Presidents Park</i>	1.15	0.90	1.65	0.63	1.18	1.21
<i>Long Branch</i>	0.22	0.11	0.11	0.25	0.25	0.25
<i>Deal</i>	0.14	0.00	0.00	0.00	0.00	0.00
Region 2 Subtotal	39.05	28.34	48.00	0.72	1.22	1.72
<i>Belmar - Shark River Inlet</i>	0.33	0.11	0.22	0.17	0.33	0.33
<i>Sea Girt - Wreck Pond</i>	0.64	0.43	0.71	0.44	1.00	1.00
<i>Sea Girt - NGTC</i>	0.70	0.60	0.80	0.57	1.00	0.43
<i>Mantoloking</i>	3.26	2.68	5.26	0.59	1.03	1.16
<i>Seaside Park</i>	0.63	0.50	1.38	0.75	2.25	2.25
<i>Island Beach SP - Northern Natural Area</i>	2.09	1.80	1.90	0.76	0.69	0.69
<i>Island Beach SP - Southern Natural Area</i>	0.44	0.22	0.33	0.33	0.50	0.50
<i>Island Beach SP - Dike</i>	0.64	0.18	0.27	0.14	0.19	0.50
<i>Barneget Light</i>	4.16	2.97	5.00	0.76	1.38	1.82
<i>Highbar</i>	0.11	0.11	0.00	0.25	0.00	0.00
<i>Loveladies</i>	0.53	0.53	0.87	0.73	1.18	1.18
Region 3 Subtotal	7.47	5.58	9.45	0.75	1.32	1.76
<i>Long Beach Township</i>	0.13	0.13	0.50	0.25	1.00	1.00
<i>Holgate</i>	19.16	12.63	18.97	0.66	1.03	1.63
<i>Little Beach</i>	11.97	6.89	10.54	0.56	0.86	1.40
<i>Horseshoe Island</i>	2.00	1.50	0.00	0.50	0.00	0.00
<i>North Brigantine N. A.</i>	5.66	3.56	6.94	0.62	1.16	1.36
Region 4 Subtotal	35.97	22.45	35.18	0.62	0.98	1.57
<i>Brigantine Beach</i>	4.74	3.21	3.16	0.45	0.45	0.58
<i>Brigantine - Inlet (Cove)</i>	1.00	0.76	1.35	0.60	1.28	1.45
<i>Longport Sodbanks</i>	0.30	0.10	0.30	0.10	0.30	0.60
<i>Malibu Wildlife Management Area</i>	0.62	0.62	0.62	0.89	0.89	0.89
<i>Seaview Harbor Marina</i>	0.20	0.20	0.40	0.40	0.80	0.80
<i>Ocean City - North</i>	2.75	1.83	2.46	0.66	0.80	1.16
<i>Ocean City - Center</i>	3.76	2.48	1.72	0.65	0.33	0.49
Region 5 Subtotal	7.32	5.00	5.26	0.68	0.77	0.99
<i>Corson's Inlet State Park</i>	3.10	2.23	2.33	0.74	0.94	0.96
<i>Corson's Sodbank</i>	0.11	0.11	0.00	0.25	0.00	0.00
<i>Strathmere NA</i>	0.67	0.40	0.67	0.50	0.86	0.91
<i>Strathmere</i>	2.12	1.31	0.96	0.61	0.43	0.59
<i>Whale Beach</i>	3.95	2.71	2.95	0.46	0.52	0.80
<i>Sea Isle City - North</i>	2.26	1.42	2.58	0.52	1.03	1.53
<i>Sea Isle City - South</i>	1.61	1.11	0.89	0.46	0.38	0.51
<i>Townsend's Inlet</i>	1.24	1.05	1.24	0.69	0.81	0.91
<i>Avalon - North</i>	1.41	1.27	1.64	0.79	0.97	1.00
<i>Avalon - Dunes</i>	3.26	2.03	2.24	0.58	0.75	0.98
Region 6 Subtotal	12.97	8.92	9.97	0.73	0.83	1.10
<i>Stone Harbor Point</i>	6.85	3.04	2.42	0.46	0.33	0.65
<i>Champagne Island</i>	0.50	0.21	0.29	0.22	0.44	0.50
<i>N. Wildwood - Hereford Inlet</i>	1.27	0.82	0.55	0.45	0.27	0.29
<i>N. Wildwood - Oceanfront</i>	1.50	1.06	0.38	0.50	0.15	0.20
<i>Wildwood Crest</i>	0.11	0.11	0.00	0.25	0.00	0.00
<i>USFWS - Cape May NWR</i>	0.67	0.56	0.22	0.73	0.27	0.30
<i>Coast Guard - LSU</i>	1.17	0.70	0.52	0.51	0.38	0.47
<i>Coast Guard - TRACEN</i>	2.38	1.59	2.03	0.56	0.77	1.02
<i>Cape May</i>	0.61	0.50	0.61	0.45	0.36	0.36
<i>Cape May Meadows</i>	3.92	3.35	3.68	0.74	0.86	1.02
<i>The Nature Conservancy</i>	3.11	2.63	2.80	0.76	0.86	0.91
<i>Cape May Point SP</i>	1.37	1.15	1.37	0.60	0.69	0.72
<i>Higbee/Magnesite</i>	0.11	0.11	0.00	0.25	0.00	0.00
<i>Cape May Ferry</i>	0.20	0.00	0.00	0.00	0.00	0.00
Region 7 Subtotal	13.32	8.76	8.42	0.62	0.57	0.81
Total NJFW only	48.11	32.21	43.37	0.67	0.94	1.36
Total State	115.97	79.05	116.29	0.68	1.01	1.45

Figure 1. New Jersey Piping Plover population and productivity: 1987-2024

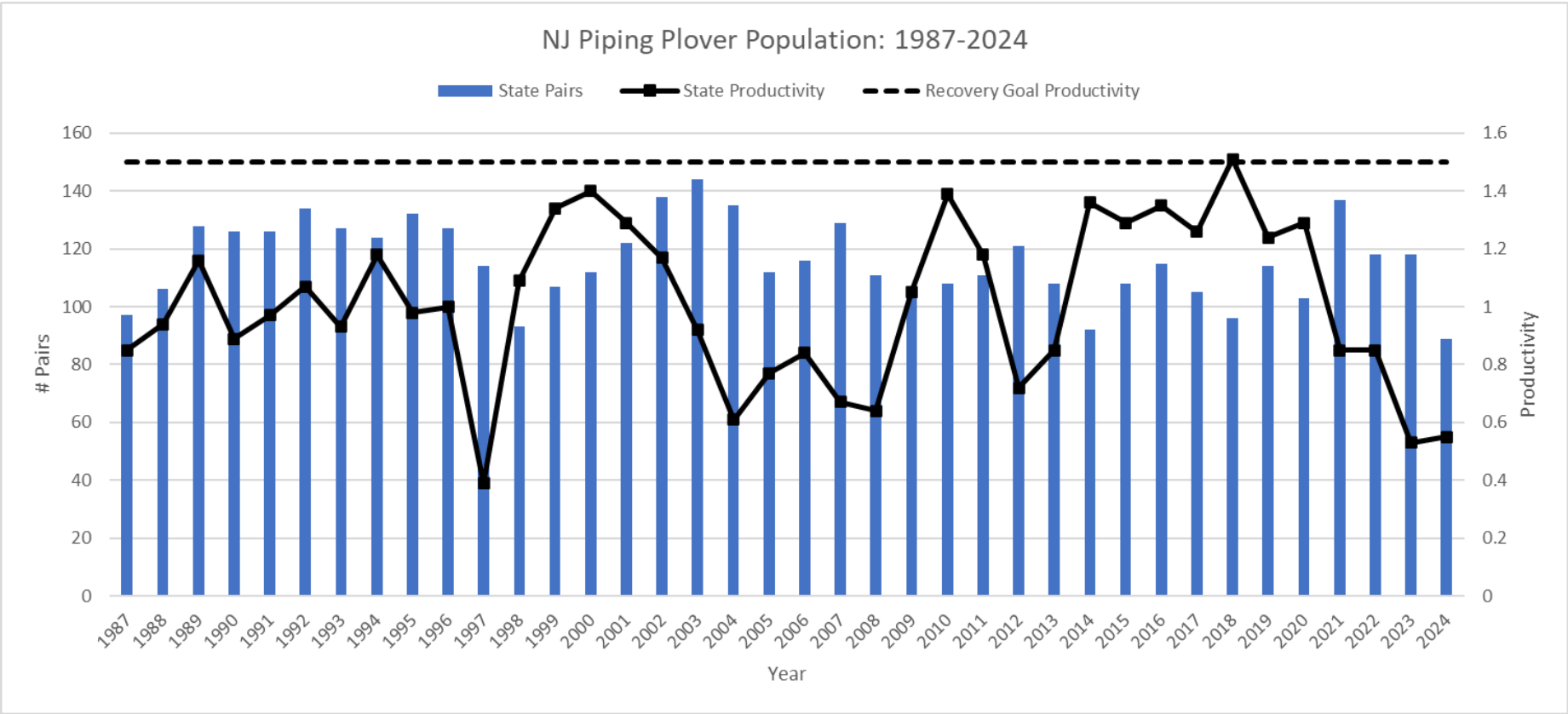


Figure 2. Causes of Piping Plover nest failure in New Jersey, all sites: 2024

