MAINE AUDUBON

U.S. Fish & Wildlife Service, Northeast Region

Rachel Carson National Wildlife Refuge

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The success of the Piping Plover and Least Tern populations in Maine are greatly enhanced by the generous support of individual landowners. Maine Audubon and landowners have a partnership that continues to grow and strengthen each year. Most landowners from whom we have requested permission to manage their beach have agreed to allow at least some form of protection or monitoring. Over 160 landowners have worked with us to allow protection of Piping Plover and Least Tern nests on their property. The number of landowner relationships increase every year as the population grows and birds choose different nesting sites.

In addition, Trevor McCourt at Ram Island; town and interim managers in Wells, Matthew Buttrick in Ogunquit, Michael Pardue in Kennebunk, Diana Asanza in Old Orchard Beach, and Thomas Hall in Scarborough; Public Works crews from Ogunquit, Scarborough, and Old Orchard Beach; Douglas Howard of the Scarborough Public Works Department; Lisa Wilson of the Old Orchard Public Works Department; and Debbie Jackson from Prouts Neck Country Club deserve special thanks for their assistance.

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INTRODUCTION

Maine Audubon began monitoring Least Terns in 1977 and Piping Plovers in 1981. Each year an annual report has been produced and is available for review of historical data. The conservation of these species continues to be a cooperative effort with landowners and other organizations and agencies. Maine Audubon, Maine Department of Inland Fisheries and Wildlife (MDIFW), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agriculture APHIS Wildlife Services (Wildlife Services) and Rachel Carson National Wildlife Refuge (RCNWR) contribute substantially to this project each year.

Maine Audubon and RCNWR both hire and supervise seasonal personnel, negotiate management agreements with private landowners, ensure consistent management practices, compile data collected from all cooperators, provide and supervise the primary field personnel for the project, and work collaboratively with municipalities on beach management issues. The staff at the RCNWR has primary responsibility for monitoring and management of five of the 28 beaches currently being monitored. They have been invaluable in covering additional sites whenever the Maine Audubon crew was unavailable. Maine Audubon has the primary responsibility for management of the other 23 sites and for producing the annual statewide report. National Audubon Society has staff on Stratton Island managing Common and Roseate Terns as well as Least Terns when they nest there. MDIFW is the primary coordinator for municipal management agreements, provides funding support and equipment (including procuring state-owned trucks for the seasonal staff), provides overall oversight, and assists with management on several sites.

The population status of Piping Plovers in Maine remains precarious and the birds continue to need intensive management. Although productivity of Piping Plovers has increased dramatically since exclosures were first used in 1989, predation of chicks and adults, storm activity, development, and heavy beach use by people and pets have negatively impacted reproductive success and population recovery.

Maine's Least Tern population appears to be generally increasing, though there is considerable variability year to year. Productivity estimates are conservative due to the field methods used. Changes in available nesting habitat and increased predation rates, particularly by "smart predators," have affected distribution and productivity of Least Terns throughout the state.

METHODS AND MATERIALS

Population Monitoring

Plovers typically first appear in Maine in mid to late March. Monitoring began in mid to late April at all potential nesting sites. The 28 sites that are regularly monitored and managed include: Ogunquit Beach in Ogunquit; Moody, Wells, Drakes Island, and Laudholm Beaches in Wells; Crescent Surf and Parsons Beaches in Kennebunk; Batson River (Marshall Point) and Goose Rocks Beach in Kennebunkport; Fortunes Rocks/Biddeford Pool Beach (including the municipal beach) and Hills Beach in Biddeford; Goosefare Brook (Kinney Shores) and Ferry Beach in Saco; Ocean Park and Old Orchard Beach in Old Orchard Beach; Pine Point, Western/Ferry, Scarborough Beach State Park, and Higgins Beaches in Scarborough; two beaches at Ram Island Farm and Crescent Beach State Park in Cape Elizabeth; Seawall, Popham State Park, and Hunnewell Beaches in Phippsburg; and Reid State Park Beaches in

Georgetown. Other sites were occasionally monitored, including Basket Island in Biddeford, Richmond Island at Ram Island Farm in Cape Elizabeth, Head Beach in Phippsburg, and Indian Point in Georgetown. The annual census was held range wide between June 1 and June 10.

Beach Monitoring

Once territorial Piping Plovers or courting Least Terns were observed, sites were visited at least once a week by biologists from Maine Audubon or RCNWR. Trained volunteers and interns assisted biologists regularly, and on certain beaches volunteers provided daily monitoring throughout the nesting season.

The presence of paired and unpaired Piping Plovers and Least Terns were recorded using NestStory (neststory.org). NestStory is a mobile collection database used for real-time data entry in the field. This monitoring tool allowed for the tracking of Piping Plovers and Least Terns. NestStory is designed to digitally track pairs, nests, and brood locations, behavior, estimated hatch and fledge dates, predators, brood counts, and much more (Appendices I-VI). To ensure users don't leave out any necessary details, NestStory offers prompts for each data point, allowing researchers to record and monitor every pair's nesting behavior.

Least Tern Monitoring

We continue to work towards developing best practices for estimating total numbers of nesting and fledgling Least Terns. We believe all methods for counting are estimates and not "true" numbers; however, we have devised protocols to minimize noise and bias by using coordinated pair and fledgling counts. Coordinated pair counts in some years may be slightly off, and fledgling counts almost always underestimate fledgling success. Accurate estimates continue to be a challenge because of the transient nature of Least Tern colonies, the fact that fledgling birds are not individually identifiable, and that nesting and fledging at colonies within Maine often do not occur simultaneously because of frequent colony disturbance. However, a certain percentage of adults will still be missed, and double-counting those individuals who fledge early in the season is a risk. We used multiple methods to estimate the number of nesting adults within the state and the number of fledglings they produce, detailed below. Our efforts are geared towards minimizing bias and documenting those times where a complete simultaneous count was not possible.

Window Pair Count

Least Terns are monitored along the Atlantic coast from North Carolina to Maine using the same window count protocol. The protocol calls for counts to take place between June 5-20, within a 7-day time frame, after Least Terns have settled at a nesting site, but before any major colony disruptions have occurred. This requires some coordination with partners who manage Least Tern colonies at each site to time the surveys appropriately. Ideally all counts in the state are conducted on the same day. All nests or birds in an incubating posture are counted, depending on if the count occurs within the colony or from the perimeter of the colony.

In 2022, coordinated state-wide counts took place on June 6 and 7. Nests were counted using walk-through nest counts.

Estimating Productivity

Previously, dusk surveys had been conducted (from 2003-2008) as we believed that most fledgling terns return to the colony once the visibility for capturing fish is diminished as evening approaches. Continued work leads us to believe that tidal cycle is the most important consideration when conducting surveys, as the extensive sand flats exposed at low tide make counting the birds impossible. Current surveys are slated for about two hours before high tide or 1-2 hours after high tide and after most of the chicks are fledged. If necessary, another count spaced at least two weeks apart (mean fledgling residency time) is conducted and the numbers are added together for a total count. The number of later fledglings is compared with chick counts to ensure fledgling numbers considered "new" are roughly consistent with what we have previously observed in the colony.

During the survey, counters stood outside the colony and were spaced such that each person counted up to the next volunteer. Counters used binoculars and recorded numbers of fledglings on data sheets. The areas tended to be rectangular and were "marked" using beach formations or debris and lines in the sand. Counters were stationed at all active colonies. Watches were synchronized or cell phones were used, and counts were conducted every five minutes. The highest estimate for a single timeslot across the colony was determined to be the best estimate of total fledglings present. Unfledged chicks were also recorded. When multiple waves of fledglings were produced, additional counts were taken every two to three weeks. At Stratton Island, where the entire Least Tern colony can be observed using a single observer, continuous daily counts were taken throughout the season.

Productivity estimates at all sites are more likely an underestimate versus an overestimate. Previous research in Maine indicates a mean fledgling residency time of two weeks. Fledgling counts spaced at least two weeks apart are considered cumulative. Fledgling residency time declines over the breeding season so some fledglings may depart prior to being counted.

Fencing

In general, stake-and-twine (symbolic) fencing was erected on beaches as soon as potential nesting sites of Least Terns or Piping Plovers were identified and as landowner permission was granted. The primary purpose of symbolic fencing is to keep people and pets away from nesting birds. High priority sites were fenced first based on habitat quality and history of successful plover and tern nesting. At sites where use by Piping Plovers was unpredictable it was difficult to determine placement of fencing ahead of time; these sites were fenced as soon as plovers exhibited territorial behavior or a nest was located.

The extent of symbolic fencing varied among sites depending on recent site occupancy by Piping Plovers, the amount of habitat historically needed by plovers at each site, and on the desires of individual landowners. We requested permission to begin fencing at or near the high tide line and continue back into the dune grass, including at least some of the sparsely grassed area that provides habitat for Piping Plover and Least Tern chicks. Signs were placed around the perimeter of the symbolic fencing to alert the public to the nesting area and prevent potential impacts to nesting pairs from beachgoers (Appendix VIII). New signs were manufactured in 2018 (Appendix IX) and placed at sites when possible.

When a plover nest was found, if an exclosure was deemed suitable for the site and landowner permission was received, nests were protected with an exclosure. The exclosures consisted of approximately 50 feet of wire fencing with five metal posts spaced evenly throughout to support the fencing. The exclosure was placed around the nest so that once the exclosure was complete the plover nest would be in the middle of the circle. Blueberry netting was cut into 14-17' circles, or in some instances, squares, and secured to the top. Any excess was bunched up and fastened tightly across the top of the fencing using zip ties to diminish the chance of entanglement. In sandy locations, exclosures were erected by a minimum of two people. Where the substrate was rocky or additional interns/volunteers were available, more people were used. Exclosures generally took no more than 20 minutes to erect from start to finish. Once the exclosure was completed, the behavior of the adults was monitored to see when and if they returned to the nest. Data on the time required to exclose a nest and on the return time for plovers was recorded in NestStory.

The USFWS guidelines for using exclosures to protect Piping Plovers state that exclosures should only be constructed after a full clutch of eggs has been confirmed. This guideline serves to limit abandonment from the disturbance caused during the erection of an exclosure. Exceptions may be approved by state agencies for beaches where egg predation is very likely. Maine's heavily developed beaches often provide easy access for predators, and thus we routinely construct exclosures around partial clutches. Data from previous years indicate that exclosing partial clutches has not caused abandonment of plover nests in Maine; most abandonments we observed were attributed to other factors such as domestic pet or human disturbance. Data continues to be collected on abandonment of exclosed vs. unexclosed nests to evaluate potential problems.

Some predators can use the exclosures to their advantage during hunting and potentially kill multiple adults. In instances when adults were taken and we were concerned for the remaining adults, exclosures were removed from nesting areas.

Concerns about exclosure use contributing to adult deaths in certain circumstances have worried plover managers in their recovery efforts for this species. An intensive workshop dedicated to strategic decision-making directed around exclosure use was held in December of 2013. Results of this workshop indicate that in the Atlantic population, exclosures increase productivity at some sites. Research is ongoing about what factors influence the benefits of exclosures to help managers make informed decisions about whether to use them, but in the meanwhile, we will continue to use them at sites where they appear to be beneficial.

Electric Fencing

We used a solar-powered electric net fence (Premier One Electro-Stop II) around parts of the Least Tern nesting sites at Laudholm Beach in Wells and Higgins Beach in Scarborough. The net fence does not protect against all predation events, but if installed and maintained properly, it is an important tool for protecting Least Tern and Piping Plover nests from mammalian predators. The charge on the net fence was checked with a digital voltmeter every time the site was visited. Beach grass was cleared from the fence line on a regular basis. We found the voltage dropped on damp days, however for the majority of the time the charge was above 5,000 volts. The fencing was adjusted as the sand habitat altered and the tern colony expanded. This fencing also protects any unexclosed plover nests when they occur within the tern colony.

Predators

Intensive predator management provided by USDA Wildlife Services began in 2007. After years of evaluation, the data suggest that average productivity rates are higher on beaches where predators are removed.

Whenever nests of Piping Plovers or Least Terns were predated, every effort was made to identify the predator. Typically, this was done using track identification. Various removal methods were used to manage predators at Ogunquit Beach and Crescent Surf Beach by Wildlife Services.

Game cameras were set up in 2022 to help identify problem predators at Drakes Island, Goose Rocks, Old Orchard, Goosefare Brook and Crescent Surf Beaches.

Public Outreach Programs 2022

Outreach programs are needed to raise public awareness about the ecology and conservation of Piping Plovers, Least Terns, and migrating shorebirds and on the impacts of disturbance from recreational activities in coastal areas.

Our annual newsletter (Appendix XI) is one tool we use to reach members of the public who are currently involved in the project and to help others become more engaged. It is published at the end of the season and distributed to every beach-front landowner on beaches with either current or historic nesting plovers. The newsletter is also mailed to all collaborators including municipal officials, volunteers, and agency personnel, and is posted on the Maine Audubon website for public viewing. This year we distributed over 400 copies of the newsletter.

The COVID-19 pandemic greatly limited our ability to engage with people face-to-face on the beach and dramatically altered how we interacted with beachgoers. We developed new ways to connect with people virtually and through new signs and informational flyers. We continued alternative outreach methods that we initiated in 2020, such as increased social media efforts and ‘beach walk’ series of educational signs. Additionally, we brought back ‘tabling’ to engage with the beach-going public -- where we set up a table on the beach or at beach-access points with plover mounts, postcards, and information to educate people. Tabling is a successful way of reaching many beachgoers in a short period of time.

Law Enforcement

For the eleventh year in a row, Maine Game Wardens patrolled beaches on dedicated details in addition to their normal duties, helping to protect Piping Plovers throughout the nesting season. Thirty details occurred; patrols were conducted at beaches from Ogunquit through Popham Beach State Park in Phippsburg. Patrols began in late May and continued through late July. As with previous years, patrols were conducted during early mornings and evenings during the week, and on weekends and holidays. Zach Ostiguy, Federal Wildlife Officer with USFWS additional conducted patrols and educated beachgoers.

Prior to conducting any patrols, all Maine Game Wardens were required to attend a training session on Piping Plovers and Least Terns. This field training included identification, life history, nesting behavior, migration, population estimates, recovery and productivity goals, and threats to the population. We had a total of at least twenty-one Game Wardens who were trained to conduct patrols.

Game Wardens interacted with hundreds of people, and we continue to receive a tremendous amount of positive feedback from people at all the beaches where the wardens patrolled. The primary purpose of game warden patrols was to prevent "take" or harassment of plovers by people or domestic animals. The Warden Service was also crucial in handling several potential instances of takes in 2022, and they followed up with investigations on several incidents including a cat catching a plover, illegal removal of eggs from a plover nest, illegal nighttime beach bonfires, and disturbance. Their presence is essential in helping the public understand the rarity of these birds, their vulnerability, and the seriousness of potential harm.

RESULTS AND DISCUSSION

Least Terns

On June 6 and 7, a coordinated walking nest census documented a minimum of 277 Least Tern pairs in Maine. This was the third highest number of nesting pairs recorded in the state since monitoring began. During the census window, 23 nests were on Laudholm, 102 nests on Crescent Surf, 91 nests on Stratton Island, 51 nests on Higgins, and 10 nests on Seawall. After the census window passed, five nests were established on Goose Rocks and more nests appeared at Higgins and Seawall. The Least Terns on Laudholm fledged a minimum of 18 chicks, Crescent Surf did not fledge any chicks, Goose Rocks fledged one chick. Stratton Island fledged 14 chicks, Higgins fledged five chicks, and Seawall fledged two chicks for a minimum state total of 40 fledglings. Despite the high number of nesting pairs, 2022 saw the second lowest productivity rate recorded since monitoring began with an estimated 0.14 fledglings per pair. Reasons for this are outlined below under each colony. We also believe that the actual number of fledged birds is higher than our data suggest, as estimating fledglings at some colonies is a challenge and nesting at some sites is in a continuous wave, rather than distinct cycles.

Site Summaries for Least Terns

Following are summaries of Least Tern population estimates, comparisons to other years, and predator management used (if any) by beach, with the primary monitoring organization or agency listed under the name of each beach. A state wide summary of Least Terns is provided by GOMSWG annual reports. In addition to recently active 2022 sites, in previous years Least Terns have also nested at Wells Beach and Reid State Park. We will continue to monitor these sites in the future for any Least Tern activity.

Laudholm Farm Beach, Wells
Rachel Carson NWR

Population Estimate: 23 Least Tern pairs were nesting during the walking nest count census conducted on June 6. Four fledgling counts were conducted on July 15, July 28, August 10, and August 15 where a minimum of 18 fledglings were observed. Laudholm experienced week-long 11+ foot tidal overwash

events once a month which contributed to nest and chick loss. There was also suspected red fox and raptor predation.

Comparison: 21 pairs nested at Laudholm in 2018 but all nests were predated by a fox after the electric net fence failed. There were no pairs nesting at Laudholm in 2019 or 2020. In 2021 there were 18 pairs nesting which combined with Crescent Surf's 116 pairs produced at least 81 fledglings.

Predator Management: Predator management was not conducted at Laudholm Farm Beach. An electric net fence was set up around the colony but temporarily removed during the 11-foot tide cycles then replaced after they passed.

Crescent Surf Beach, Kennebunk
Rachel Carson NWR

Population Estimate: 102 Least Tern pairs were nesting during the walking nest count census conducted on June 6. No chicks were observed throughout the entire season, so only one fledgling count was conducted on July 21 where there were no fledglings recorded. Crescent Surf experienced week-long 11+ft tidal overwash events once a month which caused major nest loss. There was also partial colony abandonment in June due to an unknown cause and some nests were lost to red fox predation. The beach was particularly narrow this year so we were unable to maintain the electric net fence, so predation was a large issue and overall there was less space for the terns than in the past.

Comparison: Crescent Surf Beach saw its most successful years in 2015, 2013, and 2012 with productivity of 1.04, 0.76, and 0.79 respectively. 2021, 2020, 2011, 2009, and 2008 were decent years with productivities between 0.5-0.6. Productivity was poor in 2017, 2016, and 2014, and was also poor from 2003-2007.

Predator Management: USDA Wildlife Services removed specialist predators from the Crescent Surf Beach area throughout the breeding season. The electric net fence was not installed on the beach this year due to the beach being too narrow to accommodate the fence.

Goose Rocks Beach, Kennebunkport
Maine Audubon

Population Estimate: Least Terns appeared on Goose Rocks after the window count was conducted. A high count of five nests were observed on June 21. The predator load was extremely high and it is likely additional nests were lost between visits. Predators were skunks, raccoons, and foxes. At least one nest successfully hatched two chicks and one survived until fledging.

Comparison: A small colony of Least Terns attempted to nest in 2021. There were ten nesting attempts but no chicks survived until fledging and the colony abandoned the site in late July. No nesting attempts were made in 2020 or 2019, although courtship was observed. Two nesting attempts were made in 2018 but no chicks hatched. At least seven pairs attempted to nest in 2017 but all were unsuccessful. Ten pairs of Least Terns made nest attempts on Goose Rocks in 2016 fledging at least seven chicks. No nesting attempts were made at Goose Rocks between 2012-2015. In 2011 a season high of 46 birds were

documented and produced a minimum of 12 fledglings. In 2010, a small colony set up after failures at Crescent Surf and Stratton Island, however no chicks survived.

Predator Management: None.

Western/Ferry Beach, Scarborough
Maine Audubon

Population Estimate: Least Terns did not attempt to nest on Western Beach for the third consecutive year in a row.

Comparison: In 2019, 35 Least Tern nests were observed on Western, but after a predation event, no nests or chicks remained. There were a minimum of five Least Tern nests in 2018 that fledged no chicks. There were 48 Least Tern nest attempts on Western in 2017, fledging five birds. In 2016, there were at least four nest attempts on Western, with no fledglings produced. Before this, terns had not nested on Western Beach since 2008, and the site had not fledged chicks since 2005, when there were a total of 40 active nests. Prior to 2005, Least Terns had not nested at the site since 1981.

Predator Management: None.

Stratton Island
National Audubon Society

Population Estimate: 91 Least Tern pairs were nesting during the walking nest count conducted on June 7. The highest fledgling count was on July 10 where 14 fledglings and three pre-fledgling chicks were recorded. The biggest struggle of the season was managing predation, largely if not exclusively, from Black-crowned Night-heron.

Comparison: In 2021 at least 63 pairs nested on Stratton Island but abandoned after two nights of Black-crowned Night-heron predation and tropical storm Elsa, resulting in no chicks fledged. Least terns did not nest on Stratton Island in 2020, but this site had historically been the second largest colony in the state before that. 84 pairs produced 14 fledglings in 2019 and 122 pairs produced 50 fledglings in 2018. In 2017 only one chick fledged from 87 nesting pairs.

Predator Management: The colony was guarded every night, from around 1930 to 2300, what was presumably the highest activity hours for Black-crowned Night-herons. Numerous colony visitations were discouraged by the nightly guard. A mannequin was left in the blind overnight in hopes the human shape would be enough to discourage the Black-crowned Night-herons but it's very likely a lack of harassment led to it becoming acclimated. Staff limitations made full dusk-to-dawn watches unfeasible.

Higgins Beach, Scarborough
Maine Audubon

Population Estimate: A total of 51 pairs were nesting during the walking nest count. More nests were initiated throughout the season with a high count of 67 being recorded. A minimum of five chicks fledged from Higgins Beach. An electric net fence surrounded most of the colony but fox tracks were

frequently seen outside and within the fencing. The electric fence was not working for a period of two weeks, when fox tracks increased and egg predations were high. Higgins Beach is a popular tourist beach with many beach-walkers wandering near the colony, disrupting roosting birds and making it a challenging place for fledgling birds. We believe that many fledglings leave earlier than the standard 2-week residency period, and as a result our fledgling estimates are particularly low for this site.

Comparison: In 2021, at least 71 pairs nested and fledged a minimum of 17 chicks. A colony of 128 nesting pairs of Least Terns on Higgins Beach fledged at least 50 chicks in 2020. A smaller colony of 55 pairs fledged 16 chicks in 2019. A small colony was unsuccessful in 2018 and no terns nested in 2017. In 2016, a colony had begun to form at the end of May, but a storm tide in early June washed over the area, and no nests were laid. In 2015 and 2014 small colonies formed at Higgins Beach, fledging 13 chicks in 2015 and none in 2014. No Least Terns nested on Higgins between 2010-2013.

Predator Management: An electric net fence was set up surrounding most of the colony.

Seawall Beach, Phippsburg
Maine Audubon

Population Estimate: In 2022, 10 Least Tern nests were counted during the window count. A high count of 27 nests was recorded on June 13. Consistent predation pressure from foxes resulted in this colony constantly re-nesting and moving throughout the large sand spit area. The flock estimate was roughly 60 pairs. Nests were consumed before they were able to hatch; only two chicks were observed and both fledged.

Comparison: Last year 39 chicks fledged from a minimum of 60 nesting pairs, although only 13 nests were recorded during the window count. In 2020, a small colony of Least Terns nested on Seawall Beach. Of the seven nests, at least one chick fledged. A single Least Tern nest was found in 2016 on Seawall, but otherwise terns have not attempted to nest at Seawall Beach since 2005. That year a 17-nest colony was decimated by a fox or coyote.

Predator Management: None.

Popham Beach State Park, Phippsburg
Maine Audubon

Population Estimate: Least Terns were observed flying and foraging above the Morse River between Popham Beach and Seawall Beach but no terns nested on Popham Beach in 2022.

Comparison: Least Terns have not nested on Popham Beach since 2016. In 2016, there were at least 22 nesting attempts; some hatched but all were unsuccessful due to predation. In 2015, there were 40 nesting attempts, fledging four chicks. Three Least Tern pairs nested on Popham Beach in 2013 but produced no fledglings. Two pairs nested in 2012 and fledged three chicks. Prior to that, no Least Terns have attempted to nest on Popham Beach since 1997, when a 15-pair colony failed to produce any fledglings.

Predator Management: None.

Piping Plovers

A total 140 pairs of Piping Plovers nested at 24 Maine beaches in 2022 (Tables 4, 8), 15 more than last year's high count. A total of 252 fledglings were produced in 2022, the largest number of chicks fledged off of Maine's beaches since monitoring began in 1981, and 39 greater than the previous high in 2021. Maine plovers produced an average of 1.8 chicks/pair (Table 3) with 60% chick survivorship (Table 7). Of the 196 nesting attempts in 2022, 22 were lost to over-washing tide, 12 were abandoned prior to hatch, 34 nests were predated, while six were lost to other unknown causes (Table 5). Of the 196 nesting attempts, 86 were exclosed (Table 6). The nesting outcomes were 67 of the exclosed nests successfully hatched, six exclosed nests were abandoned, 12 were lost to tide, and one nest was lost to unknown causes (Table 6). Of the 110 unexclosed nests, 55 hatched, 34 were predated, ten were lost to overwash, six abandoned prior to hatch and another five were lost to unknown causes (Table 6). Crows and other birds predated at least four nests, while mammalian predators consumed 21 nests, and the remaining nine were lost to an unknown predator (Table 6). Overall, 60% of eggs successfully hatched (Table 7).

Exclosures were not erected for nests at many sites when the nests were located on the steep dune or in very dense vegetation, thus making an exclosure impossible or dangerous. Predator activity altered the use of exclosures at sites such as Goose Rocks where we thought predators were keying in on the fencing as an indicator of nests or were otherwise putting adults at greater risk. In those cases, the nest was not exclosed until biologists deemed it safe to do so.

Predator management measures were conducted by USDA Wildlife Services biologists at two sites with nesting Piping Plovers: Ogunquit and Crescent Surf. Wildlife Services activity at Ogunquit was constrained by intense human activity; Wildlife Services observed regular unpermitted and destructive activities on Ogunquit in 2020, 2021, and 2022 particularly. Their observations were essential in limiting disturbance to nesting plovers from people and pets, as their early hour presence restricted new disturbance.

The number of Piping Plover nesting pairs increased 12% from 2021 to 2022, from 125 pairs to 140 pairs (Table 4). The increase of 15 pairs and high productivity resulted in several record high numbers for Maine, including the largest number of pairs nesting on a beach (19 pairs at Ogunquit), the largest number of chicks fledged from one beach (40 fledglings on Wells), and the first time we had more than 30 fledglings from each of three beaches (Ogunquit, Wells, Seawall). For eight consecutive years we have detected at least 60 pairs of nesting plovers in Maine, and for the past four years we have had 89 or more nesting pairs. These ever-increasing numbers demonstrate the effectiveness of our multi-leveled conservation efforts using outreach, enforcement, and predator control in addition to fencing and other more traditional management techniques.

In 2014, we began to see plover nesting activity more broadly distributed among several sites after many years where most of Maine's plovers were concentrated at a handful of locations. The increasing trend in nesting distribution continued in 2022, with 11 beaches hosting at least five nesting pairs and seven beaches fledging at least ten chicks (Table 4). The recovery of Maine's plover population and subsequent re-colonization of sites is encouraging as the population grows and disperses. This more widespread nesting distribution is important for future success as it takes pressure off a few sites and makes for a more stable population in future years.

GPS coordinates were collected for each nesting attempt (Appendix XII) and maps of brood locations and movements were sent to the MDIFW to produce GIS maps for the project (Appendix XIII).

Site Summaries for Piping Plovers

Ogunquit Beach, Ogunquit
Maine Audubon

Ogunquit Beach had another record number of nesting pairs this season with 19 pairs fledging 35 chicks. The banded male plover tagged with green flag 464 nested on Ogunquit for the fifth consecutive year and two of his chicks fledged. The neighboring pair with a brood of four adopted his two chicks two weeks after hatch and 464 was observed scraping again with his mate nearby but no secondary nesting attempt was made. A one-legged female laid and hatched two chicks but they were lost within days of hatching. There were frequent disturbances observed due to drones and unmanned aerial vehicles (UAVs) throughout the breeding season. This caused broods to move great distances and become displaced from their parents at times.

USDA Wildlife Services removed specialist predators from Ogunquit Beach throughout the breeding season.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Ogunquit	01A	4/26/22	4	4	--	H	5/26/22	Y	--	0
Ogunquit	02A	4/26/22	4	4	--	H	5/31/22	N	6/23/22	1
Ogunquit	03A	4/29/22	4	4	--	H	6/2/22	N	6/27/22	4
Ogunquit	04A	4/29/22	4	4	--	H	6/4/22	N	6/29/22	4
Ogunquit	05A	4/29/22	4	4	--	H	5/31/22	N	6/25/22	2
Ogunquit	06A	5/3/22	4	4	--	H	6/2/22	N	6/27/22	4
Ogunquit	07A	5/6/22	4	4	--	H	6/6/22	Y	7/1/22	4
Ogunquit	08A	5/6/22	4	4	--	H	6/8/22	Y	7/3/22	3
Ogunquit	09A	5/6/22	4	4	--	H	6/9/22	N	--	0
Ogunquit	10A	5/6/22	1	0	5/10/22	U	--	N	--	0
Ogunquit	11A	5/10/22	2	0	5/17/22	W	--	Y	--	0
Ogunquit	12A	5/10/22	4	4	--	H	5/31/22	N	6/18/22	4
Ogunquit	13A	5/10/22	4	4	--	H	6/9/22	N	--	0
Ogunquit	14A	5/13/22	4	4	--	H	6/15/22	N	7/10/22	2
Ogunquit	15A	5/17/22	4	4	--	H	6/18/22	N	7/13/22	1

Ogunquit	16A	5/17/22	4	4	--	H	6/16/22	N	7/11/22	2
Ogunquit	17A	5/19/22	4	3	--	H	6/18/22	N	7/13/22	1
Ogunquit	18A	5/24/22	3	3	--	H	6/23/22	N	7/18/22	1
Ogunquit	19A	6/2/22	3	2	--	H	7/2/22	N	7/27/22	2
Ogunquit	11B	6/2/22	2	2	--	H	7/7/22	N	--	0
Ogunquit	01B	6/13/22	3	0	6/21/22	W	--	N	--	0
									Total Fledged	**35**

Moody Beach, Wells
Maine Audubon

Moody Beach had two nesting pairs this season. An additional lone bird was observed early in the nesting season but never found a mate. Five total chicks fledged from Moody Beach. There were fireworks and fire disturbances over the fourth of July which corresponded with the loss of chicks. The northern most Ogunquit brood moved between Ogunquit and Moody Beach throughout the season.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Moody	01A	5/8/22	4	4	--	H	6/10/22	N	7/5/22	2
Moody	02A	5/24/22	4	3	--	H	6/21/22	N	7/16/22	3
									Total Fledged	**5**

Wells Beach, Wells
Maine Audubon

Wells Beach hosted the most breeding pairs of Piping Plovers there since the project began. The 14 pairs fledged 40 chicks - the most chicks ever from one single beach in Maine since monitoring began. A high tide event on May 17th washed over the eggs of three nests. The eggs were recovered by two of the three nesting pairs, so 07A and 13A fledged one and three chicks, respectively. People removed an egg from inside the exclosure at nest 13A with a stick reducing the clutch size to three. Law enforcement responded but due to limited evidence there was no investigation. Wells had its southernmost nest 14A this season in an area where sea walls line the shoreline and this pair successfully fledged two chicks.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Wells	01A	4/21/22	4	4	--	H	5/24/22	N	--	0
Wells	02A	4/21/22	4	4	--	H	5/25/22	Y	6/19/22	4

Wells	03A	4/28/22	4	4	--	H	5/30/22	Y	6/24/22	4
Wells	04A	4/29/22	4	4	--	H	5/31/22	N	6/25/22	4
Wells	05A	5/2/22	4	4	--	H	6/2/22	Y	6/27/22	3
Wells	06A	5/6/22	4	0	5/17/22	W	--	N	--	0
Wells	07A	5/8/22	4	1	--	H	6/10/22	N	7/5/22	1
Wells	08A	5/8/22	4	4	--	H	6/10/22	Y	7/5/22	4
Wells	10A	5/8/22	4	4	--	H	6/10/22	Y	7/5/22	3
Wells	09A	5/8/22	4	4	--	H	6/10/22	Y	7/5/22	1
Wells	11A	5/8/22	4	4	--	H	6/8/22	Y	7/3/22	3
Wells	12A	5/9/22	4	4	--	H	6/9/22	N	7/4/22	4
Wells	13A	5/13/22	4	3	--	H	6/14/22	N	7/9/22	2
Wells	06B	5/24/22	4	4	--	H	6/24/22	N	7/22/22	4
Wells	01B	6/2/22	4	1	--	H	7/1/22	Y	7/26/22	1
Wells	14A	6/10/22	3	2	--	H	7/11/22	N	8/4/22	2
									Total Fledged	**40**

Drakes Island, Wells
Maine Audubon

Drakes Island had two nesting pairs for the first time since monitoring began. Zero chicks successfully fledged from Drakes. Nest 1A was predated by a fox only a couple days before its estimated hatch date. Nest 1B eggs were washed in a high tide but the adults recovered three of them and continued incubation outside the exclosure. The exclosure was modified by attaching more fencing to include the new nest location inside. An additional egg disappeared six days before the hatch date bringing clutch size down to two. A volunteer monitor reported the lone four-day old chick was predated by a gull.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Drakes Island	01A	4/29/22	4	0	5/22/22	P	--	N	--	0
Drakes Island	02A	5/27/22	4	0	6/8/22	P	--	N	--	0
Drakes Island	01B	5/31/22	4	1	--	H	6/29/22	Y	--	0
									Total Fledged	**0**

Laudholm Beach, Wells
Rachel Carson NWR

Four pairs of Piping Plovers made eight nest attempts on Laudholm Beach in 2022 and produced six fledglings for a productivity of 1.50 fledglings per pair. Four nests were not exclosed due to rocks preventing the exclosure from being hammered into the ground; these are the same four nests that were predated. Specific predator identification was challenging but both fox and crow tracks were seen around the site and predated nests.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Laudholm	01A	4/56/22	3	3	--	H	5/31/22	Y	6/25/22	2
Laudholm	02A	5/10/22	3	0	5/18/22	W	--	Y	--	0
Laudholm	03A	5/18/22	2	0	5/24/22	P	--	N	--	0
Laudholm	04A	5/19/22	1	0	5/20/22	P	--	N	--	0
Laudholm	02B	5/24/22	4	4	--	H	6/24/22	Y	7/19/22	4
Laudholm	04B	5/24/22	4	0	6/24/22	P	--	N	--	0
Laudholm	03B	5/27/22	4	0	6/14/22	P	--	N	--	0
Laudholm	03C	6/20/22	2	0	7/14/22	W	--	Y	--	0
									Total Fledged	**6**

Crescent Surf Beach, Kennebunk
Rachel Carson NWR

This year, six pairs of Piping Plovers made eight nest attempts and fledged seven chicks for a productivity of 1.17 fledglings per pair. While six nests made it to hatch, only two of those broods survived to fledge. The cause of chick loss is largely unknown due to lack of direct evidence, however weather events, flood tides, and some predator sign were reported around the time chicks went missing. Two adult Piping Plovers were lost on Crescent Surf this season. One was found deceased entrapped in a beached lobster trap early in the season, and the other was found deceased inside its nest exclosure right after the nest hatched with no evidence as to the cause of death.

USDA Wildlife Services removed specialist predators from the beach throughout the breeding season.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Crescent Surf	01A	5/10/22	4	4	--	H	6/9/22	Y	7/4/22	4

Crescent Surf	02A	5/10/22	3	0	5/16/22	W	--	Y	--	0
Crescent Surf	03A	5/11/22	3	0	5/16/22	W	--	Y	--	0
Crescent Surf	04A	5/12/22	4	4	--	H	6/13/22	N	7/8/22	3
Crescent Surf	05A	5/12/22	4	3	--	H	6/10/22	Y	--	0
Crescent Surf	06A	5/12/22	4	4	--	H	6/10/22	Y	--	0
Crescent Surf	02B	5/24/22	4	4	--	H	6/22/22	Y	--	0
Crescent Surf	03B	5/24/22	4	3	--	H	6/27/22	Y	--	0
									Total Fledged	**7**

Parsons Beach, Kennebunk
Rachel Carson NWR

Three pairs of Piping Plovers nested on Parsons Beach in 2022 and made three nest attempts, all of which hatched. Two chicks fledged resulting in a productivity of 0.67 fledglings per pair. None of the nests were exclosed as two of them were located under dune ledges and the other landowner permission was not granted to establish any management around the nest. One adult Piping Plover from Nest 03A was predated by a raptor and one chick was lost right after hatch. It is suspected heat contributed to this chick's death, but is unconfirmed. The other sources of chick loss are unknown due to lack of direct evidence though weather events, dog tracks, and some predator sign were recorded around the time when chicks went missing.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Parsons	01A	5/27/22	4	3	--	H	6/26/22	N	7/21/22	1
Parsons	02A	5/30/22	4	4	--	H	6/30/22	N	7/25/22	1
Parsons	03A	6/6/22	4	3	--	H	7/6/22	N	--	0
									Total Fledged	**2**

Marshall Point, Kennebunk
Rachel Carson NWR

Piping Plovers did not attempt to nest on Marshall Point this year. Individuals were occasionally observed foraging on the beach, but they were likely from the Goose Rocks pairs.

Goose Rocks Beach, Kennebunkport
Maine Audubon

A total of 12 pairs of Piping Plovers nested on Goose Rocks with 29 nest attempts. Nine of those pairs made 24 of the 29 nesting attempts on the Batson River end of Goose Rocks Beach. The majority of those nests were suspected to be predated by skunks and foxes. Plovers arrived in early spring and started engaging in nesting activity in April, however plover behavior and numbers at the western end would vary drastically visit to visit as if they were being harassed by predators. In late May, Great-horned Owl tracks were spotted on Marshall Point. During the same timeframe exclosed Nest 01A was abandoned very close to its hatch date, we had concerns that adults were at risk of predation from the owl. We halted using exclosures until mid-June when the owl had moved on. The combination of unexclosed nests along with the high predator load led to many pairs re-nesting up to three or four times. Some of those re-nests were continuation nests from pairs that lost eggs mid-way through laying, resulting in smaller clutches. Nest 02A at Dinghy Point was lost and extensive cat tracks were observed in the area. Plovers on Goose Rocks continue to focus nesting activities on the Batson River end but we saw some atypical nest sites this season including the far eastern end.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Goose Rocks	01A	5/2/22	3	0	5/27/22	A	--	Y	--	0
Goose Rocks	02A	5/2/22	3	0	5/10/22	P	--	N	--	0
Goose Rocks	03A	5/10/22	3	0	5/17/22	W	--	Y	--	0
Goose Rocks	04A	5/10/22	4	4	--	H	6/14/22	Y	7/9/22	2
Goose Rocks	05A	5/13/22	3	0	5/17/22	P	--	N	--	0
Goose Rocks	06A	5/16/22	4	3	--	H	6/16/22	N	7/11/22	1
Goose Rocks	07A	5/16/22	1	0	5/17/22	U	--	N	--	0
Goose Rocks	08A	5/16/22	4	4	--	H	6/13/22	Y	7/8/22	3
Goose Rocks	07B	5/20/22	4	4	--	H	6/23/22	Y	7/19/22	4
Goose Rocks	09A	5/14/22	3	0	5/16/22	W	--	N	--	0

Goose Rocks	05B	5/24/22	4	0	6/14/22	P	--	N	--	0
Goose Rocks	10A	5/24/22	4	0	5/27/22	P	--	N	--	0
Goose Rocks	09B	5/25/22	4	4	--	H	6/26/22	N	--	0
Goose Rocks	03B	5/25/22	4	0	5/20/22	P	--	N	--	0
Goose Rocks	01B	5/27/22	2	0	6/2/22	P	--	N	--	0
Goose Rocks	11A	5/27/22	4	0	6/7/22	P	--	N	--	0
Goose Rocks	01C	6/2/22	3	0	6/9/22	P	--	N	--	0
Goose Rocks	12A	6/3/22	4	0	6/9/22	P	--	N	--	0
Goose Rocks	10B	6/7/22	4	0	6/21/22	W	--	N	--	0
Goose Rocks	13A	6/7/22	4	4	--	H	7/5/22	Y	7/29/22	4
Goose Rocks	03C	6/9/22	1	0	6/14/22	P	--	N	--	0
Goose Rocks	11B	6/14/22	4	3	--	H	7/15/22	Y	8/8/22	3
Goose Rocks	05C	6/16/22	4	0	--	H	7/17/22	Y	--	0
Goose Rocks	01D	6/16/22	4	4	--	H	7/15/22	Y	8/9/22	3
Goose Rocks	10C	6/27/22	2	0	6/29/22	P	--	N	--	0
Goose Rocks	03D	6/27/22	1	1	--	H	7/24/22	Y	8/18/22	1
Goose Rocks	10D	6/29/22	1	0	7/6/22	W	--	N	--	0
Goose Rocks	14A	6/21/22	1	0	6/23/22	P	--	N	--	0
Goose Rocks	14B	6/27/22	3	3	--	H	7/21/22	Y	8/15/22	3
									Total Fledged	**24**

Fortunes Rocks Beach, Biddeford
Maine Audubon

Seven pairs of Piping Plovers attempted to nest ten times on Fortunes Rocks Beach. Nest 7A, at the City municipal beach (also called Hattie's Beach), was exclosed without a net top and lost for unknown reasons. Dogs continue to be a large presence on Fortunes Rocks, often unleashed. A total of 15 birds fledged from the seven pairs on Fortunes Rocks Beach. This was the highest number of nesting pairs and fledglings on Fortunes Rocks since the project began.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Fortunes Rocks	01A	4/27/22	4	3	--	H	6/1/22	N	6/27/22	2
Fortunes Rocks	02A	5/2/22	4	0	5/26/22	P	--	N	--	0
Fortunes Rocks	03A	5/10/22	4	0	5/17/22	W	--	N	--	0
Fortunes Rocks	04A	5/10/22	4	0	5/20/22	P	--	N	--	0
Fortunes Rocks	05A	5/13/22	4	4	--	H	6/13/22	N	7/8/22	3
Fortunes Rocks	03B	5/24/22	4	4	--	H	6/23/22	Y	7/18/22	4
Fortunes Rocks	04B	5/27/22	4	4	--	H	6/26/22	Y	7/21/22	3
Fortunes Rocks	06A	5/30/22	3	0	6/23/22	W	--	N	--	0
Fortunes Rocks	02B	6/2/22	4	4	--	H	7/3/22	N	7/28/22	3
Fortunes Rocks	07A	6/14/22	4	0	6/23/22	U	--	Y	--	0
									Total Fledged	**15**

Hills Beach, Biddeford
Maine Audubon

Two pairs of Piping Plovers nested on Hills Beach. Nest 2A was located on the point between Surf Ave and Basket Island, adjacent to the causeway where vehicles drive to Basket Island. Landowner permission in this section of the beach is a challenge, so this nest was not able to be exclosed and was

only protected with a small triangle of three signs and twine. Despite nearly no management and vehicles driving on the beach, all of the hatched chicks from that nest fledged.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Hills	01A	5/2/22	4	4	--	H	6/1/22	N	6/26/22	1
Hills	02A	5/20/22	4	3	--	H	6/16/22	N	7/11/22	3
									Total Fledged	**4**

Ferry Beach, Saco
Maine Audubon

Ferry Beach in Saco had two nesting pairs of Piping Plovers this season that fledged a total of five chicks. One pair in the Kinney Shores area and the other pair was south of Ferry Beach State Park. In 2021 four pairs nested and fledged five chicks. Although the number of nesting pairs decreased, fledgling numbers stayed the same.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Ferry	01A	5/11/22	4	4	--	H	6/12/22	Y	7/7/22	3
Ferry	02A	6/8/22	4	3	--	H	7/10/22	Y	8/4/22	2
									Total Fledged	**5**

Goosefare Brook, Saco
Rachel Carson NWR

One pair of Piping Plovers made one nest attempt at Goosefare Brook and fledged two chicks. All four eggs hatched, but only three chicks were ever seen. Goosefare Brook was frequently visited by crows, gulls, and foxes. In addition, human trespassing inside the symbolic fencing continued to be an issue along with off-leash dogs. The beach also experienced severe erosion from the river and 11-ft tide events that created a steep bank near the nest. The refuge placed signs on either end of the bank stating "Danger! Keep off eroding edge" however people continued to walk on it accelerating the erosion process, thus bringing the edge within inches of the nest exclosure.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Goosefare Brook	01A	5/27/22	4	4	--	H	6/25/22	Y	7/20/22	**2**

Ocean Park Beach, Old Orchard
Maine Audubon

There were no nesting pairs of Piping Plovers on Ocean Park Beach this year but the beach had plover activity throughout the season. There were signs of scraping early in the season, but no nest attempts were discovered. Potential nesting habitat was good, and our southernmost Old Orchard brood used areas of Ocean Park before the brood moved back to Old Orchard Beach.

Old Orchard Beach, Old Orchard
Maine Audubon

Old Orchard had nine pairs of Piping Plovers nest this year with a total of 10 nest attempts. All abandoned nests were suspected to be caused by the presence of different outdoor domestic cats, which may have been linked to the death of an incubating adult. A domestic cat caught the adult female from Pair 06. The owner immediately contacted MDIFW Game Wardens. The plover was examined and quickly released but later the nest was abandoned. A chick from Pair 01 fell into a wooden boardwalk but was luckily discovered by a volunteer who picked up the boardwalk so the chick could return to its brood. Nest 04A lost two chicks to predation during hatch but the remaining two hatched a bit later that day and survived about a week before disappearing. Pair 07 endured high levels of human disturbance. Scrapes were suspected of being raked over and only an exclosure with a small amount of fencing around it was allowed. The pair only laid one egg, despite this being the first pair to arrive in the state and having scraped for several weeks. The nesting area had frequent boot tracks inside the fencing along with a smiley face drawn in the sand so we suspect frequent human disturbance limited this pair. Unfortunately, there were other instances of disturbance where people entered protective fencing on Old Orchard Beach. Twice, small fake eggs were discovered inside a fake scrape within fencing nearby a pair scouting territory. Heavy cleaning and raking by the town influences food availability and cover for chicks. In mid-August, a fledgling from Nest 09A was photographed by our volunteer coordinator showing human hair wrapped around its foot and cutting off circulation. Biologists were able to capture the fledgling, remove the hair, and reunite the fledgling with its brood. Biologists and volunteers document that chicks fully fledge later on Old Orchard than other Maine beaches. Typically Piping Plovers are taking practice flights at day 25 whereas on Old Orchard it is not seen until an average of 35 days and up to 40 days for full flight.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Old Orchard	01A	4/30/22	4	4	--	H	6/3/22	Y	6/28/22	3
Old Orchard	02A	5/11/22	4	4	--	H	6/11/22	N	7/6/22	2
Old Orchard	03A	5/11/22	4	0	6/8/22	A	--	N	--	0
Old Orchard	04A	5/11/22	4	4	--	H	6/10/22	Y	--	0

Old Orchard	05A	5/16/22	4	0	6/20/22	A	--	Y	--	0
Old Orchard	06A	5/23/22	3	0	6/8/22	A	--	Y	--	0
Old Orchard	07A	5/23/22	1	1	--	H	6/22/22	Y	7/17/22	1
Old Orchard	08A	5/30/22	3	0	6/10/22	A	--	N	--	0
Old Orchard	06B	6/14/22	4	3	--	H	7/10/22	N	--	0
Old Orchard	09A	6/17/22	4	4	--	H	7/16/22	N	8/10/22	2
									Total Fledged	**8**

Pine Point, Scarborough
Maine Audubon

Pine Point hosted a single pair of Piping Plovers this season. The pair settled early and laid a three egg clutch. This nest was exclosed immediately because it was exposed in open sand at a beach with frequent dog use. Three eggs hatched; however, a chick was lost for unknown reasons. Two chicks reached fledgling age and promptly left the beach once they could fly.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Pine Point	01A	5/25/22	3	3	--	H	6/27/22	Y	7/22/22	**2**

Western Beach, Scarborough
Maine Audubon

Eight pairs of Piping Plovers nested on Western Beach. Predator activity was extensive, and fox appeared to be the main predator. Six nests hatched from eleven nesting attempts. Of the 22 eggs that hatched, 17 chicks fledged off the beach. Pair 06A nested in the open sand on the busy point where Western meets up with Ferry Beach. There was frequent late night human disturbance due to illegal beach bonfires and parties near that nest. All four chicks hatched but were lost promptly, the last of which was observed being predated by a gull.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Western	01A	5/2/22	4	4	--	H	6/10/22	Y	7/5/22	4
Western	02A	5/6/22	4	4	--	H	6/11/22	N	7/6/22	3

Western	03A	5/9/22	4	0	5/16/22	W	--	Y	--	0
Western	04A	5/14/22	4	0	5/18/22	P	--	N	--	0
Western	05A	5/14/22	4	0	6/6/22	P	--	N	--	0
Western	06A	5/16/22	4	4	--	H	6/16/22	Y	--	0
Western	07A	5/18/22	4	0	6/6/22	P	--	N	--	0
Western	08A	5/19/22	4	0	6/14/22	P	--	N	--	0
Western	03B	5/27/22	4	3	--	H	6/24/22	N	7/19/22	3
Western	05B	6/13/22	4	4	--	H	7/18/22	Y	8/12/22	4
Western	07B	6/13/22	3	3	--	H	7/12/22	Y	8/5/22	3
									Total Fledged	**17**

Scarborough Beach State Park, Scarborough
Maine Audubon

Seven pairs of Piping Plovers scraped out nests at Scarborough Beach State Park. Astronomic high tides in both May and June washed out nests on this beach. Four nests hatched out of nine nesting attempts. Ten out of the 16 hatched chicks were lost likely due to predation. The parent from 06B left the beach before its one remaining chick was ready to be independent; the chick was tended by the adult for 07A and fledged.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
SBSP	01A	5/6/22	4	0	5/17/22	W	--	Y	--	0
SBSP	02A	5/11/22	2	0	5/17/22	W	--	Y	--	0
SBSP	02B	5/24/22	4	4	--	H	6/26/22	Y	7/21/22	2
SBSP	03A	5/25/22	4	4	--	H	6/21/22	Y	--	0
SBSP	04A	5/27/22	4	0	5/30/22	P	--	N	--	0
SBSP	05A	5/27/22	4	0	6/20/22	W	--	Y	--	0
SBSP	06A	6/13/22	4	0	6/15/22	W	--	N	--	0
SBSP	06B	6/20/22	3	3	--	H	7/21/22	N	8/15/22	1
SBSP	07A	6/24/22	4	3	--	H	7/21/22	Y	8/15/22	3
									Total Fledged	**6**

Higgins Beach, Scarborough

Maine Audubon

Six pairs of Piping Plovers nested on Higgins Beach with seven nest attempts. Only the first three nests that hatched successfully fledged chicks. A Least Tern Colony settled at Higgins Beach in May, along with an increase of fox tracks and egg losses throughout the colony. The last two nests were not exclosed because they were within the Least Tern colony and we did not want to endanger a tern. Fox were believed to have predated the chicks and nests from Nests 04B, 05A, and 06A.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Higgins	01A	4/25/22	4	3	--	H	5/24/22	Y	6/18/22	3
Higgins	02A	4/25/22	4	3	--	H	5/28/22	Y	6/22/22	1
Higgins	03A	5/2/22	4	3	--	H	6/4/22	Y	6/29/22	2
Higgins	04A	5/11/22	4	0	5/17/22	W	--	Y	--	0
Higgins	04B	5/23/22	4	4	--	H	6/23/22	Y	--	0
Higgins	05A	6/1/22	4	4	--	H	7/5/22	N	--	0
Higgins	06A	6/23/22	3	0	6/29/22	P	--	N	--	0
									Total Fledged	**6**

Breakwater Beach- Ram Island, Cape Elizabeth
Maine Audubon

One pair of Piping Plovers nested on Breakwater Beach this season. The brood was suspected to be predated by fox just over a week after hatching.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Breakwater	01A	6/1/22	4	3	--	H	6/28/22	Y	--	**0**

Nano's Beach- Ram Island, Cape Elizabeth
Maine Audubon

One pair of Piping Plovers nested on Nano's Beach. The pair's first nesting attempt was suspected to be predated by a fox during incubation of four eggs.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Nano	01A	5/13/2022	4	0	5/19/22	P	--	N	--	0
Nano	01B	5/24/2022	4	4	--	H	6/20/22	Y	7/14/22	3

									Total Fledged	**3**

Crescent Beach State Park, Cape Elizabeth
Maine Audubon

Two pairs of Piping Plovers nested on Crescent Beach State Park. Nest 01A was located on the western side of the beach where we typically do not see much plover activity. This pair successfully fledged all four chicks. The state park ceased raking activity throughout the entire breeding season which contributed to the plover's success alongside a new enthusiastic group of volunteer monitors.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Crescent SP	01A	6/13/22	4	4	--	H	7/1/22	N	7/26/22	4
Crescent SP	02A	6/13/22	4	2	--	H	7/15/22	Y	8/9/22	1
									Total Fledged	**5**

Seawall Beach, Phippsburg
Maine Audubon

Seawall Beach had 15 nesting pairs of Piping Plovers attempt to nest 27 times. Just over half of the nesting attempts were unsuccessful due to predation or overwash from high tides. The Least Tern colony attracted fox interest so we experienced heavy predator activity once the terns arrived. A total of 34 chicks successfully fledged. Brood 3C hatched four chicks that were observed for one visit. The following visit the brood was not located and an adult male plover was seen attempting to incubate two Least Tern chicks. The next visit, Brood 13B had an extra larger and older chick; based on hatch dates we believe this chick was one from Brood 3C.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Seawall	01A	5/12/22	4	4	--	H	6/12/22	Y	7/7/22	3
Seawall	02A	5/12/22	4	4	--	H	6/14/22	Y	7/9/22	2
Seawall	03A	5/12/22	1	0	5/17/22	W	--	N	--	0
Seawall	04A	5/12/22	4	0	5/23/22	U	--	N	--	0
Seawall	05A	5/12/22	2	0	5/12/22	A	--	Y	--	0
Seawall	06A	5/12/22	4	4	--	H	6/14/22	N	7/9/22	3
Seawall	07A	5/12/22	4	0	5/26/22	P	--	N	--	0

Seawall	08A	5/12/22	4	0	6/7/22	A	--	N	--	0
Seawall	09A	5/12/22	3	1	--	H	6/11/22	N	--	0
Seawall	10A	5/18/22	4	0	5/23/22	P	--	N	--	0
Seawall	11A	5/18/22	4	0	5/23/22	P	--	N	--	0
Seawall	12A	5/18/22	4	0	5/31/22	P	--	N	--	0
Seawall	04B	5/26/22	4	4	--	H	6/24/22	N	7/19/22	3
Seawall	13A	5/31/22	2	0	6/7/22	A	--	N	--	0
Seawall	14A	5/31/22	4	0	6/28/22	P	--	N	--	0
Seawall	05B	6/3/22	4	4	--	H	6/30/22	N	7/25/22	4
Seawall	07B	6/3/22	4	4	--	H	7/1/22	N	7/26/22	2
Seawall	10B	6/3/22	4	4	--	H	6/30/22	Y	7/25/22	4
Seawall	03B	6/7/22	1	0	6/13/22	A	--	N	--	0
Seawall	15A	6/7/22	4	3	--	H	7/11/22	N	8/5/22	3
Seawall	16A	6/13/22	4	0	6/28/22	U	--	N	--	0
Seawall	08B	6/17/22	4	0	6/22/22	P	--	N	--	0
Seawall	13B	6/17/22	3	3	--	H	7/25/22	Y	8/19/22	3
Seawall	12B	6/22/22	3	3	--	H	7/17/22	Y	8/11/22	3
Seawall	03C	6/22/22	4	4	--	H	7/19/22	N	8/16/22	1
Seawall	08C	6/24/22	3	3	--	H	7/25/22	N	8/19/22	3
Seawall	09B	6/24/22	3	0	7/15/22	W	--	N	--	0
									Total Fledged	**34**

Popham Beach State Park, Phippsburg
Maine Audubon

Popham Beach State Park had 13 pairs of Piping Plovers fledge 19 chicks. The bulk of the nesting activity occured on the western back end of the beach. Of the 17 nesting attempts, all but four were exclosed due to the excessive amount of predator tracks throughout the nesting areas. Four nesting attempts were made in dune areas near the entrances to the beach where human traffic is high; all four of these nest attempts hatched but no chicks survived to fledge. Nest 13B hatched all three eggs but chicks were never observed.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged

Popham	01A	5/9/22	4	4	--	H	6/11/22	Y	--	0
Popham	02A	5/9/22	3	3	--	H	6/10/22	Y	--	0
Popham	03A	5/9/22	4	4	--	H	6/8/22	Y	7/3/22	3
Popham	04A	5/9/22	4	4	--	H	6/11/22	Y	7/6/22	3
Popham	05A	5/9/22	4	2	--	H	6/9/22	Y	7/4/22	3
Popham	06A	5/12/22	2	0	5/18/22	A	--	Y	--	0
Popham	07A	5/12/22	4	0	5/26/22	P	--	N	--	0
Popham	08A	5/12/22	4	4	--	H	6/14/22	Y	--	0
Popham	09A	5/23/22	4	4	--	H	6/24/22	Y	7/19/22	3
Popham	10A	5/23/22	4	4	--	H	6/28/22	Y	7/23/22	3
Popham	11A	5/23/22	4	0	6/17/22	A	--	Y	--	0
Popham	07B	5/31/22	4	3	--	H	7/3/22	N	7/28/22	1
Popham	12A	5/31/22	4	4	--	H	6/26/22	N	--	0
Popham	13A	6/3/22	4	0	6/17/22	W	--	Y	--	0
Popham	06B	6/3/22	4	4	--	H	7/7/22	N	8/1/22	3
Popham	13B	6/22/22	3	3	--	H	7/21/22	Y	--	0
Popham	08B	6/28/22	3	3	--	H	7/26/22	Y	--	0
									Total Fledged	**19**

Hunnewell Beach, Phippsburg
Maine Audubon

There were no Piping Plovers nesting on Hunnewell Beach in 2022. The beach was surveyed multiple times and had some suitable habitat but no plovers were ever observed there. The last time a pair nested on Hunnewell was in 2001.

Half Mile Beach- Reid State Park, Georgetown
Maine Audubon

Half Mile Beach had two confirmed nesting pairs of Piping Plovers that each had successful nests. The two nests hatched a total of eight chicks, with seven chicks successfully fledging. A third pair of adults was spotted consistently on Half Mile and Indian Point, though no evidence of a nest was ever found. Pair 01A included a banded male plover tagged with green flag A50.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Half Mile	01A	5/13/22	4	4	--	H	6/8/22	Y	7/3/22	3
Half Mile	02A	05/25/22	4	4	--	H	6/20/22	Y	7/25/22	4
									Total Fledged	**7**

Mile Beach- Reid State Park, Georgetown
Maine Audubon

Mile Beach had two nest attempts. Nest 01A was discovered as a predated nest and the other was found abandoned roughly two weeks after discovery. No chicks were successfully hatched or fledged from Mile Beach in 2022.

Beach	Nest	Discovery	Eggs	# Hatched	Nest Loss Date	Nest Fate	Actual Hatch	Exclosed	Actual Fledge	# Fledged
Mile	01A	5/19/22	--	--	5/19/22	P	--	N	--	--
Mile	02A	5/25/22	3	0	6/9/22	A	--	N	--	--
									Total Fledged	**0**

Outreach Details and Results

Maine Audubon
Outreach to beach-goers and stakeholders is essential to the success of our work protecting beach-nesting birds, but has been increasingly challenging throughout the COVID pandemic, especially as it coincided with increased nesting birds requiring more monitoring and management from biologists. The Coastal Birds Team devotes time when on the beach to educate and connect with people while doing our management work, and we were able to engage in some tabling where we set up a small booth with plover mounts and outreach materials by beach entrances.

We continued expanding innovative signage to engage beach goers, including putting up plover story-board educational signs that greeted people as they walked on the beach similar to what we began in 2020. These were very popular at the sites where they were displayed, and we developed and made new signage to educate about what an exclosure is and encourage people to move away from fencing. Exclosure story-boards were placed at high-trafficked exclosure sites that had small symbolic fencing buffers in Ogunquit, Old Orchard, Goose Rocks, and others. These signs directed beachgoers to back away and move further down the beach, and educational signs with more information were placed at a distance explaining exclosures as a plover management strategy.

Quantifying how many people we connected with is also challenging, and we can only offer our best estimate:

- **830** Instagram followers- connected with and interacted with via Instagram platform with stories and information
- **350** people educated through virtual and on-beach Trainings
- **2,860** opportunistic and socially-distanced interactions on the beach
- **400** people engaged through educational tabling at beach entrances

Maine Audubon connected with a minimum of 4,440 people in 2022, but the reality is probably many more.

Maine Audubon biologists also worked closely with communications staff to create blogposts, videos, and social media content, and also spoke with newspaper and television reporters' numerous times throughout the nesting season about the project.

Rachel Carson National Wildlife Refuge

One of the primary duties of the RCNWR plover technician is to work together with volunteers and interns to have a public presence on our beaches. Whenever possible, the plover technician is in the field, speaking with the public, ensuring closures are in effect, letting people view the birds through spotting scopes, distributing information and making positive public contacts. When available, volunteers and interns supplement this effort. Staff presence on the beaches helps ensure that management problems are noted in a timely manner and that biological data is collected. Public education is one of our primary plover conservation tools.

A log of public outreach activities is maintained, and all interns and staff are encouraged to write down plover and tern related outreach contacts. In 2022, a minimum of 262 staff interactions with public individuals were recorded. This does not include any interactions volunteers had throughout the season. The recorded interactions were distributed as follows: Laudholm 70, Crescent Surf 9, Parsons 52, Goosefare Brook 110, Ferry 14, and other sites 7. The plover technician led two educational beach visits with local high schools in partnership with the Wells Reserve. RCNWR also maintains an active social media site on Facebook with multiple educational posts regarding plovers and terns throughout the year. The refuge's Facebook page has around 12,000 followers.

CONCLUSIONS AND RECCOMENDATIONS FOR 2023

Intensive field work, predator management, law enforcement, and active beach outreach programs continue to aid in the recovery of Maine's Piping Plover and Least Tern populations. Eight consecutive years of over 60 pairs of nesting Piping Plovers and a chick productivity rate of over 1.5 indicates the current management program is benefitting the species. The new high of 140 nesting pair and accompanying record of 252 fledglings in 2022 demonstrate that Maine beaches are capable of sustaining more nesting Piping Plovers than our previous 41 years of experience had indicated.

In spite of Least Tern productivity not reaching recovery goal numbers in recent years, we documented the third-highest number of Least Tern nesting pairs in 2022 since monitoring began in 1977. Least Tern

longevity means their population is more resilient in the face of poor productivity, however more attention to Least Terns may be necessary in future years.

Our work also continues to benefit other species of concern, including the state and federally *endangered* Roseate Tern, federally *threatened* Red Knot, and other migrating shorebird species of management concern. In areas where Least Tern or Piping Plover protected area fencing remains until mid-August, great numbers of migratory shorebirds roost.

Based on good productivity in recent years, plover numbers may continue to experience increases in the upcoming years. As Maine's Piping Plover population continues to recover, the breeding population may level off and stabilize. Managers need to prepare for multiple scenarios. We recommend the following for 2023:

General

Support the continued expansion of both plovers and particularly terns to sites north of Portland where historically both species have had great success.

Electric Fencing

The solar-powered electric net fence used at the tern colony at Laudholm and Higgins Beach, and occasionally at other beaches, continues to be a useful tool in protecting these birds from predators. However, they are most effectively used in concert with other predator management techniques and must be monitored closely. We recommend that net fences continue to be used at tern colonies and potentially be used at sites like Popham or Seawall to help increase the success of terns at other sites in Maine.

Outreach

The ongoing global pandemic meant that many of our traditional education efforts had to be altered and new methods developed. Having an outreach specialist for our third year helped with our transition to digital and social media outreach as well as developing and manufacturing new signage to deal with issues that cropped up mid-season. Despite outreach numbers appearing lower than previous years, we believe we reached many more people than documented with our new beach signs and media presence.

We have found that at sites like Ogunquit Beach with concerted outreach efforts, the public is more informed and excited about the birds, evidenced by the fact that people frequently remember talking with us on previous vacations. Based on our increasingly positive interactions, we believe our outreach efforts are productive and worth continuing. We plan on continuing our increased staffing capacity for outreach in 2023, and hope we will be able to directly interact with more beachgoers than in the past three years as the pandemic recedes. We believe this will be ever more important as we anticipate beachgoers will encounter even more birds than in 2022.

Law Enforcement

The presence of wardens on the beach was helpful in ensuring the public's compliance staying outside our symbolic fencing and following dog ordinances. Wardens gave out warnings to dog owners, provided information about the birds to beachgoers, and were critical in investigations of potential take incidents on the beaches, such as on Wells Beach, Western Beach, and Old Orchard Beach. Continued and increased pressure from dog walkers on beaches such as Fortunes Rocks Beach, Hills Beach, Pine Point Beach, Old Orchard Beach, Wells Beach, and Higgins Beach makes Warden Service presence essential for continued plover nesting success. Continued correspondence and thought about how to best use wardens on the beach and maximize our funding efforts is needed.

Beach Cleaning

Beach cleaning continues on many of Maine's beaches, although some beach managers are reducing cleaning activity. Beach cleaning needs to be done in accordance with a site-specific management plan that incorporates the needs of nesting birds. Old Orchard Beaches and Pine Point Beach are regularly cleaned, and small sections of Ogunquit Beach are cleaned, although the "Natural Beach Area" continues to be left untouched throughout the summer. Continued proper management of this beach will further build up the sand on the beach, making it an excellent example for other municipalities and beach managers. Wells Beach and Crescent Beach State Park ceased all raking activities during the plover breeding season this year and had greater than usual productivity. The success can be linked to a variety of factors including leaving wrack on the beach, but demonstrates the benefit of not raking wrack off the beach. We will continue to share these successes with other towns that continue raking and/or to limit raking in more areas.

Use of trained spotters (in accordance with beach management agreements) should continue to be monitored and encouraged. We recommend closer correspondence between MDIFW and municipalities to ensure that commitments outlined in the Beach Management Agreements are being followed as Maine Audubon is not a signatory on the agreements and are not as effective as MDIFW in making change happen.

Predator Management

Predator management from USDA Wildlife Services continues to be integral to Maine's Piping Plover and Least Tern populations. Wildlife Services operated at only two of our nearly 30 sites, but remain important to the overall state productivity numbers, as sites like Crescent Surf Beach continue to be essential for both endangered beach-nesting species. Predator management areas increase the number of nesting birds, decrease nest predation, and increase chick survivorship.

We believe that productivity numbers would be much lower at Crescent Surf Beach and Ogunquit without this essential support from the Wildlife Services team. Wildlife Services conducts annual reports of their work and the results consistently demonstrate the effectiveness of predator management.

Domestic and Feral Animals

Continued collaboration with the Warden Service and further outreach efforts are critical to limiting the detrimental effects of domestic and feral animals on nesting Piping Plovers. Roaming cats and off-leash dogs present problems every year and result in nest abandonment and plover harassment. This year cats

on Old Orchard were a particular problem and linked to a number of abandonments and likely adult deaths. In 2023 we recommend increased outreach efforts on encouraging residents and renters to keep cats indoors. Continued education and monitoring of dog owners (particularly by the Warden Service) will be important to nesting success in future years, especially during early morning and evening hours, when walkers are most likely to let their dogs run on the beach. Plovers continue to nest on beaches with heavy dog use such as Old Orchard, Pine Point, and Fortune's Rocks.

Table 1: Number of Nesting Least Tern Pairs and Fledglings ( ) at each Nesting Site in Maine, 1977-2022

Year	WELLS	LAUDHOLM FARM	CRESCENT SURF	GOOSE ROCKS	GOOSEFARE BROOK	PINE POINT	FERRY/ WESTERN	STRATTON ISLAND	HIGGINS	RAM ISLAND	SEAWALL	POPHAM STATE PARK	REID STATE PARK	TOTAL
1977	0(0)	[3(0)]	14(10)	20-25(20)	-	0(0)	6-8(6)	-	-	0(0)	13(14)	4-5(0)	0(0)	50-60(50)
1978	0(0)	0(0)	[7(0)]	55(35+)	-	0(0)	20(25+)	-	-	0(0)	18(6+)	0(0)	0(0)	93(66)
1979	25(6+)	3(?)	0(0)	[22(0)]	-	0(0)	30(12)	-	-	0(0)	20(13)	0(0)	0(0)	78(31)
1980	[2(0)]	[6(0)]	17(12)	15(12)	-	0(0)	6(0)	-	-	0(0)	12(4)	0(0)	12(6)	62(34)
1981	0(0)	[N3(0)] [S3(0)]	55(20)	6-15(0)	-	0(0)	0(0)	-	-	0(0)	E2(0) W2(0)	4(1)	15(0)	78(21)
1982	0(0)	0(0)	27(13)	0(0)	-	0(0)	0(0)	-	-	0(0)	E3(5) W4(2)	0(0)	5(6)	39(26)
1983	0(0)	0(0)	[9](0)	22(5)	-	0(0)	0(0)	-	-	0(0)	14(12)	10(5)	8(7+)	54(29)
1984	0(0)	0(0)	0(0)	39(15)	-	0(0)	0(0)	-	-	0(0)	40(52)	0(0)	9(15)	88(82)
1985	0(0)	0(0)	4(3)	57(6)	-	0(0)	0(0)	-	-	8(0)	36(3)	0(0)	26(0)	131(12)
1986	0(0)	0(0)	26(10)	25(1)	-	1(0)	0(0)	-	-	0(0)	72(18)	0(0)	0(0)	124(30)
1987	0(0)	0(0)	[20(0)]	19(2)	-	8(1)	0(0)	-	-	0(0)	48(3)	14(6)	[8(0)]	89(12)
1988	0(0)	0(?)	45(20+)	[12(1)]	-	0(0)	0(0)	-	-	0(0)	13(12)	40+(7+)	[12(0)]	98(40)
1989	0(0)	0(0)	46(0)	5(0)	-	0(0)	0(0)	-	-	0(0)	18(1)	15(1)*	6(6)	83(8)
1990	0(0)	0(0)	16(6)	3(0)	-	0(0)	0(0)	-	-	0(0)	18(2)	20(15)	8(21)	65(44)
1991	0(0)	1(1)	0(0)	9(0)	-	0(0)	0(0)	-	-	0(0)	0*(12)	30(6)	12(6)	52(25)
1992	0(0)	14(11)	15(42)	0(0)	-	0(0)	0(0)	-	-	0(0)	33(30)	0*(0)	32(40)	94(123)
1993	0(0)	1(3)	64(62)	1(0)	-	0(0)	0(0)	-	-	0(0)	29(22)	8(4)	22(23)	125(114)
1994	0(0)	12(13)	35(32)	0	-	0(0)	0	-	-	0	22(20)	0	20(14)	89(79)
1995	0	8(0)	25(9)	[10(0)]	-	0	0	-	-	0	25(0)	0	42(7)	100(16)
1996	0	0	[15(0)]	0	-	0	0	-	15(8)	0	[20(0)]	25(22)	[30(0)]	60(30)
1997	0	0	20(1)	0	-	0	0	-	15(10)	0	[4(0)]	15(0)	[16(0)]	50(11)
1998	0	1(2)	20(7)	10(0)	1(0)	0	0	-	[25(1)]	0	12(2)	0	35(0)	86(12)
1999	0	20(20)	40(45)	0	0	0	0	-	[9(1)][1]	0	[28(1)][1]	0	0	62(67)
2000	0	37(17)	85(62)	0	0	0	0	-	4(2)	0	0	0	0	126(81)
2001	0	15(#)	102(57)	0	0	0	0	-	4(6)[2]	0	3(0)[2]	0	0	120(63)
2002	0	12(√)	81(145)	0	0	0	0	-	9(8)	0	0	0	19(2)	121(155)
2003	0	20(0)	57(8)	8(0)	0	0	0	-	38(53)	0	0	0	33(5)	156(66)
2004	15(10)	1(0)	[50(3)]	0	0	0	0	-	45(54)	0	0	0	50(2)	146(69)

2005	0	4(1)	[52(7)]	0	0	0	[40(3)]	18(9)	[22(0)]	0	[17(0)]	0	0	114(20)
2006	[1(0)]	0	30(10)	[25(1)]	0	0	0	103(15)[4]	1(0)	0	0	0	[1(0)]	134(26)[5]
2007	1(1)	0	[37(1)]	[45(2)]	0	0	0	113(108)	0	0	0	0	0	150(112)[5]
2008	0	0	92(52)	2(0)	0	0	[2]	72(33)	0	0	0	0	0	166(89)[5]
2009	0	0	102**(62)	[6**(0)]	0	0	0	72(16)	[16(0)]	0	0	0	0	170(78)
2010	0	[1]**	136**(45)	18** (0)[6]	0	0	0	76**(5)	0	0	0	0	0	211*(50)
2011	0	0	123*(73)	23*(12)	0	0	0	59*(28)	0	0	0	0	0	205*(113)
2012	0	0	99*(78)	0	0	0	0	92*(72)	0	5(1)[7]	0	2(3)[7]	0	191(155)[8]
2013	0	0	129*(93)	0	0	0	0	92*(79)	0	0	0	3*(0)	0	224*(172)
2014	0	*4***(4)	164*(29)	0	0	0	0	79*(36)	4*(0)	0	0	2*(6)	0	249(72)
2015	0	6**(0)	138*(144)	0	0	0	0	69*(0)	25*(6)	0	0	14*(3)	0	233*(153)
2016	0	2**(0)	169*(15)	10**(7)	0	0	4(0)**	69*(14)	0	0	1(0)**	22(0)**	0	238*(36)[5]
2017	0	1*(0)[6]	115*(13)	4*(0)[6]	0	0	48*(5)	87*(1)	0	0	0	0	0	255*(19)
2018	0	21*(0)[5]	43*(19)	2**[0]	0	0	4**[0]	122*(50)	10**	0	0	0	**0**	186*(69)[4]
2019	0	0	156*(31)	2[0][9]	0	0	35[0]	84*(14)	21*(16)	0	0	0	**0**	296*(61)
2020	0	0	130*(65)	0	0	0	0	0	128*(50)	0	7(1)	0	**0**	258*(116)
2021	0	18*(41)***	116*(40)***	10**[0]	0	0	0	[63*0]	71*(17)	0	13*(39)	0	**0**	281*(137)
2022	0	23*(18)	102(0)	*5***(1)	0	0	0	91*(14)	51*(5)	0	10*(2)	0	**0**	277*(40)

( ) number of fledglings
[ ] colony deserted
* simultaneous count at all occupied nesting sites during window count, not a site specific high nest count, only these numbers used in total. In 2017, after window count, colonies moved around substantially due to predation issues, in 2018 a synchronized count was not possible as the CS colony was disrupted and colonies never really synched up.
** nesting outside of the window count and not included in state total
*** Productivity at CS and Laudholm should be calculated by combining number of nests and fledglings from the two and be considered one "Little River colony" as LETE were moving back and forth between beaches after fledging making it impossible to know where birds fledged from.
# total amount of fledglings included with the Crescent Surf totals, could not differentiate totals between the beaches
√ Laudholm fledglings combined with Crescent Surf

[1] only nesting pairs counted in total

[2] renesting after loss at Crescent Surf/Laudholm not counted in total - Higgins(1pr), Seawall(3pr)

[3] renested from colony at Crescent Surf after crow predated nests

[4] preliminary numbers

[5] total was simultaneous count at occupied sites, not site specific high nest counts

[6] renested from colony at Crescent Surf after fox predation, not counted in total

[7] Ram Island and Popham colonies developed after the storm and census, renests from Stratton and Crescent Surf

[8] 185 was GOMSWG census, 191 pairs is closer to actual number, though still an underestimate due to storm event.

[9] nests only observed at one visit and not during window count

Table 2: Productivity of Least Terns in Maine, 1977-2022

Year	Chicks fledged/pair	Productivity
1977	50/55	0.9
1978	66/93	0.7
1979	31/78	0.4
1980	34/62	0.5
1981	21/78	0.3
1982	26/39	0.7
1983	29/54	0.5
1984	82/88	0.9
1985	12/131	0.1
1986	30/124	0.2
1987	12/89	0.1
1988	40/98	0.4
1989	8/83	0.1
1990	44/65	0.7
1991	25/52	0.5
1992	123/94	1.3
1993	114/125	0.9
1994	79/89	0.9
1995	16/100	0.2
1996	30/60	0.5
1997	11/50	0.2
1998	12/86	0.1
1999	67/62	1.1
2000	81/126	0.6
2001	63/120	0.5
2002	155/121	1.3
2003	66/156	0.4
2004	69/146	0.5
2005	20/114	0.2
2006	26/134	0.2
2007	112/150	0.7
2008	89/166	0.5
2009	78/170	0.5
2010	50/212	0.2
2011	113/205	0.6
2012	155/191*	0.8
2013	172/224	0.8
2014	72/249	0.3
2015	153/233	0.7
2016	36/238	0.2
2017	19/255	0.1
2018	69/186	0.4
2019	61/296	0.2
2020	116/258	0.4
2021	134/228	0.6
2022	**40/277**	**0.1**

Table 3: Productivity of Piping Plovers in Maine, 1981-2022

Year	Chicks fledged/pair	Productivity
1981	9/10	0.9
1982	18/10	1.8
1983	7/6	1.17
1984	21/9	2.33
1985	28/15	1.87
1986	31/15	2.07
1987	21/12	1.75
1988	15/20	0.75
1989	38/16	2.38
1990	26/17	1.53
1991	45/18	2.5
1992	49/24	2.04
1993	76/32	2.38
1994	70/35	2
1995	95/40	2.38
1996	98/60	1.63
1997	93/47	1.98
1998	88/60	1.47
1999	91/56	1.63
2000	80/50	1.6
2001	109/55	1.98
2002	91/66	1.38
2003	78/61	1.28
2004	80/55	1.45
2005	27/49	0.55
2006	54/40	1.35
2007	37/35	1.06
2008	42/24	1.75
2009	46/27	1.7
2010	49/30	1.63
2011	70/33	2.12
2012	64/42	1.52
2013	85/44	1.93
2014	97/50	1.94
2015	121/62	1.95
2016	101/66	1.53
2017	102/64	1.59
2018	128/68	1.88
2019	175/89	1.97
2020	199/98	2.03
2021	213/125	1.70
2022	**252/140**	**1.80**

Table 4: Number of Nesting Piping Plover Pairs and Fledglings ( ) at each Site in Maine, 1981-2022

Year	OGUNQUIT	MOODY	WELLS	DRAKES ISLAND	LAUDHOLM FARM	CRESCENT SURF	PARSONS BEACH	MARSHALL POINT	GOOSE ROCKS	FORTUNES ROCK	HILLS BEACH	FERRY	GOOSEFARE BROOK	OLD ORCHARD	PINE POINT	WESTERN	SCARBOROUGH	HIGGINS	RAM ISLAND	CRESCENT	HEAD BEACH	SEAWALL	POPHAM	HUNNEWELL	INDIAN POINT	REID STATE PARK	TOTAL
1981	0	0	1(0)	-	-	4(9)	-	0(0)	1(0)	-		-	-	-	1(0)	-	-	-	-	-		2(0)	0(0)	-	-	1(0)	**10(9)**
1982	0	0	0	-	-	3(10)	-	0	0	-		-	-	-	1(0)	-	-	-	-	-		5(8)	3(0)	-	-	1(0)	**10(18)**
1983	0	0	0	-	-	1(0)	-	0	0	-		-	-	-	0	-	-	-	-	-		3(4)	1(0)	-	-	1(3)	**6(7)**
1984	0	0	0	-	-	0	-	0	0	-		-	-	-	0	-	-	-	-	-		6(14)	1(2)	-	-	2(5)	**9(21)**
1985	1(3)	0	0	-	-	1(0)	-	1(2)	1(3)	-		-	-	-	0	-	-	-	-	-		9(14)	0	-	-	2(6)	**15(28)**
1986	1(1)	0	0	-	0	1(0)	-	0	1(4)	-		-	-	-	0	0	-	-	0	-		9(24)	0	0	-	3(2)	**15(31)**
1987	[1(0)]	0	0	-	0	1(0)	-	0	1(4)	-		-	-	-	1(0)	0	-	-	0	-		8(17)	0	0	-	1(0)	**12(21)**
1988	[1(0)]	0	0	-	0	1(2)	-	0	2(3)	-		-	-	-	0	0	-	-	0	-		7(3)	1(3)	6(2)	-	3(0)	**20(15)**
1989	0	0	0	-	0	2(3)	-	0	2(8)	-		-	-	-	0	0	-	-	0	-		7(11)	3(11)	1(3)	-	1(2)	**16(38)**
1990	0	0	0	-	0	3(4)	-	0	2(4)	-		-	-	-	0	0	-	-	0	-		6(8)	3(2)	1(4)	-	2(4)	**17(26)**
1991	0	0	0	-	1(3)	3(9)	-	0	1(3)	-		-	-	-	1(0)	-	-	-	-	-		4(12)	4(6)	2(6)	-	2(6)	**18(45)**
1992	0	0	0	-	1(0)	4(16)	-	0	2(3)	-		-	-	-	0	1(2)	-	-	-	-		7(13)	5(10)	2(0)	-	2(5)	**24(49)**
1993	0	0	0	-	1(4)	4(16)	-	0	2(7)	-		-	1(2)	-	0	3(9)	-	2(2)	1(3)	-		6(10)	8(18)	1(0)	-	3(5)	**32(76)**
1994	0	0	0	-	1(3)	4(11)	-	0	4(10)	-		-	1(3)	0	2(1)	3(8)	-	2(2)	1(1)	-		5(6)	7(19)	1(0)	-	4(6)	**35(70)**
1995	2(5)	0	2(5)	-	1(2)*	4(9)	-	0	6(15)	1(2)		-	1(0)	0	[1(0)]	3(10)	1(3)	2(4)*	2(5)	-		6(12)	4(12)	0	-	5(11)	**40(95)**
1996	5(10)	0	4(12)	1(0)	1(4)	5(15)	-	1(3)	6(8)	2(3)*			1(2)	1(3)	3(0)	3(4)	2(0)	5(13)	1(3)	-		7(6)	5(10)*	0	-	7(2)	**60(98)**
1997	3(8)	0	4(11)	-	1(2)	4(13)	-	1(3)	6(13)	2(4)		-	1(0)	2(0)	1(0)	[1(0)]	2(1)	4(13)	1(4)	-		5(9)	6(11)	-	[1(0)]	4(1)	**47(93)**
1998	6(16)	0	4(5)	1(0)	2(3)	3(6)	-	1(0)	7(14)	3(10)		-	1(1)	0(0)	1(0)	1(2)	3(2)	4(3)	2(4)	1(1)		9(10)	5(6)	2(2)	0	4(3)	**60(88)**
1999	6(5)	1(2)	6(9)	0	4(11)	4(4)	-	0(0)	6(12)	4(7)		1(1)	0(0)	0(0)	0(0)	0(0)	2(4)	3(10)	3(6)	1(1)		8(10)	2(3)	3(3)	0	2(3)	**56(91)**
2000	4(4)	0	5(10)	0	6(14)	3(6)	1(4)	0	5(1)	3(3)		0	1(4)	0	0	0	3(8)	2(7)	2(7)	1(0)		9(7)	0	2(1)	0	3(4)	**50(80)**
2001	3(1)	0	6(19)	0	4(14)	5(14)^	1(4)	0	4(11)	4(0)		0	1(1)	1(2)	1(0)	0	3(6)	4(9)	4(5)	0		10(8)	[1(0)]	1(4)	1(3)	4(8)^	**55(109)**
2002	5(0)	0(0)	7(10)	1(0)	5(15)	5(6)	2(7)	0(0)	4(9)	3(1)	1(1)	0(0)	1(1)	1(1)	4(1)	0(0)	4(4)	4(11)	4(5)	1(1)	1(0)	6(9)	1(0)	0(0)	0(0)	6(9)	**66(91)**
2003	3(1)	0(0)	5(12)	1(1)	6(10)	8(0)	3(6)	0(0)	4(5)	1(2)	1(0)	0(0)	1(4)	1(1)	2(2)	0(0)	3(1)	5(10)	3(1)	1(0)	0(0)	5(3)	1(0)	0(0)	0(0)	7(19)	**61(78)**
2004	3(4)	0(0)	7(21)	1(0)	5(3)	3(4)	2(3)	0(0)	4(0)	1(3)	1(2)	0(0)	1(1)	1(2)	1(0)	0(0)	2(1)	d	3(5)	1(0)	0(0)	5(7)	1(1)	0(0)	0(0)	7(13)	**55(80)**
2005	4(0)	0	6(6)	1(0)	1(1)	6(5)	1(0)^	0	1(1)	1(0)	2(1)	0	1(2)	1(0)	0	2(1)	2(6)	6(0)	4(1)	0	0	5(0)	1(0)^	0	0	6(3)	**49(27)**
2006	1(0)	1(2)	4(9)	1(2)	0	5(4)	0	0	5(14)	0	2(1)	1(0)	1(1)	1(1)	0	2(0)	3(6)	3(2)	2(3)	0	0	5(4)	1(2)	0	0	3(3)	**41 (54)**
2007	3(1)	0	2(2)	1(1)	0	4(4)	0	0	7(10)	0	1(0)	2(0)	1(0)	1(2)	0	2(6)	2(0)	2(3)	1(1)	0	0	2(0)	1(0)	0	0	3(7)	**35 (37)**
2008	0	0	2(6)	0	0	3(9)	1(1)	0	7(15)	0	0	0(0)	2(3)	1(0)	0	1(4)	1(0)	1(0)^	3(3)	0	0	0	0	0	0	2(1)	**24(42)**
2009	1(3)	0	2(3)	0	0	6(19)	0	0	8(15)	0	0	0	1(3)	1(0)^	0	1(0)	1(0)^	2(0)	2(2)	0	0	2(0)*	0	0	0	2(1)*	**27 (46)**
2010	2(2)	0	3(6)	0	0	6(14)	0	0	8(10)	2(6)	0	0	1(3)	0	0	1(0)	0	1(2)	2(0)	0	0	0	2(2)	0	0	2(4)	**30(49)**
2011	3(5)	0	4(7)	0	0	5(14)	1(4)	0	7(18)	2(3)	1(0)[1]	0	1(4)	0	1(1)	0	1(0)	2(1)	1(3)	0	0	1(4)	3^(6)	0	0	1(0)	**33(70)**
2012	2(4)	1(2)	4(8)	0	0	7(17)	0	0	9(10)	1(2)	1(0)	0	1(3)	0	1(1)	0	0	1(0)	1(1)	0	0	2(0)	6(13)	0	0	2(3)	**42(64)**
2013	3(4)	0	3(7)	0	1(4)	7(22)	0	0	6(11)	3(4)	2(2)[1]	0	2(4)	2(5)	1(0)	0	2(3)	1(0)^	2(2)	0	0	1(4)	7(7)	0	0	2(6)	**44(85)**
2014	3(7)	1(1)	3(7)	0	1(1)	6(18)	0	0	4(9)	2(6)	0	1(0)	2(2)	6(10)	3(5)	0	5(0)^	1(3)	2(0)	2(4)	0	2(4)	5(14)	0	0	2(6)	**50(97)**
2015	5(8)	1(2)	5(8)	1(3)	1(4)	7(18)	0	0	5(10)	3(5)	1(0)	0	1(2)	9(17)	2(3)	2(6)	1(3)	3(4)	1(2)	1(2)	0	6(14)	5(10)	0	0	2(0)	**62(121)**
2016	7(13)	1(3)	6(17)	0	1(4)	6(15)	1(0)	1(0)	6(8)	2(3)	2(1)	1(2)	0	9(8)	4(1)^	3(2)	1(0)	2(7)	1(1)	1(0)	0	7(11)	4(5)	0	0	1(0)	**66(101)**
2017	8(26)	0	6(12)	1(2)	2(2)	7(9)^	0	0	7(6)	2(3)	1(0)	0**	0	7(6)	2(0)	5(11)	1(3)	2(2)	1(0)	0	0	6(16)	6(0)	0	0	1(4)	**64(102)**
2018	11(24)	0	6(15)	1(0)	2(5)	6(5)	0	1(0)^	7(11)	1(2)	1(3)	1(4)**	1(2)	3(10)	0	7(15)	2(4)	4(7)	1(0)	0	0	6(12)	6(5)	0	0	2(4)	**68(128)**
2019	12(14)	1(0)	8(24)	1(4)	2(6)	7(8)	0	0	6(11)	4(3)	2(4)	0**	0***	7(8)	2(2)	8(26)	2(4)	5(7)	1(0)	1(2)	0	7(18)	10(26)	0	0	3(6)	**89(175)**
2020	12(30)	1(3)	8(13)	1(1)	3(7)	6(13)	1(3)	1(0)^	6(13)	3(6)	1(3)	1(1)	1(0)	8(11)	0	9(21)	5(8)	5(9)	2(4)	2(1)	0	8(13)	14(25)	0	0	1(4)	**98(199)**
2021	17(28)	3(3)	8(13)	1(1)	4(7)	7(8)	2(0)	1(1)	9(22)	5(7)^	2(3)	4(5)	1(0)	8(5)	2(1)	9(16)	6(2)	5(11)	3(7)	2(3)	0	15(33)	10(25)	0	0	4(12)	**125(213)**
2022	19(35)	2(5)	14(40)	2(0)	4(6)	6(7)	3(2)	0	12(24)	7(15)	2(4)	2(5)	1(2)	9(8)	1(2)	8(17)	7(6)	6(6)	2(3)	2(5)	0	15(34)	13(19)	0	0	4(7)	**140(252)**

[1] = Chick raised in rehabilitation center and released, not counted in total fledgling count

[ ] = failed early in season, not counted in total

* = additional nests present but failed

^ = 1 pair moved to another site, not counted in total

** some chicks from southern OOB raised on Ferry

*** One Old Orchard pair nested on RCNWR property adjeacent to Goosefare Brook, but on OOB side. Counted in OOB total.

Table 5: Causes of Nest Losses for Piping Plovers, 2002-2022

Causes Of Nest Loss						
Year	**Tide**	**Nest Predation**	**Abandonment**	**Buried in Sand**	**Other(unknown; dead eggs)**	**Totals**
2002	18	21	17	0	0	56
2003	6	19	9	0	0	34
2004	12	4	21	0	0	37
2005	22	17	13	0	0	52
2006	2	9	6	0	0	17
2007	15	5	9	1	1	31
2008	0	2	4	0	0	6
2009	6	3	3	0	0	12
2010	1	1	5	0	0	7
2011	0	2	7*	0	0	9
2012	21	9	6**	0	0	36
2013	14	14	5**	0	0	33
2014	4	5	6	0	0	15
2015	6	11	4	1	0	22
2016	15	14	7	0	1	37
2017	26	15	6	0	0	47
2018	8	15	5	0	0	28
2019	0	16	8	0	0	24
2020	1	13	14	1	2	31
2021	14	26	16	2	2	60
2022	22	35	12	0	5	74

Table 6: Number of Nests Hatched, Destroyed, and Abandoned in Exclosed vs. Unexclosed Piping Plover Nests in 2022

Nesting Outcome	**Unexclosed**	**Exclosed**	**Total**
Predated-Avian	4	0	4
Predated-Mammalian	21	0	21
Predated-Unknown	10	0	10
Tide	10	12	22
Abandoned	6	6	12
Other (unknown)	4	1	5
Unsuccessful Nests SUBTOTALS	***55***	***19***	**74**
Successfully hatched	***55***	***67***	**122**
Total Nesting Attempts	***110***	***86***	***196***

Table 7: Estimated Piping Plover Productivity Loss from Egg to Fledgling, 2002-2022

Year	% Egg Hatchability	% Chicks Fledged	Productivity
2002	39%	73%	1.4
2003	48%	57%	1.28
2004	42%	66%	1.45
2005	34%	26%	0.55
2006	54%	53%	1.35
2007	35%	53%	1.06
2008	74%	49%	1.75
2009	57%	68%	1.7
2010	74%	51%	1.63
2011	69%	65%	2.12
2012	45%	57%	1.52
2013	46%	77%	1.93
2014	63%	70%	1.94
2015	69%	61%	1.95
2016	59%	54%	1.53
2017	50%	57%	1.59
2018	65%	66%	1.88
2019	73%	59%	1.97
2020	71%	63%	2.03
2021	60%	58%	1.70
2022	**60%**	**60%**	**1.80**

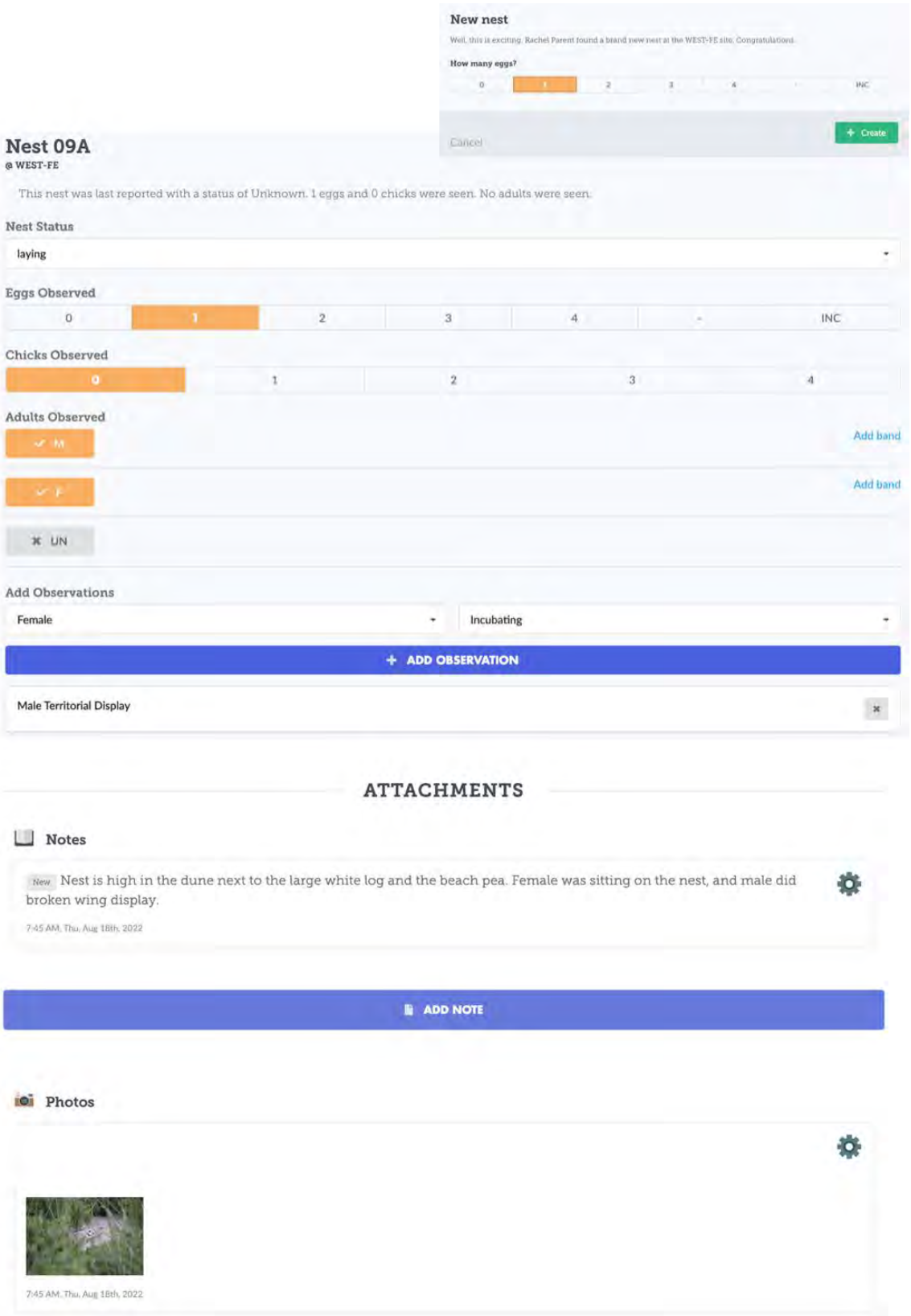
Table 8: List of Regularly Monitored Beaches and Observed Piping Plover Activity in 2022

Town	Beach	Pairs	Nest Attempts	Fledged	Outcomes
Ogunquit	Ogunquit	19	21	35	1U, 2W, 18H
Wells	Moody	2	2	5	2H
Wells	Wells	14	16	40	1W, 15H
Wells	Drakes Island	2	3	0	2P, 1H
Wells	Laudholm Farm	4	8	6	2W, 4P, 2H
Kennebunk	Crescent Surf	6	8	7	2W, 6H
Kennebunk	Parsons	3	3	2	3H
Kennebunk	Marshall Point	**			
Kennebunkport	Goose Rocks	12	29	24	11H, 12P, 3W, 1A, 2U
Biddeford	Fortunes Rocks	7	10	15	5H, 2P, 2W, 1U
Biddeford	Hills	2	2	4	2H
Saco	Ferry	2	2	5	2H
Saco	Goosefare Brook	1	1	2	1H
Old Orchard	Ocean Park	**			
Old Orchard	Old Orchard	9	10	8	4A, 6H
Scarborough	Pine Point	1	1	2	1H
Scarborough	Western	8	11	17	1W, 4P, 6H
Scarborough	Scarborough	7	9	6	4W, 1P, 4H
Scarborough	Higgins	5*	7	6	1W, 5H, 1P
Cape Elizabeth	Ram Island	2	3	3	1P, 2H
Cape Elizabeth	Crescent Beach SP	2	2	5	2H
Phippsburg	Seawall	15	27	34	6P, 4A, 2W, 2U, 13H
Phippsburg	Popham Beach	13	17	19	2A, 1P, 13H, 1W
Phippsburg	Hunnewell	**			
Georgetown	Reid- Mile	2	2		1P, 1A
Georgetown	Reid- Half Mile	2	2	7	2H
TOTALS		**140**	**196**	**252**	

*pairs moved between beaches

**plover tracks and use observed, no nesting detected

Appendix I: NestStory Create New Nest



Appendix II: NestStory Exclosure Data and Activity Log

Exclosure Data

+ Edit

Date Exclosed	05/02/2022
Time Adult Off	14min
Time Exclosure Complete	13min
Time Adult Return	1min
Total Time Off Nest	14min
Exclosure Shape	circular
Type Of Top	bird netting

Activity Log

Date	Status	Eggs	Chicks	M	F	UN	Link
Mon, May 2nd 2022	laying	1	0	Y	Y	N	View Report
2 Observations ▸							
Tue, May 3rd 2022	laying	1		Y	Y	N	View Report
2 Observations ▸							
Fri, May 6th 2022	laying	2		Y	N	N	View Report
Mon, May 9th 2022	incubating	4		N	N	N	View Report
Wed, May 11th 2022	incubating	4		N	N	N	View Report
1 Attachments ▸							

Appendix III: NestStory Nest Card

01A 2022 | PIPL | WEST-FE

Nest Fate	Brood Fate	Last Check
hatched	fledged	07/12/22

5/2	6/10	7/5	N/A
DISCOVERED	HATCHED	FLEDGED	LOSS

Active Nest Status	Continuation Nest
fledged	N

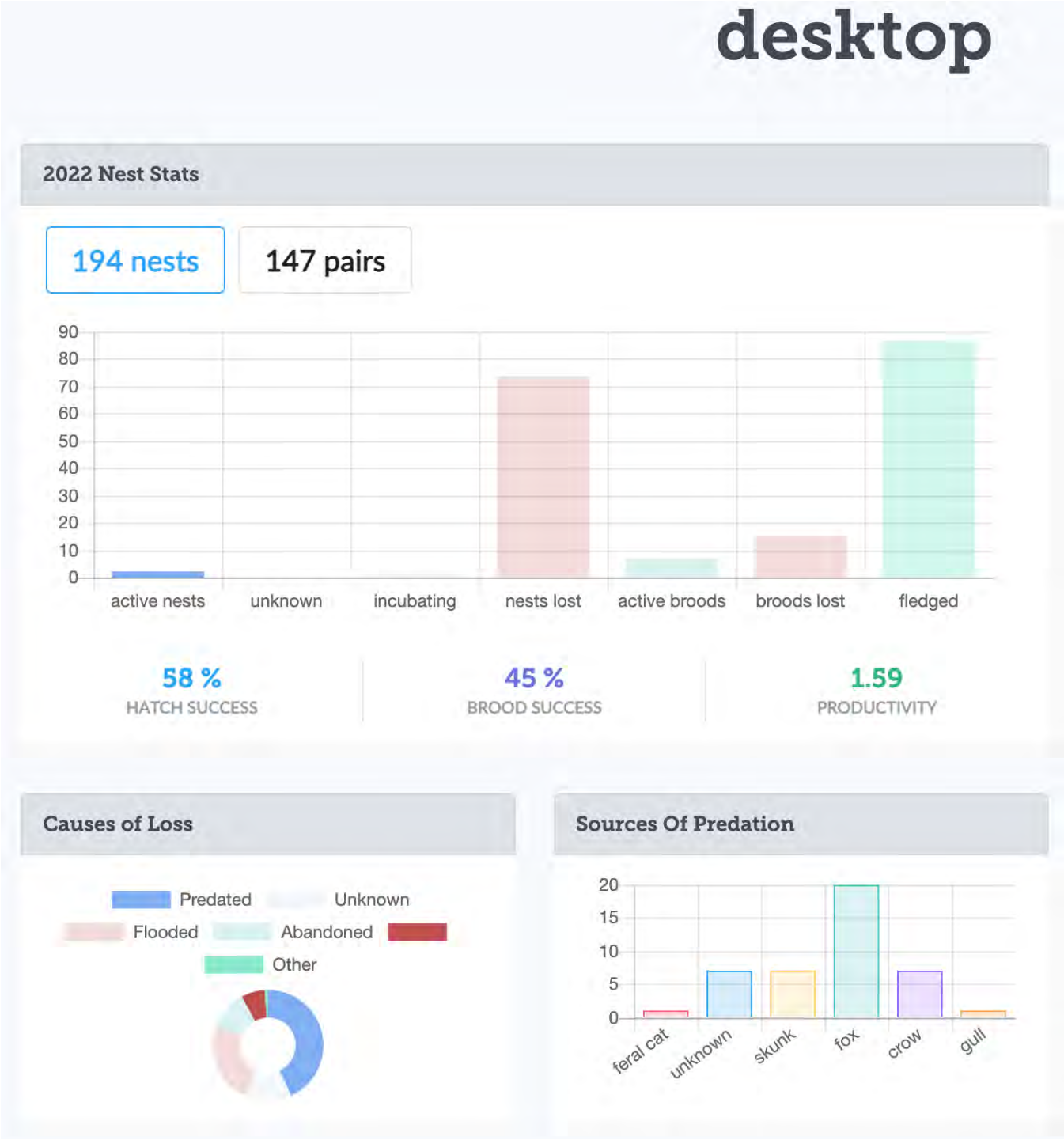
Nest History

Estimated Hatch	06/06/22
Earliest Possible Hatch	
NLT?	N
Actual Hatch	06/10/22
Hatch Observed?	Y
Nest Initiation	n/a
First Incubation	n/a
Last Incubation	n/a
Max Clutch	4
Egg Hatched	4
Eggs Unhatched	0
Eggs Collected	0

Brood History

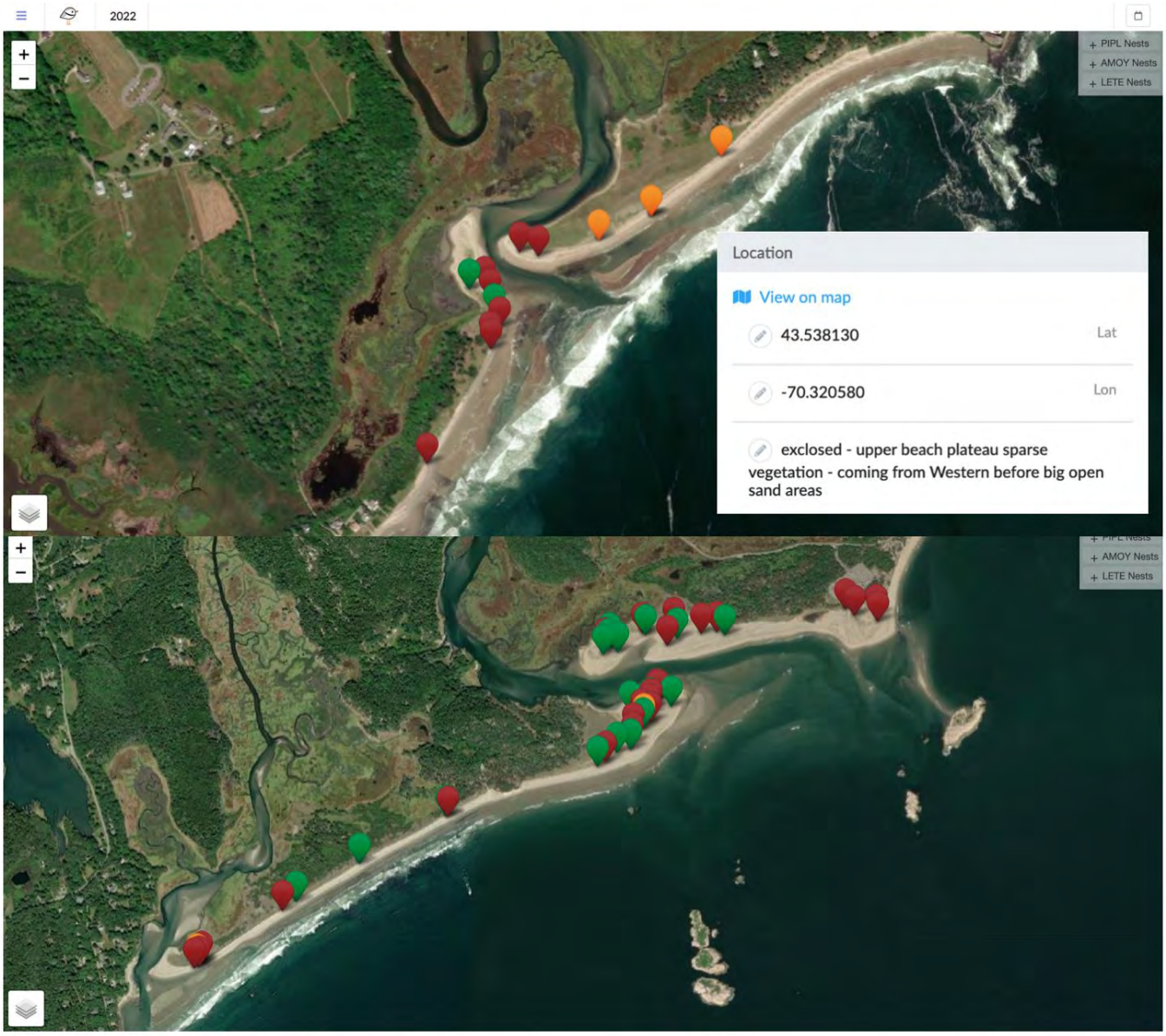
Estimated Fledge	07/05/22
Actual Fledge	07/05/22
Date Fledge Determined	07/06/22
Date Brood Banded	n/a
First Brood Observation	n/a
Last Brood Observation	n/a
Max Chicks	4
Chicks Fledged	4
Chicks Unfledged	0

Appendix IV: NestStory Desktop Statistics and Tables



Appendix V: NestStory Planner

Appendix VI: NestStory Maps and Nest Locations



Appendix VII: Piping Plover Census for Maine Sites, 2022

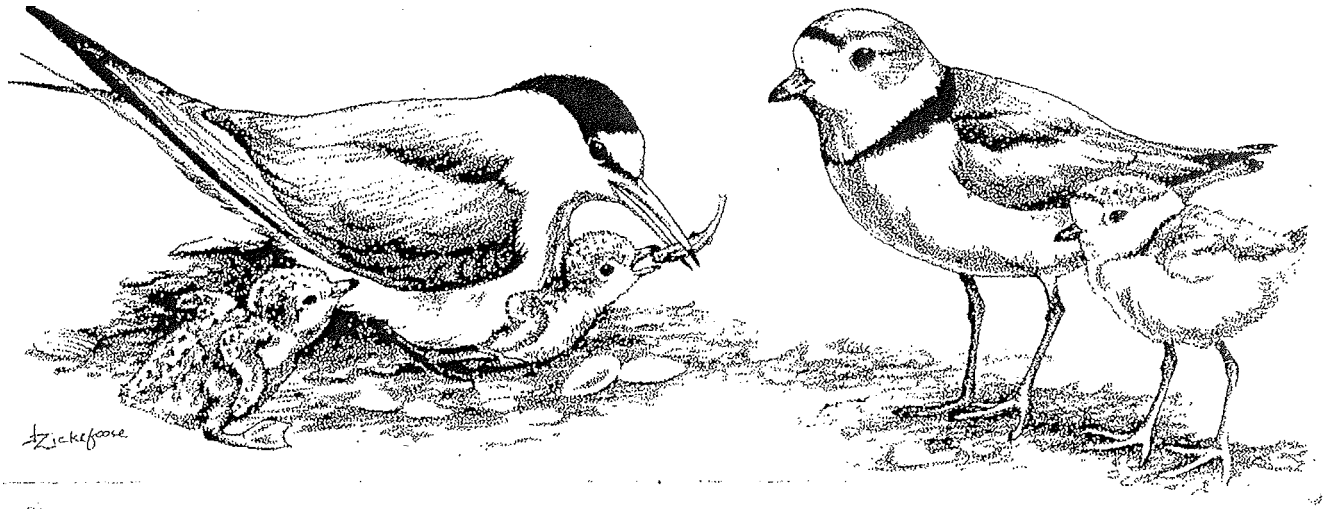
2022 Piping Plover Census						
Town	**Beach**	**# Adults**	**# Pairs**	**# Nests**	**# Chicks**	**Comments**
Biddeford	Fortune's Rock Beach	11	7	5	Y	
	Granite Pt Beach	0	0	0	NA	
	Hattie's Beach	*with Fortune's Rock Beach				
	Hills Beach	4	2	1	Y	
Cape Elizabeth	Crescent Beach State Park	3	2	1	N	
	Ram Island	5	2	2	N	
Georgetown	Indian Point	0	0	0	NA	
	Reid State Park	5	4	1	Y	Banded GF A50 nesting
Kennebunk	Crescent Surf	10	6	6	N	
	Colony Beach	0	0	0	NA	
	Gooch's Beach	0	0	0	NA	
	Kennebunk Beach	0	0	0	NA	
	Parsons Beach	5	3	3	N	
Kennebunkport	Goose Rocks Beach	11	12	9	N	
	Marshall Point	0	0	0	NA	
Kittery	Crescent Beach	0	0	0	NA	
	Seapoint Beach	0	0	0	NA	
Ogunquit	Ogunquit Beach	29	19	7	Y	Banded GF 464 nesting
Old Orchard Beach	Ocean Park	0	0	0	NA	
	Old Orchard Beach-S	4	2	1	Y	
	Old Orchard Beach-N	10	7	3	Y	
Phippsburg	Head Beach	0	0	0	NA	
	Hunnewell Beach	0	0	0	NA	
	Popham Beach State Park	20	13	10	Y	
	Seawall Beach	24	15	11	N	
Saco	Ferry Beach	4	2	2	N	
	Goosefare Brook	2	1	1	N	
Scarborough	Higgins Beach	10	5	2	Y	
	Pine Point	2	1	1	N	
	Scarborough Beach	7	7	3	N	
	Western/Ferry Beach	13	8	4	N	
Wells	Drake's Island	2	2	1	N	
	Laudholm Farm	8	4	3	Y	
	Moody Beach	4	2	1	Y	
	Wells Beach	23	14	4	Y	
York	Cape Neddick Beach	0	0	0	NA	

	TOTAL		**140**			

Appendix VIII: Restricted Area Sign

RESTRICTED AREA

This area is a natural breeding ground for Terns and Plovers



THESE RARE BIRDS, THEIR NESTS AND EGGS ARE PROTECTED

UNDER MAINE AND FEDERAL LAWS

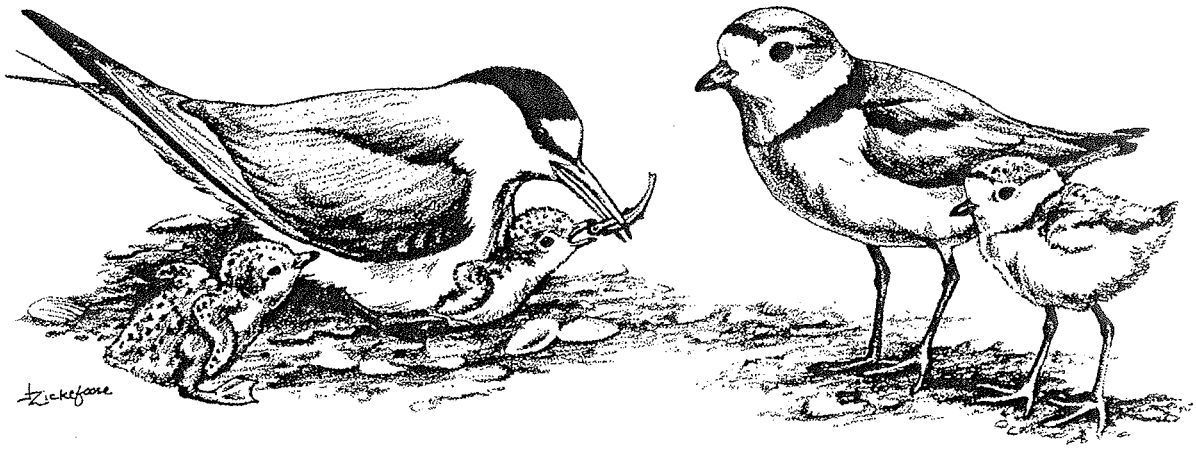
Persons May Be Arrested and Fined for Killing, Harassing or in Any Way Disturbing Birds Nesting in This Area (12 MRSA Sec. 7756).

ILLUSTRATION BY JULIE ZICKEFOOSE, HADLYME, CT. 06439

VOSS SIGNS MANLIUS, NY 13104-0553 (315) 682-6418

ZONE RESTREINTE

Cette zone est un terrain de reproduction pour les Hirondelles De Mer et les Pluviers Siffleur



CES OISEAUX RARES, LEURS NIDS ET LEURS OEUFS SONT PROTÉGÉS

PAR LES LOIS DU MAINE ET LES LOIS FÉDÉRALES
Sera Arrêtée et Condamnée à L'amende
Toute Personne Trouvée Coupable D'avoir Tué, Harcelé
Ou Troublé de Quelque Façon Que ce Soit
Les Oiseaux Qui Font Leurs Nids Dans Cette Zone.

ILLUSTRATION BY JULIE ZICKEFOOSE, HADLYME, CT 06439

VOSS SIGNS, MANLIUS, NY 13104-0553 (315) 682-6416

Appendix IX: Plover, Tern, and Shorebird Signs

ATTENTION

Please keep away from this sandpiper and plover feeding and resting area.

You can help these endangered species by staying close to the water's edge.

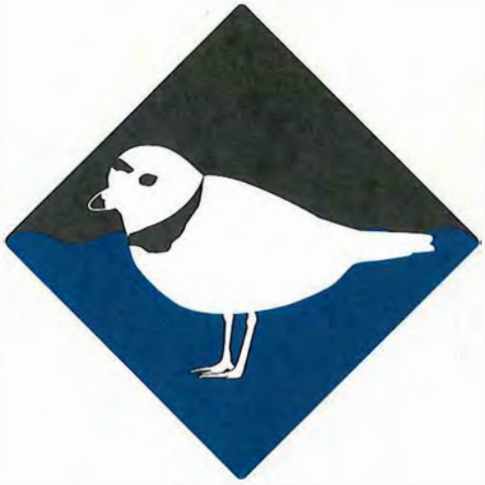
MAINE
DEPT. OF INLAND FISHERIES AND WILDLIFE

ATTENTION

Signs with this symbol are posted where endangered piping plovers nest or where plover families and migrating sandpipers are resting and feeding.

When people or pets get too close, plover parents can become scared and leave their nest and chicks. You can help protect eggs and chicks by staying away from signed areas.

Weighing only a few ounces, shorebirds complete annual migrations between arctic nesting areas and South American winter habitats.



Thousands of sandpipers and plovers stop along Maine's coast to rest and refuel for a nonstop flight to South America (2000 miles or more)!

3. - 80 signs

YOU CAN HELP

Disrupting these weary travelers means they use up vital energy they need to successfully migrate. Avoid walking or jogging through feeding and resting flocks of birds. Please give them lots of space and if permitted, keep your dog on leash.

DUNE

DRY SAND: SENSITIVE NESTING AREA

WET SAND: WALK CLOSE TO THE WATER'S EDGE

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

mefishwildlife.com (207) 287-8000

It is a violation of Maine and Federal law to kill, harass, or disturb endangered birds in this area (12 MRSA, Ch 925, Sub 3, Sec 12808; Federal Endangered Species Act, Sec 9).

ATTENTION

Signs with this symbol are posted where endangered piping plovers nest or where plover families and migrating sandpipers are resting and feeding.

When people or pets get too close, plover parents can become scared and leave their nest and chicks. You can help protect eggs and chicks by staying away from signed areas.

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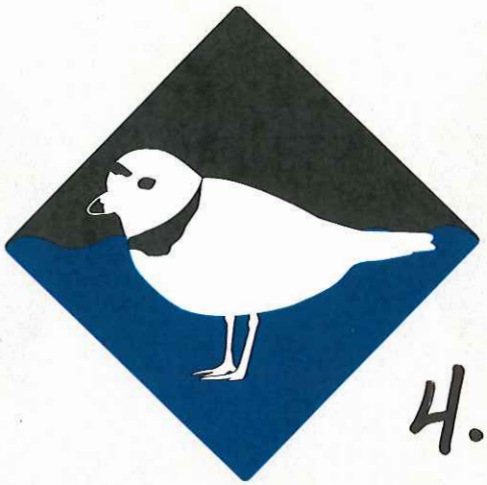

Thousands of sandpipers and plovers stop along Maine's coast to rest and refuel for a nonstop flight to South America (2000 miles or more)!

4.- 33 signs

YOU CAN HELP

Disrupting these weary travelers means they use up vital energy they need to successfully migrate. Avoid walking or jogging through feeding and resting flocks of birds. Please give them lots of space and if permitted, keep your dog on leash.

DUNE

DRY SAND: SENSITIVE NESTING AREA

WET SAND: WALK CLOSE TO THE WATER'S EDGE

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

mefishwildlife.com (207) 287-8000

It is a violation of Maine and Federal law to kill, harass, or disturb endangered birds in this area (12 MRSA, Ch 925, Sub 3, Sec 12808; Federal Endangered Species Act, Sec 9).

ATTENTION

Signs with this symbol are posted where migrating sandpipers are resting and feeding.

Weighing only a few ounces, shorebirds complete annual migrations between arctic nesting areas and South American winter habitats.

Thousands of sandpipers and plovers stop along Maine's coast to rest and refuel for a nonstop flight to South America (2000 miles or more)!

5. - 25

YOU CAN HELP

Disrupting these weary travelers means they use up vital energy they need to successfully migrate. Avoid walking or jogging through feeding and resting flocks of birds. Please give them lots of space and if permitted, keep your dog on leash.

✓ UPLAND EDGE: WALK CLOSE TO THE VEGETATION

✗ BEACH COBBLE & ROCKY LEDGE: SENSITIVE ROOSTING AREA

✓ MUD FLATS: WALK CLOSE TO THE WATER'S EDGE

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

mefishwildlife.com (207) 287-8000

It is a violation of Maine and Federal law to kill, harass, or disturb endangered birds in this area (12 MRSA, Ch 925, Sub 3, Sec 12808; Federal Endangered Species Act, Sec 9).

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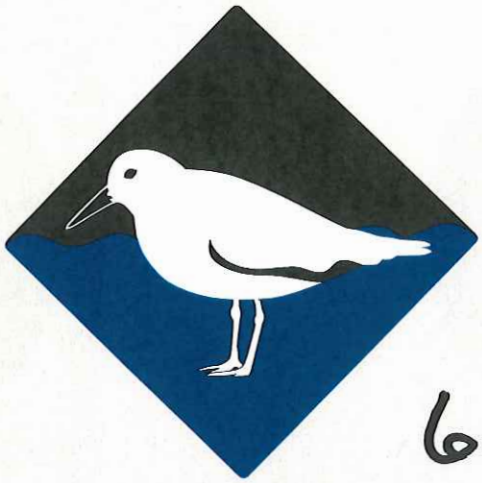
Weighing only a few ounces, shorebirds complete annual migrations between arctic nesting areas and South American winter habitats.



Thousands of sandpipers and plovers stop along Maine's coast to rest and refuel for a nonstop flight to South America (2000 miles or more)!

6. - 25

YOU CAN HELP

Disrupting these weary travelers means they use up vital energy they need to successfully migrate. Avoid walking or jogging through feeding and resting flocks of birds. Please give them lots of space and if permitted, keep your dog on leash.

UPLAND EDGE: WALK CLOSE TO THE VEGETATION

BEACH COBBLE & ROCKY LEDGE: SENSITIVE ROOSTING AREA

MUD FLATS: WALK CLOSE TO THE WATER'S EDGE

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

mefishwildlife.com (207) 287-8000

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Maine Audubon

Coastal Birds 2022

Newsletter

More Than We Could Have Imagined!

2022 was another record-breaking year for Piping Plovers in Maine, with 140 pairs nesting on Maine beaches, fledging 252 chicks. These numbers are up from 125 pairs fledging 213 chicks in 2021 and 98 pairs fledging 199 chicks in 2020. Productivity this year was 1.8 chicks per pair, which surpasses our recovery goals of 1.5 and the productivity of 1.7 in 2021. This season's success is a result of the incredible work of biologists, landowners, volunteers, town employees, and beachgoers, all of whom contributed to a season of firsts. Ogunquit Beach boasted the largest number of pairs (19) documented nesting on one beach in Maine; Wells Beach was the first beach in the project's history to fledge 40 chicks; and this was Maine's first year having three beaches fledge more than 30 chicks.

Breaking down our numbers for the season, we saw consistent improvement across the majority of our beaches. Our southernmost beaches in Ogunquit and Wells did especially well, fledging an incredible 86 chicks from 41 pairs. All the way up the coast in Phippsburg and Georgetown, Seawall Beach, Popham State Park, and Reid State Park fledged a total of 60 chicks from 32 pairs. The resulting productivity of 2.1 and 1.9 chicks per pair for these southern and northern regions respectively are well beyond our recovery goals of 1.5 chicks per pair. And even though the Saco Bay region did not meet our recovery goals of 1.5, these beaches still fledged an average of 1.3 chicks per pair due to the support of volunteers and park staff.

Such success on both our busy southern beaches and our quieter northern beaches exemplifies the variety of factors that contribute to Piping Plover recovery in Maine. Piping Plovers on our southern beaches benefit from a strong volunteer monitoring program and amazing partnerships with landowners, towns, and with local law enforcement. As a result, they can thrive amongst crowded tourist beaches. At our northern beaches, Piping Plovers enjoy fewer crowds of beachgoers and more expansive nesting habitat, along with support from our State Parks and Bates College.

These results show . . . it takes a village to help people and plovers share the beach.

2022's season is a culmination of the efforts of the Plover Recovery Project over the past 41 years along with our hard-working partners. Our high numbers this season were a summation of small successes across all of our beaches. These results show that each beach is essential to the overall success of the endangered Piping Plover and it takes a village to help people and plovers share the beach.

In celebrating the accomplishments, it is important to keep them in perspective. Despite the growth seen in Maine, there are still only 2000 pairs of Piping Plovers estimated to nest along the Atlantic Coast, and not all areas are seeing similar success. For this reason, it is important that Maine's Piping Plovers continue to prosper and contribute to the international recovery goals for the species.

Photo: Rachel Parent

Hairy Foot Mission

In mid-August, after most Piping Plover chicks had flown off the beaches, our team received a call from Missy Mans, Old Orchard Beach volunteer coordinator, about a fledgling with something wrapped around its ankle and foot. The tangle was wound so tightly that the foot and ankle were swollen, causing the bird to limp. Luckily, our biologists were able to get on site quickly to help capture the still-flightless bird and remove a snarl of human hair wrapped around the foot. It was a delicate process, but the team was able to remove the knot. The bird was checked for additional injuries before being released near its brood. Since the rescue, the fledgling has been seen running and flapping around the beach; a successful catch, untangle, and release!

Photo: Missy Mans

The Downside to Drones

Drones and model planes may be fun, but they are often perceived as predators by wildlife. When drones are flown near nesting sites, Piping Plovers fly off their nests and away from their broods to chase them, which leaves their eggs and chicks vulnerable to actual threats. You can help protect Piping Plovers by flying drones or model planes at sites other than the beach during these summer months. Our beaches provide necessary space not only for Piping Plovers but also for a multitude of other shorebird species. When alarmed, these birds cannot forage for the food they need to fuel their long migrations. So next summer, help make the beach a relaxing place for all by keeping the drones off the beach.

Wells the Plover Wonderland

Wells Beach had record-breaking numbers of nesting Piping Plovers this year. A total of fourteen pairs nested and fledged a whopping 40 chicks! This is the most chicks ever fledged off a single beach in Maine since we began monitoring in 1981. So, why was Wells so successful?

Much of Wells' success can be attributed to its incredible volunteer force. Suzanne Craig leads the charge with roughly 50 other volunteers. When the Coastal Bird Crew's biologists are on the beach they run into at least five volunteers every visit. Wells volunteers are ambassadors for the plovers, looking out for the birds and educating beachgoers about the birds and how to minimize disturbing them.

Landowners at Wells are another asset to keeping them safe. They allow stake and twine fencing to be erected in front of their beachfront homes and businesses to protect nesting areas, and also keep their eyes and ears open for what's happening at the nests (birds laying eggs, incubating, or chicks hatched) and report any problems. In addition, the Town of Wells ceased all raking activity on the beach until the plover breeding season was over to minimize disturbance and provide good feeding grounds for the chicks. All of these things, paired with a little bit of luck, resulted in Wells Beach being home to fourteen plover families!

Photo: RagingWire/FLICKR

An Intern's Perspective

I'm Not in Kansas Anymore

By Gabby Ochoa

When I accepted this position, I had been to the East Coast twice in my life and had never been to Maine. I applied with little idea of what the work would entail, or even what Maine looked like. All I knew was that I loved birds and wanted to work toward their conservation. Having been born and raised in Kansas, and completed my undergraduate degree in Iowa, I had a level of familiarity with midwestern species of shorebirds. None of that prepared me for how infinitely different beach shorebird conservation could be.

I started in June—a month after the other amazing intern, Silas Weden, and well after the team began in April—and was immediately thrown into the chaos of nest-searching, exclosing nests, and chick-checking. All of that was just the start; there is a certain kind of fever-pitch that the Coastal Birds Crew hits right around the Fourth of July. Beaches have nests, chicks, and fledglings—and then there are crowds and fireworks mixed in. At the end of the season, it has been rewarding to watch many chicks fledge successfully.

The Coastal Birds Crew completes a mix of the nitty-gritty, physical conservation work and the educational outreach that makes the effort successful. I was pleasantly surprised to see the passion beach communities possess for the birds with which they cohabit. Each outreach table or beach conversation was met with interest and excitement at the birds' success. The positive public response, coupled with the adorable birds, has made this internship an incredible introduction to the world of avian conservation.

Maine's Least Terns Have Challenging Year

Maine Audubon, Rachel Carson National Wildlife Refuge, and the National Audubon Society continue to monitor and manage sites across Southern Maine for endangered Least Terns. This year, six sites hosted nesting colonies: Laudholm Beach, a beach in Kennebunk, Goose Rocks Beach, Stratton Island, Higgins Beach, and Seawall Beach. The early June nest census count resulted in 277 nests, the third highest count since monitoring began in 1977. Despite having a high number of nesting pairs, only an estimated 40 fledglings were produced this season. The estimated state productivity is 0.14 fledglings per pair, which is the second lowest productivity rate recorded.

The Least Tern colonies managed by Rachel Carson National Wildlife Refuge on Laudholm Beach and in Kennebunk experienced a mix of successes and failures. The colony that has historically been the largest in the state once again held that title with 102 nesting pairs. Unfortunately, this colony did not produce any fledglings, resulting in a productivity rate of zero fledglings per pair. The beach was more narrow than usual and faced numerous challenges. These included partial colony abandonment, monthly week-long 11 foot high tide events that washed over almost the entirety of the nesting habitat, and visits from Red Foxes and a Great-horned Owl.

Laudholm Beach was a bright spot this season; 23 nesting pairs produced at least 18 fledglings for an estimated productivity rate of 0.78 fledglings per pair. This was the highest number of pairs to nest on Laudholm and the second highest number of fledglings to be produced since monitoring began on this beach.

Goose Rocks Beach did not have any nesting pairs during the June census, but a small group of five pairs were observed nesting there a few weeks later. One chick was able to fledge in spite of Skunk, Raccoon, and Red Fox activity. Foxes were also a problem at Seawall Beach, which forced the colony to move around to different areas of the beach multiple times.

During the census, 10 nesting pairs were counted that fledged at least two chicks for an estimated productivity of 0.20 fledglings per pair. Fox and beachwalkers provided challenges for the colony at Higgins Beach. Higgins hosted 51 nesting pairs in early June and fledged at least 5 chicks for an estimated productivity rate of 0.10 fledglings per pair.

Stratton Island, managed by the National Audubon Society, has started to make a comeback from the past two years of zero productivity. There were 91 nesting pairs recorded in June. At least 14 fledglings resulted in an estimated productivity of 0.15 fledglings per pair. The Least Terns on the island once again faced their biggest struggle with Black-crowned Night Heron predation along with weather events causing loss.

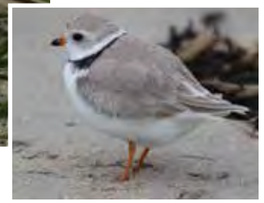
Despite having a tough year, we are hopeful for Least Terns over the long term as the number of nesting pairs continues to gradually increase over time. Also, as relatively long-lived birds, they have many more chances for a successful nesting season in future years. Continued cooperation and partnerships with biologists and land managers is the key to helping our state's Least Tern population.

Photo: Gabby Ochoa

Field Notes from Phippsburg

Co-parenting Across Species?

A pair of Least Terns at Seawall Beach in Phippsburg was brooding two new chicks, feeding them fish and sitting on top of them to protect them from the heat. Our crew watched closely as a male plover standing near the brooding tern began exhibiting his own brooding behavior. When the tern uncovered its brood, the male plover ran over and settled down on top of one of the chicks until the tern parents chased him away. The plover 'dad' responded to the terns by doing a broken wing display, trying to lure the adult terns away from their own chicks as if the tern parents were predators. We watched this interaction for about twenty minutes, and the same behavior was observed two days later when our crew next visited. We suspect that this plover dad lost his own chicks but still felt those parental instincts once he saw the downy tern chicks. It's always fun to watch two of our endangered species interact, but this unwanted neighborly gesture was definitely the highlight of the season!



Comic created by intern Silas Weden

Avian Flu Came Visiting this Summer

Highly-pathogenic Avian Influenza (HPAI), or bird flu, infects the respiratory and gastrointestinal tracts of birds. This virus spreads rapidly, especially among communal species and colonial nesters, and results in high mortality rates among wild and domestic flocks. This summer brought a nasty wave of HPAI to Maine's sandy shores and rocky islands. The Coastal Birds Crew grappled with several emotionally taxing weeks as large numbers of Black-backed Gulls, Common Eiders, and other avian species were found dead or dying on the beaches. Public concern peaked, and worried beachgoers were calling Maine Audubon, animal control agencies, and avian rehab groups regarding sick birds across the state. Due to the influx of deceased birds, laboratories had a difficult time keeping up with testing, thus hindering efforts to track disease spread. Without the ability to verify every viral case and other potential factors like algal blooms, there has been no way to confirm how many bird deaths have been attributed to HPAI this summer in Maine. Luckily, no Piping Plovers or Least Terns were harmed by Avian Flu in 2022 as far as we know.

Although there are currently no human cases of HPAI in the United States, it is still essential for the public to recognize that this is a zoonotic disease, meaning it can spread to other animals, including mammals like us and our pets. And although the worst of the outbreak has subsided, Avian Flu is still around. So what can we do? And what should we avoid?

Photo: Sherrie Tucker

DON'TS

Move, touch, or pick up sick/dead wildlife in any capacity. Handling sick or deceased wildlife is a human health risk!

Allow pets to approach sick or dead animals. Bird flu is zoonotic and can spread to your furry family members.

DO'S

Give sick animals plenty of space. They are already stressed enough without human interference.

Call animal control or your local municipality to inform them of the distressed animal. They are better equipped to remove sick animals from public areas

The Silver Lining

Evolution only allows the strong to survive and reproduce.

The genetic makeup of the resilient birds who lived this summer will be passed to their offspring, making them more likely to withstand viral threats in the future.

How Can We Help Our Long-Distance Travelers?

Twice a year, shorebirds take on impressive long distance migrations lasting thousands of miles from South America to the Arctic and back again. Maine hosts many important migratory stopover sites on its beaches, mudflats, salt marshes, and tidal rivers. Shorebirds rely on these sites to rest and feed in order to build up fat reserves and energy for long non-stop treks over the Atlantic Ocean. Globally, most shorebird species are facing population declines due to habitat loss and disturbance. Here in Maine we can help these amazing birds survive migration by doing a few simple things:

- Avoid walking through flocks of resting and feeding shorebirds. Try to walk around these flocks so they do not fly off.
- If permitted, walk your dog on a leash and away from flocks of feeding and resting shorebirds. Even well-behaved dogs frighten shorebirds.
- Give them space. When viewing or photographing shorebirds, be sure to do so from a distance that does not interrupt their normal behaviors. If they begin to run or fly away from you, you're too close!

Piping Plover

Nesting Data 2022

Town	Beach	Pairs	Nest Attempts	Fledglings
Ogunquit	Ogunquit	19	21	35
Wells	Moody	2	2	5
	Wells	14	16	40
	Drakes Island	2	3	0
	Laudholm Farm	4	8	6
Kennebunk	All Beaches	9	11	9
Kennebunkpt.	Marshall Point	0	0	0
	Goose Rocks	12	29	24
Biddeford	Fortunes Rocks	7	10	15
	Hills	2	2	4
Saco	Ferry	2	2	5
	Goosefare Brook	1	1	2
Old Orchard Beach	Ocean Park	0	0	0
	Old Orchard	9	10	8
Scarborough	Pine Point	1	1	2
	Western/Ferry	8	11	17
	Scarborough SP	7	9	6
	Higgins	5	7	6
Cape Eliz.	Ram Island	2	3	3
	Crescent SP	2	2	5
Phippsburg	Seawall	15	27	34
	Popham SP	13	17	19
	Hunnewell	0	0	0
Georgetown	Reid SP-Mile	2	2	0
	Reid SP-Half Mile	2	2	7
Totals		**140**	**196**	**252**

SP = State Park

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The Coastal Birds Project

The Coastal Birds newsletter is published annually by Maine Audubon in partnership with the Maine Department of Inland Fisheries & Wildlife and Rachel Carson National Wildlife Refuge.

Maine Audubon has worked for more than 40 years to restore Maine's Piping Plover and Least Tern populations with help from our partners, Maine Department of Inland Fisheries and Wildlife (MDIFW) and the U.S. Fish and Wildlife Service (USFWS); populations have increased substantially in that time. The project is funded by MDIFW, USFWS, with additional funding from the Phineas W. Sprague Memorial Foundation.

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Appendix XI: UTM Coordinates and Nesting Outcomes for 2022 Piping Plover Nests

Site	Nest Code	Latitude	Longitude	Discovery	Status	Eggs	Chicks	Number Hatched	Number Fledged	Nest Fate	Loss Date	Suspected Cause Of Nest Loss	Suspected Predator	Expected Hatch	Actual Hatch	Exclosed?	Expected Fledge	Actual Fledge
BREA	01A	43.552858	-70.244008	2022-06-01	lost	4	3	3	0	H				2022-07-01	2022-06-28	Y	2022-07-23	
CRES-SP	01A	43.56254	-70.23143	2022-06-13	fledged	4	4	4	4	H				2022-07-11	2022-07-01		2022-07-26	2022-07-26
CRES-SP	02A	43.56453	-70.22619	2022-06-13	fledged	4	2	2	1	H				2022-07-18	2022-07-15	Y	2022-08-09	2022-08-09
Crescent Surf	01A	43.335621	-70.538934	2022-05-10	fledged	4	4	4	4	H				2022-06-09	2022-06-09	Y	2022-07-04	2022-07-04
Crescent Surf	02A	43.335386	-70.54105	2022-05-10	lost	3	0	0	0	W	2022-05-16	flooded				Y		
Crescent Surf	03A	43.335312	-70.540542	2022-05-11	lost	3	0	0	0	W	2022-05-16	flooded				Y		
Crescent Surf	04A	43.337241	-70.535681	2022-05-12	fledged	4	4	4	3	H				2022-06-13	2022-06-13		2022-07-08	2022-07-08
Crescent Surf	05A	43.336081	-70.537552	2022-05-12	lost	4	1	3	0	H				2022-06-09	2022-06-10	Y	2022-07-05	
Crescent Surf	06A	43.336081	-70.537552	2022-05-12	lost	4	1	4	0	H				2022-06-09	2022-06-10		2022-07-05	
Crescent Surf	02B	43.335473	-70.539276	2022-05-24	lost	4	4	4	0	H				2022-06-24	2022-06-22	Y	2022-07-17	
Crescent Surf	03B	43.335422	-70.541063	2022-05-24	lost	4	3	3	0	H				2022-06-24	2022-06-27	Y	2022-07-22	
DRAK	01A	43.322	-70.5535	2022-04-29	lost	4	0	0	0	P	2022-05-22	predated	fox	2022-05-30				
DRAK	02A	43.319811	-70.555491	2022-05-27	lost	4	0	0	0	P	2022-06-08	predated	unknown	2022-06-27				
DRAK	01B	43.32187	-70.553468	2022-05-31	lost	2	1	1	0	H				2022-07-01	2022-06-29	Y	2022-07-24	
FERR-Saco	01A	43.492068	-70.385605	2022-05-11	fledged	4	4	4	3	H				2022-06-13	2022-06-12	Y	2022-07-07	2022-07-07
FERR-Saco	02A	43.4728	-70.3842	2022-06-08	fledged	4	3	3	2	H				2022-07-12	2022-07-10	Y	2022-08-04	2022-08-04
FORT	01A	43.43542	-70.36913	2022-04-27	fledged	4	3	3	2	H				2022-06-02	2022-06-01		2022-06-26	2022-06-27
FORT	02A	43.435269	-70.369516	2022-05-02	lost	4	0	0	0	P	2022-05-27	predated	fox	2022-05-30				
FORT	03A	43.434475	-70.370241	2022-05-10	lost	4	0	0	0	W	2022-05-17	flooded						
FORT	04A	43.43414	-70.37092	2022-05-10	lost	4	0	0	0	U	2022-05-20	unknown		2022-06-14				
FORT	05A	43.43788	-70.36524	2022-05-13	fledged	4	4	4	3	H				2022-06-14	2022-06-13		2022-07-08	2022-07-08
FORT	03B	43.4346	-70.37025	2022-05-24	fledged	4	4	4	4	H				2022-06-25	2022-06-23	Y	2022-07-18	2022-07-18
FORT	04B	43.432106	-70.372852	2022-05-27	fledged	4	4	4	3	H				2022-06-29	2022-06-26	Y	2022-07-21	2022-07-21
FORT	06A	43.43731	-70.36633	2022-05-30	lost	3	0	0	0	W	2022-06-23	flooded		2022-06-30				
FORT	02B	43.43522	-70.36942	2022-06-02	fledged	4	4	4	3	H				2022-07-05	2022-07-03		2022-07-28	2022-07-28
FORT	07A	43.44249	-70.34971	2022-06-14	lost	4	0	0	0	U	2022-06-23	unknown		2022-07-12		Y		
GOOS	01A	43.390208	-70.426602	2022-05-02	lost	3	0	0	0	A	2022-05-27	abandoned		2022-06-03		Y		
GOOS	02A	43.398177	-70.411605	2022-05-02	lost	3	0	0	0	P	2022-05-10	predated	feral cat					
GOOS	03A	43.389168	-70.428576	2022-05-10	lost	3	0	0	0	W	2022-05-17	flooded				Y		
GOOS	04A	43.389541	-70.427432	2022-05-10	fledged	4	4	4	2	H				2022-06-13	2022-06-14	Y	2022-07-09	2022-07-09
GOOS	05A	43.388184	-70.428981	2022-05-13	lost	3	0	0	0	P	2022-05-17	predated	skunk					
GOOS	06A	43.39924	-70.410043	2022-05-16	fledged	4	3	3	1	H				2022-06-18	2022-06-16		2022-07-11	2022-07-11
GOOS	07A	43.389188	-70.428397	2022-05-16	lost	1	0	0	0	U	2022-05-17	unknown						

GOOS	08A	43.390142	-70.426784	2022-05-16	fledged	4	4	4	3	H				2022-06-13	2022-06-13	Y	2022-07-08	2022-07-08
GOOS	07B	43.389206	-70.428241	2022-05-20	fledged	4	4	4	4	H				2022-06-19	2022-06-23	Y	2022-07-19	2022-07-19
GOOS	09A	43.402008	-70.399433	2022-05-14	lost	3	0	0	0	W	2022-05-20	flooded						
GOOS	05B	43.38827	-70.4285	2022-05-24	lost	4	0	0	0	P	2022-06-14	predated		2022-06-24				
GOOS	10A	43.3886	-70.42888	2022-05-24	lost	4	0	0	0	P	2022-05-27	predated	skunk					
GOOS	09B	43.401984	-70.399801	2022-05-25	lost	4	4	4	0	H				2022-06-28	2022-06-26		2022-07-21	
GOOS	03B	43.389139	-70.428315	2022-05-25	lost	4	0	0	0	P	2022-05-30	predated	skunk					
GOOS	01B	43.39038	-70.426526	2022-05-27	lost	2	0	0	0	P	2022-06-02	predated	skunk					
GOOS	11A	43.39061	-70.42599	2022-05-27	lost	4	0	0	0	P	2022-06-07	predated	skunk	2022-06-22				
GOOS	01C	43.39019	-70.42637	2022-06-02	lost	3	0	0	0	P	2022-06-09	predated						
GOOS	12A	43.392619	-70.424245	2022-06-03	lost	4	0	0	0	P	2022-06-09	predated	skunk	2022-06-30				
GOOS	10B	43.38844	-70.42832	2022-06-07	lost	4	0	0	0	W	2022-06-21	flooded		2022-07-06				
GOOS	13A	43.397344	-70.41807	2022-06-07	fledged	4	4	4	4	H				2022-07-06	2022-07-05	Y	2022-07-30	2022-07-29
GOOS	03C	43.388938	-70.428177	2022-06-09	lost	1	0	0	0	P	2022-06-14	predated	fox					
GOOS	11B	43.39071	-70.42579	2022-06-14	fledged	4	3	3	3	H				2022-07-19	2022-07-15	Y	2022-08-09	2022-08-09
GOOS	05C	43.38834	-70.4285	2022-06-16	lost	4	4	4	0	H				2022-07-19	2022-07-17	Y	2022-08-11	
GOOS	01D	43.39025	-70.42645	2022-06-16	fledged	4	4	4	3	H				2022-07-18	2022-07-15	Y	2022-08-09	2022-08-09
GOOS	10C	43.38841	-70.42839	2022-06-27	lost	2	0	0	0	P	2022-06-29	predated	skunk					
GOOS	03D	43.38893	-70.42819	2022-06-27	fledged	1	1	1	1	H				2022-07-24	2022-07-24	Y	2022-08-18	2022-08-18
GOOS	10D	43.38837	-70.42801	2022-06-29	lost	1	0	0	0	W	2022-07-06	flooded						
GOOS	14A	43.3882	-70.42859	2022-06-21	lost	1	0	0	0	P	2022-06-23	predated						
GOOS	14B	43.38823	-70.42865	2022-06-27	fledged	3	3	3	3	H				2022-07-22	2022-07-21	Y	2022-08-15	2022-08-15
Goosefare Brook	01A	43.495864	-70.38524	2022-05-27	fledged	4	3	4	2	H				2022-06-27	2022-06-25	Y	2022-07-20	2022-07-20
HALF	01A	43.773032	-69.735794	2022-05-13	fledged	4	4	4	3	H				2022-06-08	2022-06-08	Y	2022-07-03	2022-07-03
HALF	02A	43.771604	-69.738984	2022-05-25	fledged	4	4	4	4	H				2022-06-23	2022-06-20	Y	2022-07-15	2022-07-15
HIGG	01A	43.562319	-70.273123	2022-04-25	fledged	4	3	3	3	H				2022-05-24	2022-05-24	Y	2022-06-18	2022-06-18
HIGG	02A	43.562395	-70.27292	2022-04-25	fledged	4	3	3	1	H				2022-05-29	2022-05-28	Y	2022-06-22	2022-06-22
HIGG	03A	43.563373	-70.272002	2022-05-02	fledged	4	3	3	2	H				2022-06-04	2022-06-04	Y	2022-06-29	2022-06-29
HIGG	04A	43.562271	-70.273002	2022-05-11	lost	4	0	0	0	W	2022-05-17	flooded		2022-06-13		Y		
HIGG	04B	43.562563	-70.272402	2022-05-23	lost	4	4	4	0	H				2022-06-28	2022-06-23	Y	2022-07-18	
HIGG	05A	43.56287	-70.272	2022-06-01	lost	4	0	4	0	H				2022-07-06	2022-07-05			
HIGG	06A	43.562563	-70.272516	2022-06-23	lost	3	0	0	0	P	2022-06-29	predated	fox					
HILL	01A	43.458984	-70.37469	2022-05-02	fledged	4	4	4	1	H				2022-06-02	2022-06-01		2022-06-26	2022-06-26
HILL	02A	43.451586	-70.364397	2022-05-20	fledged	4	3	3	3	H				2022-06-18	2022-06-16		2022-07-11	2022-07-11
Laudholm	01A	43.334674	-70.542401	2022-04-25	fledged	3	3	3	2	H				2022-05-30	2022-05-31	Y	2022-06-25	2022-06-25
Laudholm	02A	43.334716	-70.541983	2022-05-10	lost	3	0	0	0	W	2022-05-18	flooded				Y		

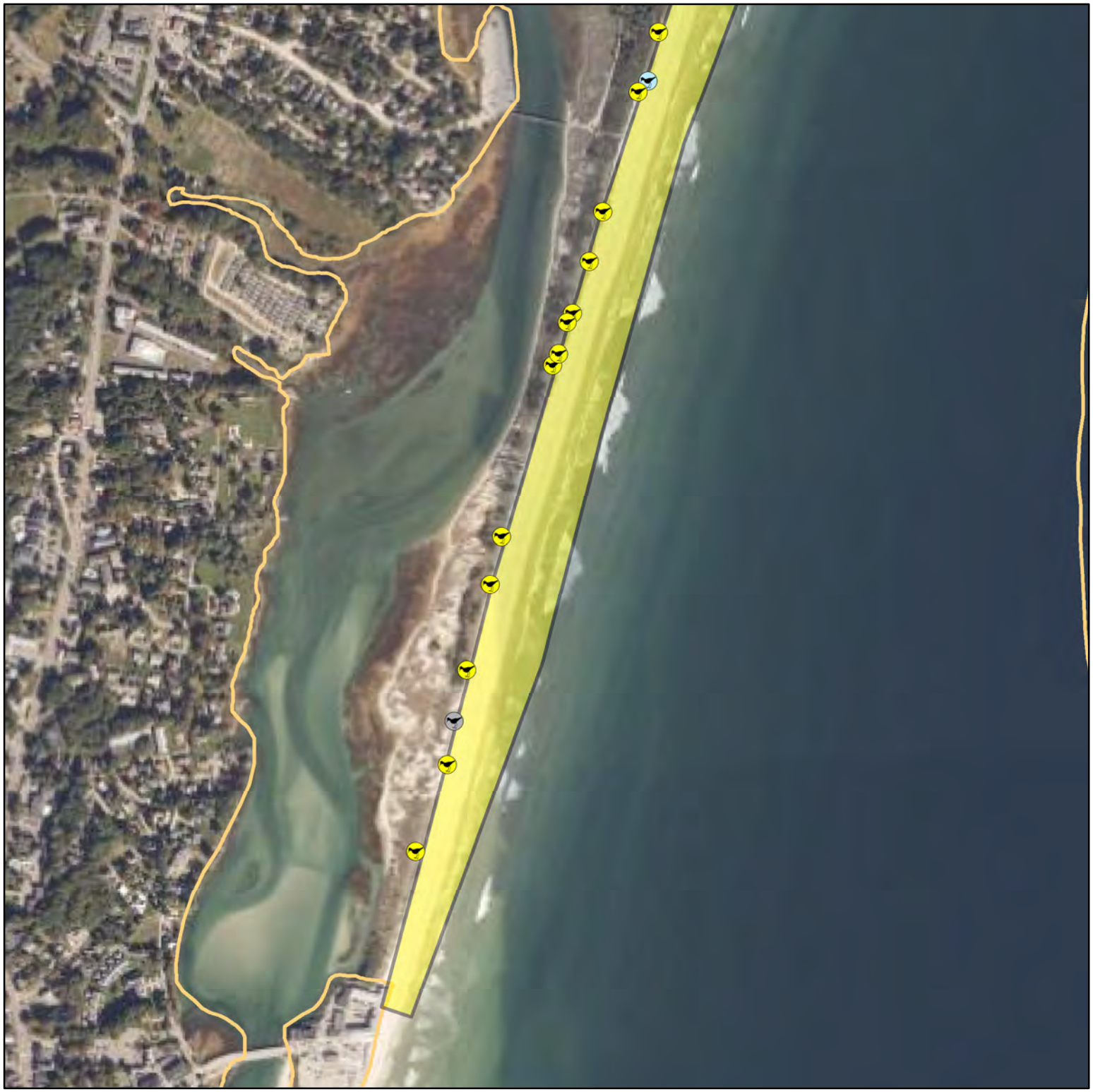
Laudholm	03A	43.331292	-70.543524	2022-05-18	lost	2	0	0	0	P	2022-05-24	predated	unknown					
Laudholm	04A	43.334475	-70.541841	2022-05-19	lost	1	0	0	0	P	2022-05-20	predated	unknown					
Laudholm	04B	43.333512	-70.541817	2022-05-24	lost	4	0	0	0	P	2022-06-24	predated	fox	2022-06-26				
Laudholm	02B	43.334179	-70.541723	2022-05-24	fledged	4	4	4	4	H				2022-06-24	2022-06-24	Y	2022-07-19	2022-07-19
Laudholm	03B	43.333655	-70.541845	2022-05-27	lost	3	0	0	0	P	2022-06-14	predated	fox					
Laudholm	03C	43.333938	-70.541581	2022-06-20	lost	2	0	0	0	W	2022-07-14	flooded		2022-07-17		Y		
MILE	01A	43.780726	-69.725401	2022-05-19	lost		0	0	0	P	2022-05-19	predated	unknown					
MILE	02A	43.779377	-69.727343	2022-05-25	lost	3	0	0	0	A	2022-06-09	abandoned						
MOOD	01A	43.270869	-70.584897	2022-05-08	fledged	4	4	4	2	H				2022-06-11	2022-06-10		2022-07-05	2022-07-05
MOOD	02A	43.269791	-70.585502	2022-05-24	fledged	4	3	3	3	H				2022-06-25	2022-06-21		2022-07-16	2022-07-16
NANO	01A	43.554293	-70.260121	2022-05-13	lost	4	0	0	0	P	2022-05-19	predated	fox	2022-06-10				
NANO	01B	43.55416	-70.26124	2022-05-24	fledged	4	4	4	3	H				2022-06-22	2022-06-20	Y	2022-07-15	2022-07-14
OGUN	01A	43.265985	-70.587699	2022-04-26	lost	4	4	4	0	H				2022-05-28	2022-05-26	Y	2022-06-20	
OGUN	02A	43.25729	-70.591331	2022-04-26	fledged	4	4	4	1	H				2022-05-30	2022-05-31		2022-06-24	2022-06-23
OGUN	03A	43.265846	-70.587857	2022-04-29	fledged	4	4	4	4	H				2022-06-01	2022-06-02		2022-06-27	2022-06-27
OGUN	04A	43.264132	-70.588616	2022-04-29	fledged	4	4	4	4	H				2022-06-03	2022-06-04		2022-06-29	2022-06-29
OGUN	05A	43.25549	-70.591926	2022-04-29	fledged	4	4	4	2	H				2022-06-01	2022-05-31		2022-06-25	2022-06-25
OGUN	06A	43.256644	-70.591522	2022-05-03	fledged	4	4	4	4	H				2022-06-04	2022-06-02		2022-06-27	2022-06-27
OGUN	07A	43.261691	-70.58958	2022-05-06	fledged	4	4	4	4	H				2022-06-08	2022-06-06	Y	2022-07-01	2022-07-01
OGUN	08A	43.261031	-70.58981	2022-05-06	fledged	4	4	4	3	H				2022-06-08	2022-06-08	Y	2022-07-03	2022-07-03
OGUN	09A	43.26032	-70.590104	2022-05-06	lost	4	4	4	0	H				2022-06-08	2022-06-09		2022-07-04	
OGUN	10A	43.254782	-70.592142	2022-05-06	lost	1	0	0	0	U	2022-05-10	unknown	unknown					
OGUN	11A	43.263483	-70.588787	2022-05-10	lost	3	0	0	0	W	2022-05-17	flooded				Y		
OGUN	12A	43.259616	-70.590449	2022-05-10	fledged	4	4	4	4	H				2022-06-01	2022-05-31		2022-06-25	2022-06-18
OGUN	13A	43.254203	-70.592255	2022-05-10	lost	4	4	4	0	H				2022-06-09	2022-06-09		2022-07-04	
OGUN	14A	43.267068	-70.587067	2022-05-13	fledged	4	4	4	2	H				2022-06-17	2022-06-15		2022-07-10	2022-07-10
OGUN	15A	43.263338	-70.588968	2022-05-17	fledged	4	4	4	1	H				2022-06-18	2022-06-18		2022-07-13	2022-07-13
OGUN	16A	43.259771	-70.590345	2022-05-17	fledged	4	2	4	2	H				2022-06-15	2022-06-16		2022-07-11	2022-07-11
OGUN	17A	43.253023	-70.592808	2022-05-19	fledged	4	3	3	1	H				2022-06-17	2022-06-18		2022-07-13	2022-07-13
OGUN	18A	43.260193	-70.590193	2022-05-24	unknown	3	3	3	1	H				2022-06-23	2022-06-23		2022-07-18	2022-07-18
OGUN	19A	43.26534	-70.587966	2022-06-02	fledged	3	2	2	2	H				2022-07-05	2022-07-02		2022-07-27	2022-07-27
OGUN	11B	43.264957	-70.588152	2022-06-02	lost	2	0	2	0	H				2022-07-05	2022-07-07		2022-08-01	
OGUN	01B	43.265879	-70.587659	2022-06-13	lost	3	0	0	0	W	2022-06-21	flooded						
OOB	01A	43.51068	-70.37649	2022-04-30	fledged	4	4	4	3	H				2022-06-03	2022-06-04	Y	2022-06-29	2022-06-29
OOB	02A	43.511768	-70.375771	2022-05-11	fledged	4	3	4	2	H				2022-06-13	2022-06-11		2022-07-06	2022-07-06
OOB	03A	43.52366	-70.366	2022-05-11	lost	4	0	0	0	A	2022-06-08	abandoned		2022-06-17				

OOB	04A	43.53198	-70.35839	2022-05-11	lost	4	4	4	0	H				2022-06-14	2022-06-10	Y	2022-07-05	
OOB	05A	43.525238	-70.36481	2022-05-16	lost	4	0	0	0	A	2022-06-14	abandoned		2022-06-17		Y		
OOB	06A	43.53521	-70.353523	2022-05-23	lost	3	0	0	0	A	2022-06-03	abandoned				Y		
OOB	07A	43.530645	-70.359727	2022-05-23	fledged	1	1	1	1	H				2022-06-24	2022-06-22	Y	2022-07-17	2022-07-17
OOB	08A	43.52309	-70.36658	2022-05-30	lost	3	0	0	0	A	2022-06-10	abandoned						
OOB	06B	43.53497	-70.35377	2022-06-14	lost	4	3	3	0	H				2022-07-12	2022-07-10		2022-08-04	
OOB	09A	43.52473	-70.36524	2022-06-17	fledged	4	4	4	2	H				2022-07-18	2022-07-16		2022-08-10	2022-08-10
Parsons	01A	43.342987	-70.522773	2022-05-27	fledged	4	3	3	1	H				2022-06-25	2022-06-25		2022-07-21	2022-07-21
Parsons	02A	43.342258	-70.524766	2022-05-30	fledged	4	4	4	1	H				2022-07-01	2022-06-30		2022-07-25	2022-07-25
Parsons	03A	43.34356	-70.521036	2022-06-06	lost	4	2	3	0	H				2022-07-07	2022-07-06		2022-07-31	
PINE	01A	43.54103	-70.33151	2022-05-25	unknown	3	3	3	2	H				2022-06-28	2022-06-27	Y	2022-07-22	2022-07-22
POPH	01A	43.735793	-69.797181	2022-05-09	lost	4	0	4	0	H				2022-06-10	2022-06-11	Y	2022-07-06	
POPH	02A	43.736028	-69.797649	2022-05-09	lost	3	3	3	0	H				2022-06-11	2022-06-10	Y	2022-07-05	
POPH	03A	43.73493	-69.80656	2022-05-09	fledged	4	4	4	3	H				2022-06-08	2022-06-08	Y	2022-07-03	2022-07-03
POPH	04A	43.734731	-69.810134	2022-05-09	fledged	4	4	4	3	H				2022-06-11	2022-06-11	Y	2022-07-06	2022-07-06
POPH	05A	43.73439	-69.80971	2022-05-09	fledged	4	3	2	3	H				2022-06-10	2022-06-09	Y	2022-07-04	2022-07-04
POPH	06A	43.735141	-69.808414	2022-05-12	lost	2	0	0	0	A	2022-05-18	abandoned				Y		
POPH	07A	43.735158	-69.804456	2022-05-12	lost	4	0	0	0	P	2022-05-26	predated	crow	2022-06-14				
POPH	08A	43.735578	-69.795934	2022-05-12	lost	4	0	4	0	H				2022-06-13	2022-06-14	Y		
POPH	09A	43.734522	-69.810186	2022-05-23	fledged	4	4	4	3	H				2022-06-22	2022-06-24	Y	2022-07-19	2022-07-19
POPH	10A	43.734302	-69.810475	2022-05-23	fledged	4	4	4	3	H				2022-06-28	2022-06-28	Y	2022-07-23	2022-07-23
POPH	11A	43.7351	-69.805297	2022-05-23	lost	4	0	0	0	A	2022-06-17	abandoned		2022-06-26		Y		
POPH	07B	43.73503	-69.80404	2022-05-31	fledged	4	3	3	1	H				2022-07-03	2022-07-03		2022-07-28	2022-07-28
POPH	12A	43.734533	-69.810334	2022-05-31	lost	4	4	4	0	H				2022-06-28	2022-06-26		2022-07-21	
POPH	13A	43.735336	-69.806727	2022-06-03	lost	4	0	0	0	W	2022-06-13	flooded		2022-07-03		Y		
POPH	06B	43.735046	-69.808254	2022-06-03	fledged	4	4	4	3	H				2022-07-06	2022-07-07		2022-08-01	2022-08-01
POPH	13B	43.734648	-69.807099	2022-06-22	lost	3	0	3	0	H				2022-07-22	2022-07-21	Y	2022-08-15	
POPH	08B	43.735831	-69.796026	2022-06-28	lost	3	3	3	0	H				2022-07-24	2022-07-26	Y	2022-08-20	
SCAR	01A	43.54744	-70.304163	2022-05-06	lost	4	0	0	0	W	2022-05-17	flooded		2022-06-08		Y		
SCAR	02A	43.546386	-70.305687	2022-05-11	lost	2	0	0	0	W	2022-05-17	flooded				Y		
SCAR	02B	43.546553	-70.305491	2022-05-24	fledged	4	4	4	2	H				2022-06-26	2022-06-26	Y	2022-07-21	2022-07-21
SCAR	03A	43.545185	-70.307328	2022-05-24	lost	4	4	4	0	H				2022-06-24	2022-06-21	Y	2022-07-16	
SCAR	04A	43.541145	-70.310671	2022-05-27	lost	4	0	0	0	P	2022-05-30	predated	crow	2002-06-24				
SCAR	05A	43.54822	-70.30317	2022-05-27	lost	4	0	0	0	W	2022-06-20	flooded		2022-06-25		Y		
SCAR	06A	43.54824	-70.30302	2022-06-13	lost	4	0	0	0	W	2022-06-15	flooded		2022-07-11				
SCAR	06B	43.548394	-70.30302	2022-06-20	fledged	3	3	3	1	H				2022-07-24	2022-07-21		2022-08-15	2022-08-15

SCAR	07A	43.546223	-70.305864	2022-06-24	fledged	4	3	3	3	H				2022-07-24	2022-07-21	Y	2022-08-15	2022-08-15
SEAW	01A	43.732121	-69.809052	2022-05-12	fledged	4	3	4	3	H				2022-06-12	2022-06-12	Y	2022-07-07	2022-07-07
SEAW	02A	43.731462	-69.808363	2022-05-12	fledged	4	4	4	2	H				2022-06-12	2022-06-14	Y	2022-07-09	2022-07-09
SEAW	03A	43.732591	-69.807663	2022-05-12	lost	1	0	0	0	W	2022-05-18	flooded						
SEAW	04A	43.732049	-69.808067	2022-05-12	lost	4	0	0	0	U	2022-05-23	unknown		2022-06-11				
SEAW	05A	43.728097	-69.818727	2022-05-12	lost	2	0	0	0	A	2022-05-18	abandoned				Y		
SEAW	06A	43.72631	-69.82341	2022-05-12	fledged	4	4	4	3	H				2022-06-11	2022-06-14		2022-07-09	2022-07-09
SEAW	07A	43.72451	-69.82748	2022-05-12	lost	4	0	0	0	P	2022-05-26	predated	crow	2022-06-13				
SEAW	08A	43.72254	-69.83175	2022-05-12	lost	4	0	0	0	A	2022-06-09	abandoned		2022-06-11				
SEAW	09A	43.72231	-69.83215	2022-05-12	lost	1	1	1	0	H				2022-06-11	2022-06-11			
SEAW	10A	43.730929	-69.808918	2022-05-18	lost	4	0	0	0	P	2022-05-23	predated	fox	2022-06-14				
SEAW	11A	43.731718	-69.807985	2022-05-18	lost	4	0	0	0	P	2022-05-23	predated	unknown					
SEAW	12A	43.730212	-69.810349	2022-05-18	lost	4	0	0	0	P	2022-05-31	predated	fox	2022-06-18				
SEAW	04B	43.732245	-69.807982	2022-05-26	fledged	4	4	4	3	H				2022-06-28	2022-06-24		2022-07-19	2022-07-19
SEAW	13A	43.73183	-69.80848	2022-05-31	lost	2	0	0	0	A	2022-06-07	abandoned						
SEAW	14A	43.73221	-69.80793	2022-05-31	lost	4	0	0	0	P	2022-06-28	predated	fox	2022-07-03				
SEAW	05B	43.728137	-69.818816	2022-06-03	fledged	4	4	4	4	H				2022-07-02	2022-06-30		2022-07-25	2022-07-25
SEAW	07B	43.724836	-69.826755	2022-06-03	fledged	4	4	4	2	H				2022-07-03	2022-07-01		2022-07-26	2022-07-26
SEAW	10B	43.730666	-69.809009	2022-06-03	fledged	4	4	4	4	H				2022-07-02	2022-06-30	Y	2022-07-25	2022-07-25
SEAW	03B	43.732557	-69.807564	2022-06-07	lost	1	0	0	0	A	2022-06-13	abandoned						
SEAW	15A	43.730537	-69.809761	2022-06-07	fledged	4	3	3	3	H				2022-07-09	2022-07-11		2022-08-05	2022-08-05
SEAW	16A	43.7313	-69.80887	2022-06-13	lost	4	0	0	0	U	2022-06-28	unknown		2022-07-12				
SEAW	08B	43.722494	-69.831897	2022-06-17	lost	4	0	0	0	P	2022-06-22	predated	crow	2022-07-14				
SEAW	13B	43.73164	-69.808329	2022-06-17	fledged	3	3	3	3	H				2022-07-17	2022-07-25	Y	2022-08-19	2022-08-19
SEAW	12B	43.730027	-69.810768	2022-06-22	fledged	3	3	3	3	H				2022-07-17	2022-07-17	Y	2022-08-11	2022-08-11
SEAW	03C	43.732326	-69.806852	2022-06-22	fledged	4	4	4	1	H				2022-07-22	2022-07-19		2022-08-13	2022-08-16
SEAW	08C	43.72245	-69.832	2022-06-24	fledged	3	3	3	3	H				2022-07-27	2022-07-25		2022-08-19	2022-08-19
SEAW	09B	43.72235	-69.8319	2022-06-24	lost	3	0	0	0	W	2022-07-15	flooded		2022-07-27				
WELL	01A	43.315529	-70.5598	2022-04-21	lost	4	0	4	0	H				2022-05-24	2022-05-24			
WELL	02A	43.312292	-70.562269	2022-04-21	fledged	4	4	4	4	H				2022-05-25	2022-05-25	Y	2022-06-19	2022-06-19
WELL	03A	43.314027	-70.56097	2022-04-28	fledged	4	4	4	4	H				2022-06-01	2022-05-30	Y	2022-06-24	2022-06-24
WELL	04A	43.310535	-70.563257	2022-04-29	fledged	4	4	4	4	H				2022-06-03	2022-05-31		2022-06-25	2022-06-25
WELL	05A	43.314807	-70.560261	2022-05-02	fledged	4	4	4	3	H				2022-06-04	2022-06-02	Y	2022-06-27	2022-06-27
WELL	06A	43.309108	-70.563948	2022-05-06	lost	4	0	0	0	W	2022-05-19	flooded		2022-06-08				
WELL	07A	43.307785	-70.564701	2022-05-08	fledged	4	1	1	1	H				2022-06-10	2022-06-10		2022-07-05	2022-07-05
WELL	08A	43.314655	-70.560571	2022-05-08	fledged	4	4	4	4	H				2022-06-11	2022-06-10	Y	2022-07-05	2022-07-05

WELL	10A	43.316454	-70.559631	2022-05-08	fledged	4	4	4	3	H				2022-06-11	2022-06-10	Y	2022-07-05	2022-07-05
WELL	09A	43.316	-70.559819	2022-05-08	fledged	4	4	4	1	H				2022-06-11	2022-06-10	Y	2022-07-05	2022-07-05
WELL	11A	43.316781	-70.558352	2022-05-08	fledged	4	4	4	3	H				2022-06-10	2022-06-08	Y	2022-07-03	2022-07-03
WELL	12A	43.31196	-70.562439	2022-05-09	fledged	4	4	4	4	H				2022-06-11	2022-06-09		2022-07-04	2022-07-04
WELL	13A	43.310729	-70.563048	2022-05-13	fledged	3	3	3	2	H				2022-06-16	2022-06-14		2022-07-09	2022-07-09
WELL	06B	43.309054	-70.564003	2022-05-24	fledged	4	4	4	4	H				2022-06-25	2022-06-24		2022-07-22	2022-07-22
WELL	01B	43.315769	-70.559573	2022-06-02	fledged	4	1	1	1	H				2022-07-03	2022-07-01	Y	2022-07-26	2022-07-26
WELL	14A	43.305803	-70.565733	2022-06-10	fledged	3	2	2	2	H				2022-07-13	2022-07-11		2022-08-05	2022-08-04
WEST-FE	01A	43.53813	-70.32058	2022-05-02	fledged	4	4	4	4	H				2022-06-06	2022-06-10	Y	2022-07-05	2022-07-05
WEST-FE	02A	43.53941	-70.322258	2022-05-06	fledged	4	4	4	3	H				2022-06-11	2022-06-11		2022-07-06	2022-07-06
WEST-FE	03A	43.536966	-70.319396	2022-05-09	lost	4	0	0	0	W	2022-05-16	flooded		2022-06-11		Y		
WEST-FE	04A	43.538645	-70.321091	2022-05-14	lost	4	0	0	0	P	2022-05-18	predated	fox	2022-06-11				
WEST-FE	05A	43.538821	-70.3213	2022-05-14	lost	4	0	0	0	P	2022-06-06	predated	fox	2022-06-15				
WEST-FE	06A	43.541453	-70.325166	2022-05-16	lost	4	4	4	0	H				2022-06-21	2022-06-16	Y	2022-07-11	
WEST-FE	07A	43.539328	-70.322082	2022-05-18	lost	4	0	0	0	P	2022-06-06	predated	fox	2022-06-21				
WEST-FE	08A	43.537413	-70.319759	2022-05-19	lost	4	0	0	0	P	2022-06-14	predated	fox	2022-06-21				
WEST-FE	03B	43.53614	-70.31881	2022-05-27	fledged	4	3	3	3	H				2022-06-27	2022-06-24		2022-07-19	2022-07-19
WEST-FE	05B	43.53885	-70.32156	2022-06-13	fledged	4	4	4	4	H				2022-07-18	2022-07-18	Y	2022-08-12	2022-08-12
WEST-FE	07B	43.53914	-70.32202	2022-06-13	fledged	3	4	3	3	H				2022-07-17	2022-07-12	Y	2022-08-06	2022-08-05

Key: H –hatched, P – predation, A – abandoned, W – washout, U – unknown



2022 Piping Plover Nest Locations

Ogunquit Beach

Nest Location & Outcome

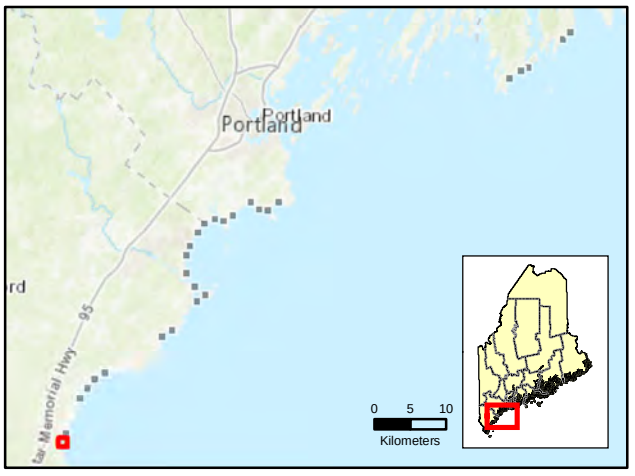
- Hatched
- Unknown
- Washout

- Foraging Area
- Essential Habitat

0 55 110 220 330 440 Meters

N W E S

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Ogunquit Beach / Moody Beach

Nest Location & Outcome

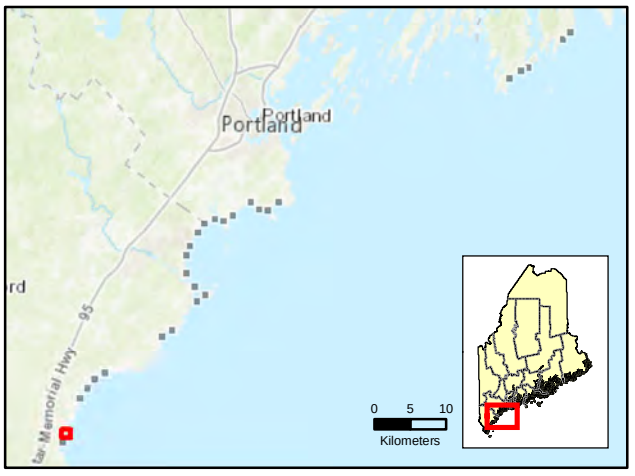
- Hatched
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S

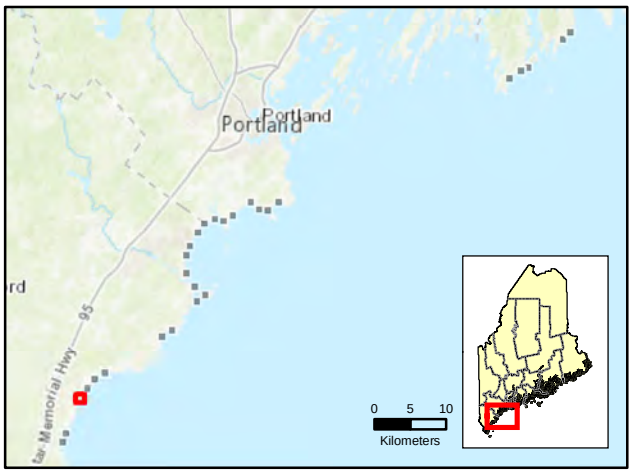


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Wells Beach



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

Nest Location & Outcome

- Hatched
- Washout

Foraging Area

0 55 110 220 330 440 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S

2022 Piping Plover Nest Locations

Drakes Island Beach

Nest Location & Outcome

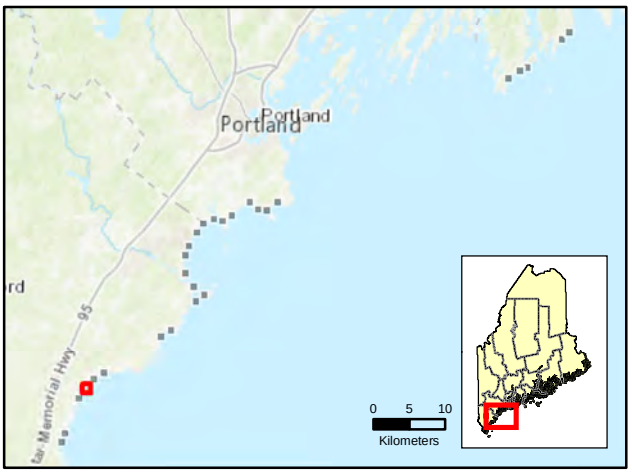
- Hatched
- Predation
- Foraging Area
- Essential Habitat

Meters

0 40 80 160 240 320

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



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February, 07, 2023

2022 Piping Plover Nest Locations

Laudholm Farm / Crescent Surf

Nest Location & Outcome

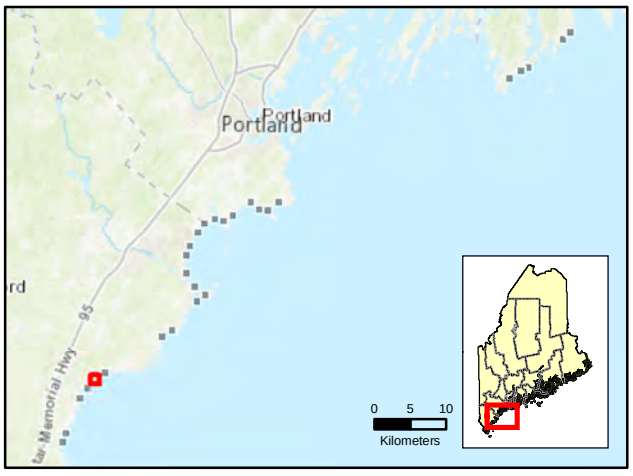
- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N
W E
S

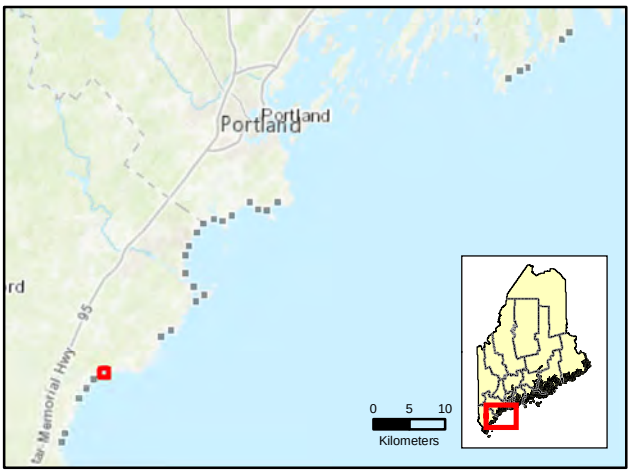


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Parsons Beach



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

Nest Location & Outcome

Hatched

Foraging Area

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N
W E
S

2022 Piping Plover Nest Locations

Goose Rocks / Marshall Point

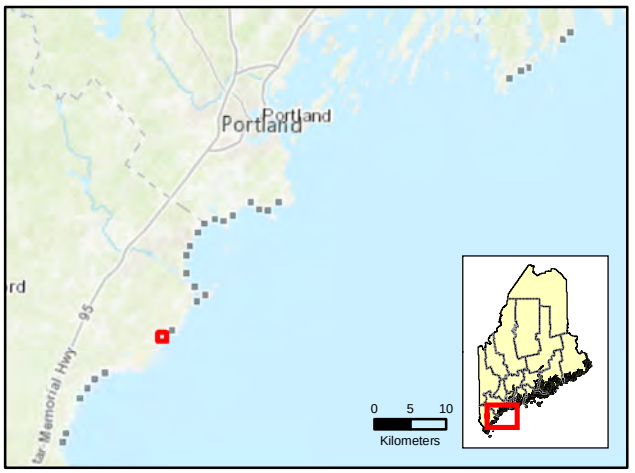
Nest Location & Outcome

- Abandoned
- Hatched
- Predation
- Unknown
- Washout

- Foraging Area
- Essential Habitat

0 70 140 280 420 560 Meters

N W E S



Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Goose Rocks (East)

Nest Location & Outcome

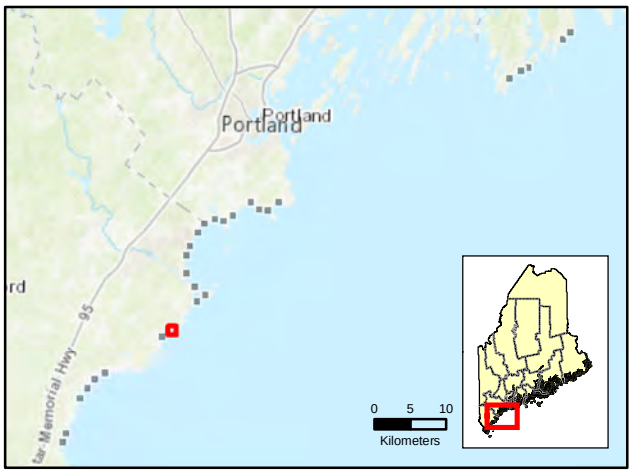
- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Fortunes Rocks

Nest Location & Outcome

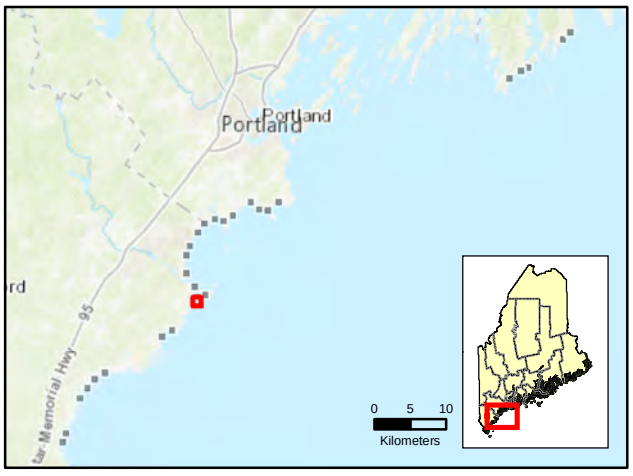
- Hatched
- Predation
- Unknown
- Washout

- Foraging Area
- Essential Habitat

0 70 140 280 420 560 Meters

N W E S

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

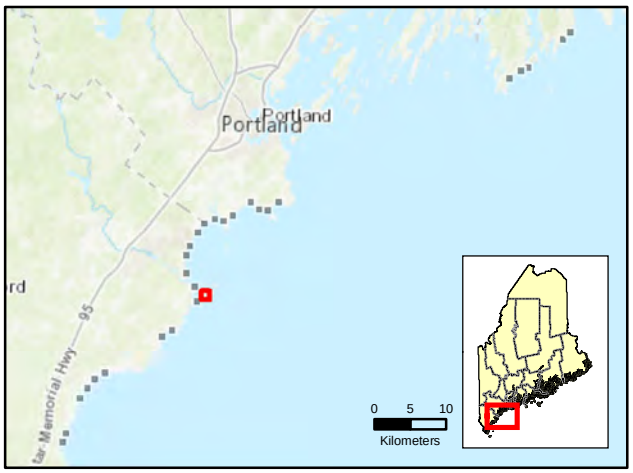


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Fortunes Rocks - Public Beach



Nest Location & Outcome

Unknown

Essential Habitat

0 70 140 280 420 560 Meters

N
W E
S

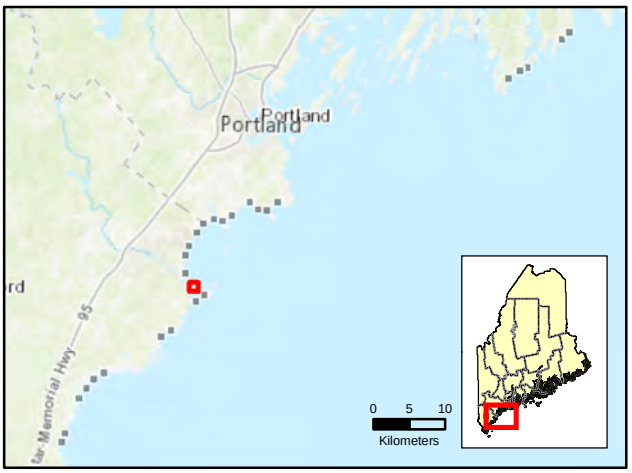
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Hills Beach



Nest Location & Outcome

Hatched

Foraging Area

0 40 80 160 240 320 Meters

N
W E
S

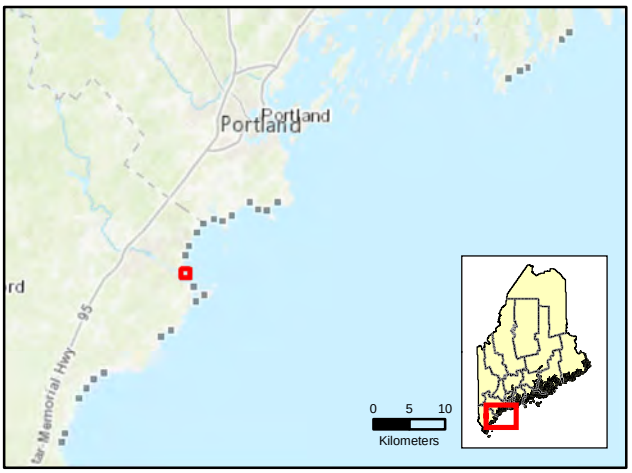
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Ferry Beach



Nest Location & Outcome

Hatched

Foraging Area

0 70 140 280 420 560 Meters

N
W E
S

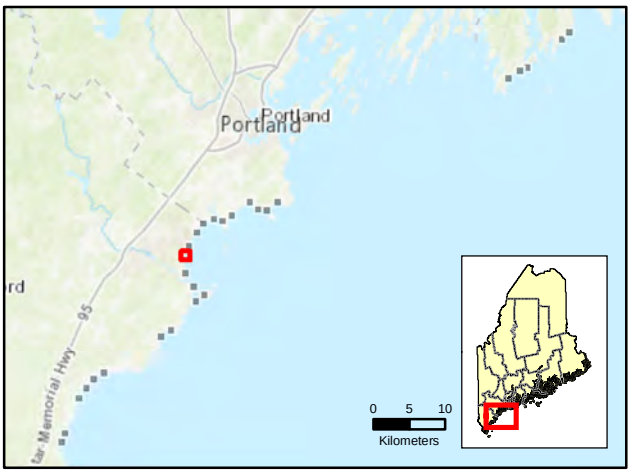
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Goosefare Brook / Ocean Park



Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

0 40 80 160 240 320 Meters

N
W E
S

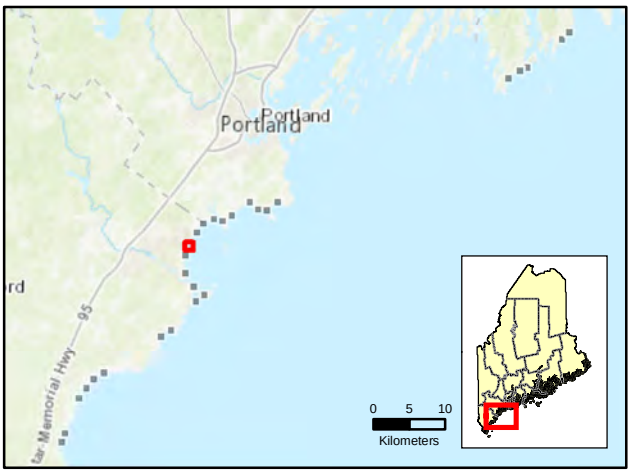
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Old Orchard Beach



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

Meters

0 55 110 220 330 440

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N
W E
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2022 Piping Plover Nest Locations

Old Orchard Beach - Surfside / Grand Beach

Nest Location & Outcome

- Abandoned
- Hatched

- Foraging Area
- Essential Habitat

Meters

0 70 140 280 420 560

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N
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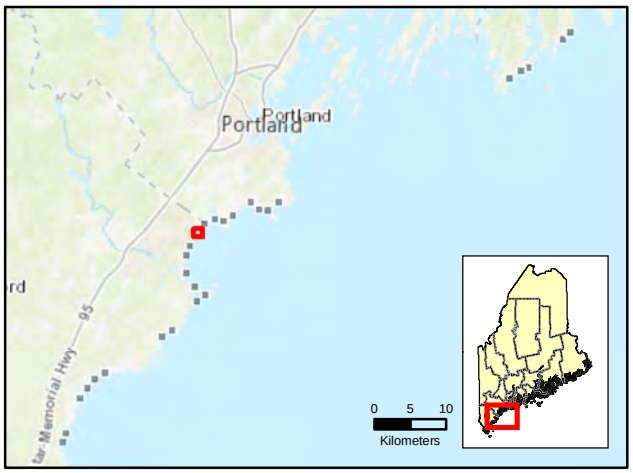
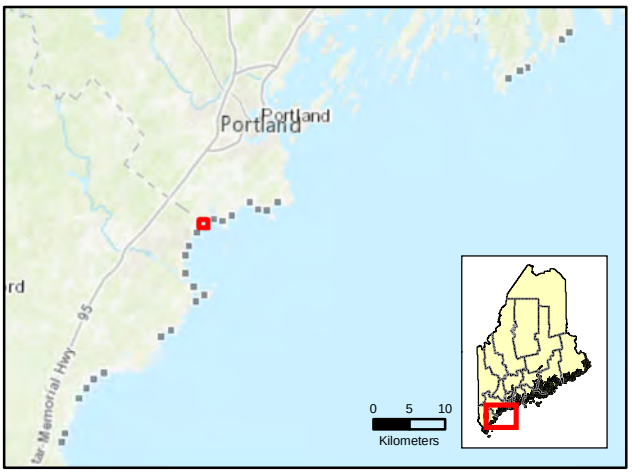


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Old Orchard Beach - Grand Beach



Nest Location & Outcome

- Abandoned
- Hatched

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

N
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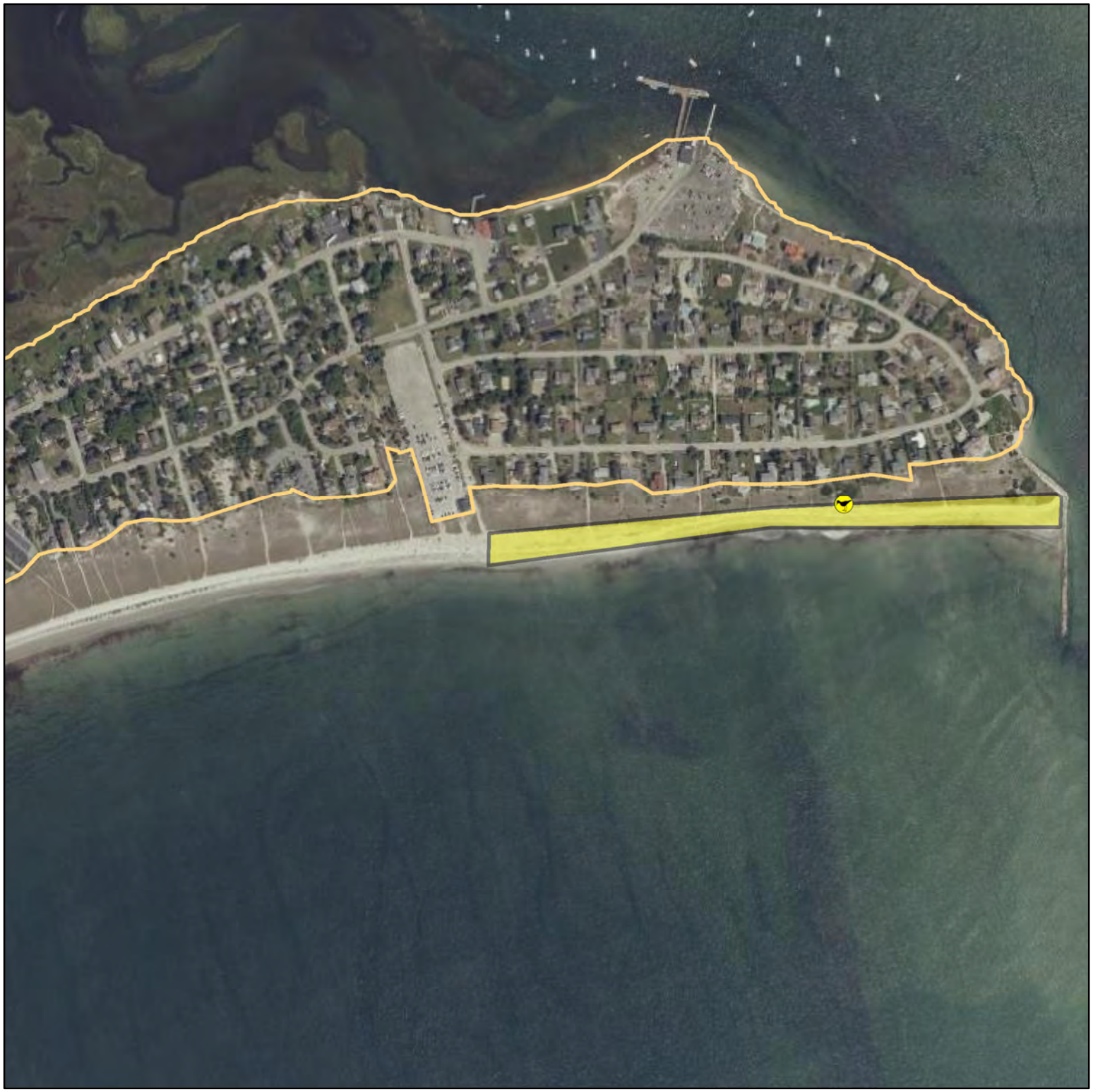
Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

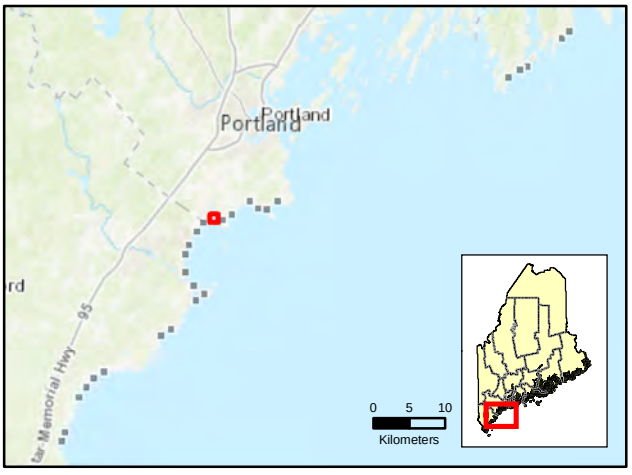
Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023



2022 Piping Plover Nest Locations

Pine Point



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N
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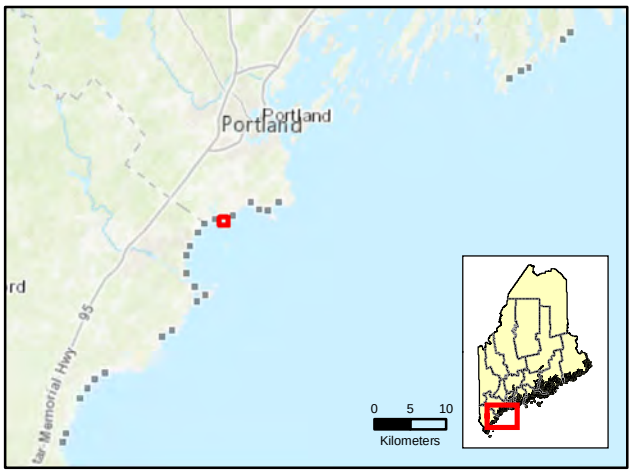
2022 Piping Plover Nest Locations

Western Beach



Nest Location & Outcome

- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

N
W E
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Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Scarborough Beach

Nest Location & Outcome

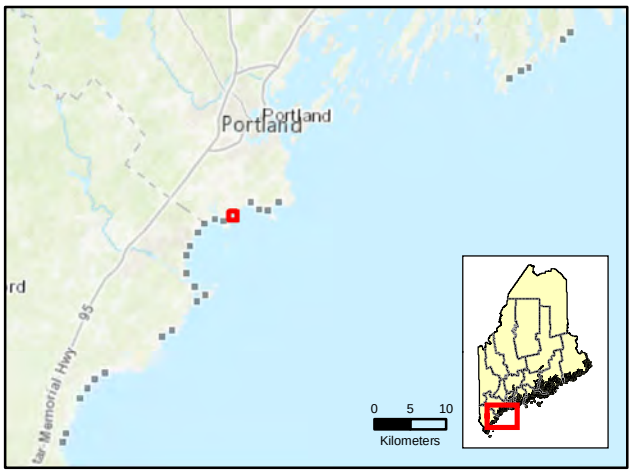
- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Higgins Beach

Nest Location & Outcome

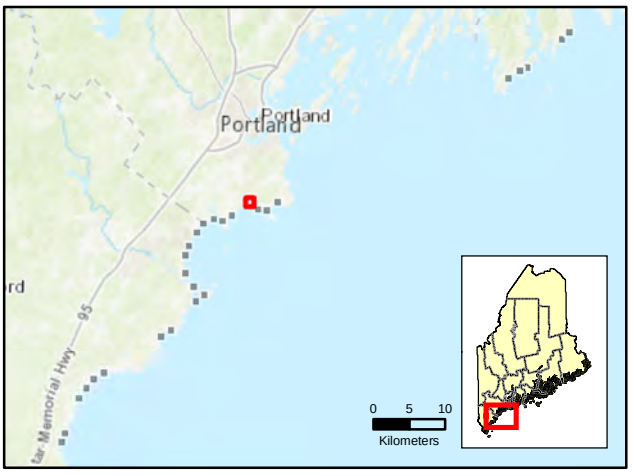
- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



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February, 07, 2023

2022 Piping Plover Nest Locations

Ram Island - Nano's Beach

Nest Location & Outcome

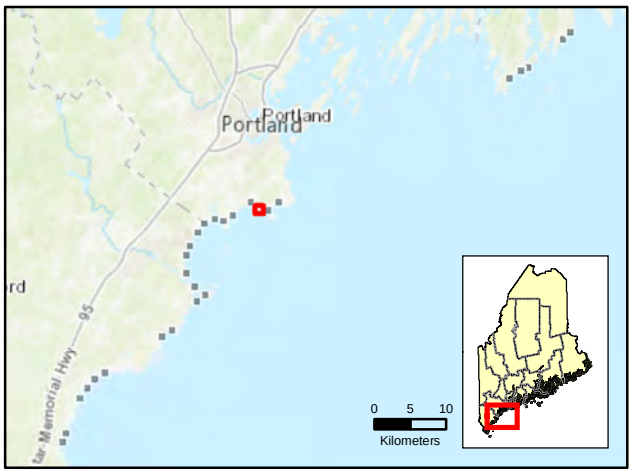
- Hatched
- Predation

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S

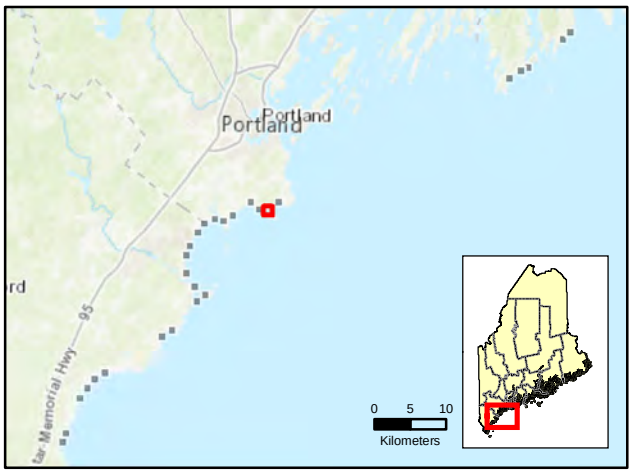


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Ram Island - Breakwater



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

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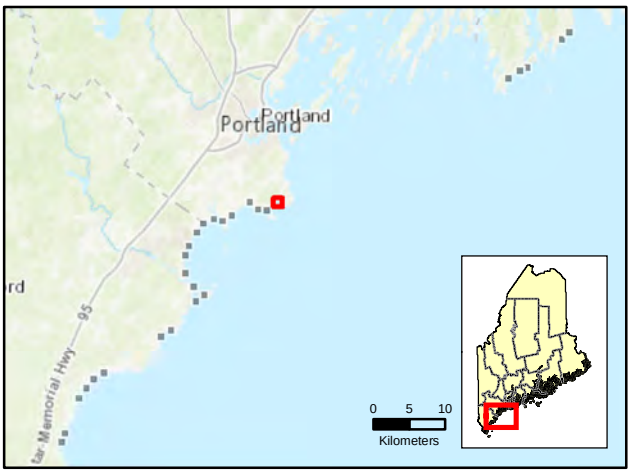
2022 Piping Plover Nest Locations

Crescent Beach State Park



Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

Meters

0 40 80 160 240 320

N

W E

S

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Seawall Beach

Nest Location & Outcome

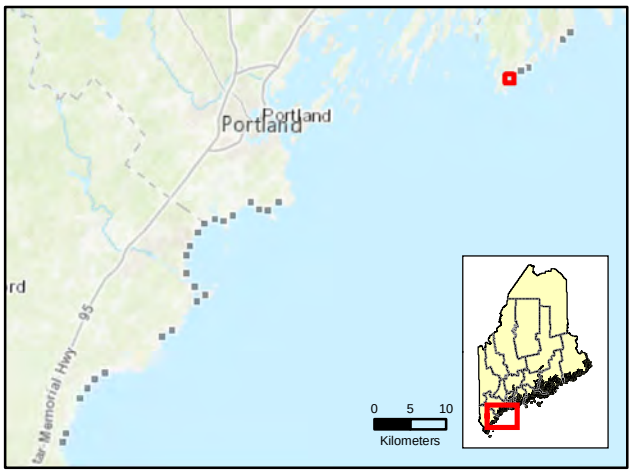
- Abandoned
- Hatched
- Predation
- Washout

- Foraging Area
- Essential Habitat

0 70 140 280 420 560 Meters

N W E S

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Seawall Beach (East) / Popham Beach (West)

Nest Location & Outcome

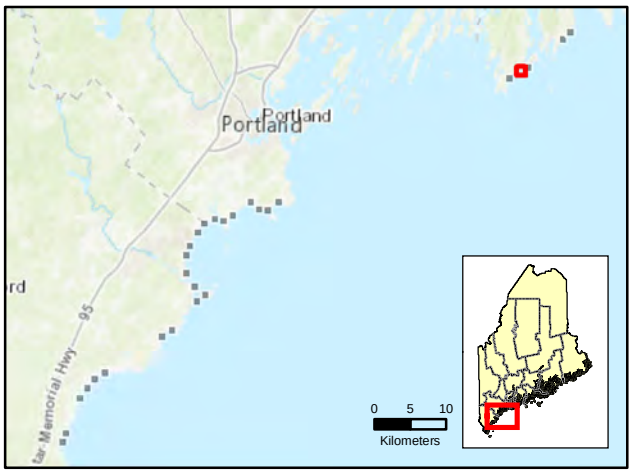
- Abandoned
- Hatched
- Predation
- Unknown
- Washout

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Popham Beach

Nest Location & Outcome

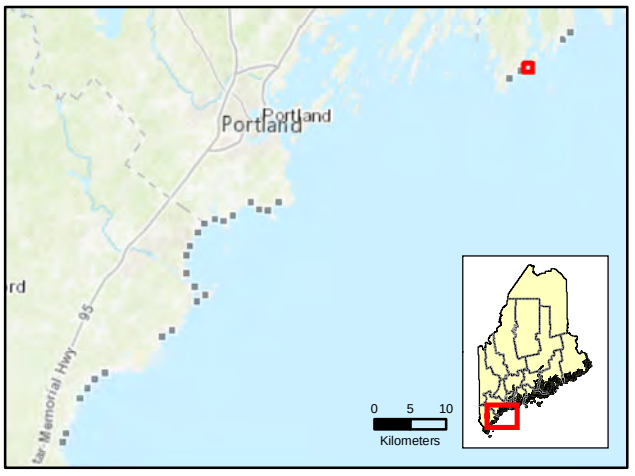
- Abandoned
- Hatched
- Predation

- Foraging Area
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S

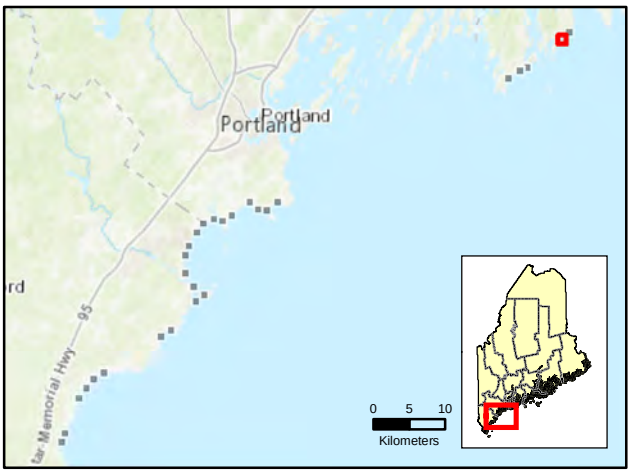


Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Reid State Park - Half Mile Beach



Nest Location & Outcome

Hatched

Foraging Area

Essential Habitat

0 40 80 160 240 320 Meters

N
W E
S

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023

2022 Piping Plover Nest Locations

Reid State Park - Mile Beach

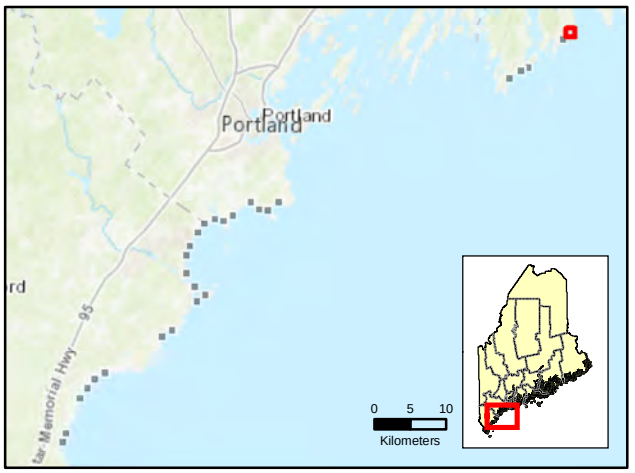
Nest Location & Outcome

- Abandoned
- Predation
- Essential Habitat

0 40 80 160 240 320 Meters

Universal Transverse Mercator (UTM) Projection
North American Datum (NAD) 1983
Data Sources: MEGIS; MDIFW; Maine Audubon

N W E S



Map Prepared by Maine Department of Inland Fisheries & Wildlife

February, 07, 2023