MASSACHUSETTS WILDLIFE

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New Piping Plover Plan,
Family Fishing Tradition,
Eider Virus Mystery

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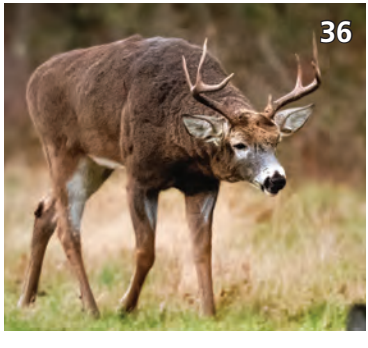

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MASSACHUSETTS WILDLIFE

Vol. 66 No. 4

FEATURES

On the Cover: An energetic 10-day old Piping Plover (*Charadrius melodus*) chick seems to celebrate life as it breaks free from the protective shelter of the adult female. She still has two of the four-chick brood safely tucked beneath her, out of the hot sun and hidden from the eyes of predators. Plover Monitors record data on each confirmed nesting pair as a measure of productivity. Photographed on the North Shore with a Nikon 840mm lens (35mm equivalent) © Bill Byrne

SUCCESS ON THE SAND

Piping Plover Management

by Jonathan Regosin

Photo © Bill Byrne

A small pale shorebird sits motionless in a shallow depression on a Massachusetts beach, while wind-whipped beachgrass scours fluid patterns in the sand. A watchful gull pauses overhead. It floats on the wind, intently searching for the slightest movement, before catching a gust that propels it down the shoreline. It shrinks to a pinpoint and vanishes into blue. A vibration rattles one of the four speckled eggs that lay beneath the attentive shorebird. She rises and inspects her clutch. Moments later, the tip of a tiny black beak breaks through the eggshell and into our world. The chick wriggles forward and comes to rest; half in its shell and half on the sand. The process repeats itself three times over the next day and a half. Each chick ventures out on the sandy moonscape to feed itself within hours of hatching—four little fuzz balls on stilts, each facing a challenging and changing world. Under their parents' heedful eyes, the chicks struggle to evade predators and eke out an existence on the sand, while facing the ever-present threat of storms and high tides that can shatter their world. Refuge is sought under their mother's wings.

Nearby, beachgoers apply sunscreen, children build sandcastles, and multi-colored beach umbrellas dot the landscape. This is the story of the Piping Plover. It is also the story of Massachusetts' residents, and how changes in our population, lifestyles, and land use inadvertently led to the decline of the plover and how successful conservation action taken over the past three decades to manage and recover plover populations threatened to unravel with an erosion of community support—and how diverse interests came together to reverse this trend.

Photos © Bill Byrne

DECLINE & RECOVERY

The decline of the Piping Plover (*Charadrius melodus*) during the 19th century has been largely attributed to market hunting. The Migratory Bird Treaty Act of 1918 ended commercial hunting for all migratory birds in the United States, providing an opportunity for modest recovery. However, plovers suffered another decline beginning in the 1940s and 50s, culminating in listing under the federal Endangered Species Act (ESA) and the Massachusetts Endangered Species Act (MESA) in the 1980s. Although multiple factors likely contributed to this mid-20th century decline, the mid to late 1900s were a period of rapid human population growth, with dramatic increases in development along our coastline. This development was accompanied by changes in work and leisure routines and significant increases in recreational use of beaches. Of course, this was also the era of the affordable, mass-produced automobile. Not only were more people visiting the beach but they could now spread out and access beaches that were hitherto too difficult to reach; and in addition to bathing, beach driving in off-road vehicles now became popular.


Photo © Bill Byrne

Piping Plovers are remarkably well adapted to life on the beach—relying on cryptic coloration to protect them from predators—but without adequate protection measures, plovers are extremely vulnerable to human disturbance. Recreational beachgoers, pets, and off-road vehicles can inadvertently disrupt courtship and nesting activity, accidentally trample nests, and disturb feeding chicks, leading to poor growth and increased predation risk. The mid to late 1900s also saw dramatically increased predator populations for several reasons. First, predator populations were increasing due to reduced persecution (e.g. bounties) and hunting pressure resulting from the continuing shift from a rural-agricultural to urban-suburban society. Second, suburban development adjacent to beaches and the associated increase in recreational beach use led to the increased availability of food waste for species such as skunks and raccoons. Finally, certain predators such as the Eastern Coyote, first reported in Massachusetts in 1957, expanded their ranges into plover habitat.

At the time of federal ESA listing in 1986, plovers had declined to approximately 800 breeding pairs on the Atlantic Coast from Newfoundland to South Carolina, with an estimated 140 breeding pairs in Massachusetts. To put this number in perspective, even after significant population increases during the last three decades, the global plover population today across all three breeding populations (see map on page 16) is less than 10,000 adults—less than the number of people that might be found at one popular beach on a hazy August afternoon.

With growing concern about the future of the plover population in the Commonwealth, Massachusetts Division of Fisheries and Wildlife (MassWildlife) staff in the Natural Heritage and Endangered Species Program began an intensive effort to work with beach managers and property owners to protect the plover and its habitat. Two very important pieces of legislation,

the MESA and the Massachusetts Wetland Protection Act (WPA), facilitated efforts to advance plover recovery. In 1993, MassWildlife published Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns, and Their Habitats in Massachusetts. These guidelines were designed to assist landowners in complying with the rare species provisions of MESA and the WPA, by prescribing management techniques to avoid "take" of the plover (i.e., killing, harm, harassment) and adverse effects to its habitat. The guidelines were also designed to "provide necessary protection to Piping Plovers and terns without unnecessarily restricting appropriate access along all of the state's beaches." Furthermore, the guidelines commit MassWildlife to "continue to seek and consider management measures that offer maximum flexibility in balancing recreational use with protection of rare species and their habitats." In 1994, the U.S. Fish and Wildlife Service (USFWS) issued plover protection guidelines that closely parallel the Massachusetts guidelines.

The guidelines contain two major provisions that have had a tremendous positive impact on plover conservation. First, symbolic fencing (i.e. with posts and string) of plover nesting habitat on the upper beach enables the birds to establish territories, court and nest without excessive disturbance, and

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Potential Threats

Various avian and terrestrial predators, as well as human activity, can have a dramatic impact on Piping Plover productivity. MassWildlife's federally-approved management plan balances beach use while ensuring the long-term viability of this threatened shorebird.

Photos © Bill Byrne

NATURAL HISTORY

Piping Plovers return to Massachusetts beaches in late March and early April. Males stake out territories and produce a series of depressions, or "scrapes" in the sand as part of the courtship process. Late April and early May is a great time to visit the beach and observe the birds as they pair up, settle territorial disputes with their neighbors, go about the business of selecting and improving a preferred scrape, mating, and egg-laying. Females usually lay one egg every other day for a total clutch of three to four eggs. Males and females take turns incubating the clutch, and barring nest predation or overwash during storm tides, eggs hatch after about four weeks. If the first nest fails, many pairs will renest, sometimes even three or four times. Plovers rarely renest after successfully hatching chicks, even if the chicks later perish.

When the eggs hatch, the parents will carefully brood the chicks, keeping them warm until they begin to walk and forage a few hours later. Like ducklings, plover chicks are "precocious," meaning they feed themselves shortly after hatching—in contrast to songbird chicks that remain largely helpless in the nest and dependent upon parental feeding. During the first 4–5 weeks the chicks grow rapidly until they are able to fly, or "fledge" at about 30–35 days old. Prior to fledging, the chicks spend a lot of time feeding on insects and other invertebrates in the intertidal zone and in beach wrack—seaweed and other debris deposited by the tides. During August and September, plovers join other staging and migrating shorebirds, ultimately wintering in the southeastern United States, Bahamas and West Indies.

Piping Plover monitoring starts with recording initial pairing and nest scrapes. In the photo above, however, an intruding male (center) does a courtship display in an attempt to lure the female (left) away from her established mate. Males are sometimes more distinctly marked than females with thicker neck bands. On the opposite page, from the time the eggs hatch, precocial chicks quickly learn to forage on their own for a variety of invertebrates on and below the surface, while the adults are always nearby to shelter the chicks and drive off shorebird intruders.

Photos © Bill Byrne

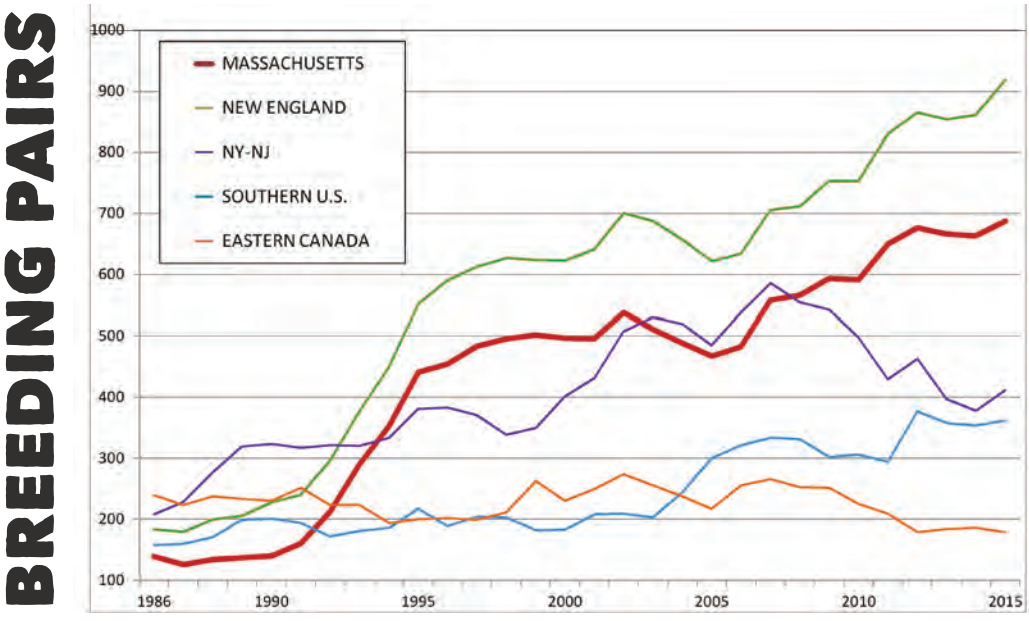


Figure 1: From 1986–2015, the Piping Plover population in Massachusetts (red line above) increased almost five-fold, from 139 to 687 breeding pairs. Massachusetts plovers represented approximately 18% of the Atlantic Coast population in 1986 as compared to approximately 38% today.

Continued from page 9

protects actual nests from trampling or abandonment. Second, restricting off-road vehicle passage or parking during the time between hatching and fledging (flying) within areas of chick activity which includes at least an additional 100-yard buffer zone around those locations. Additionally, the guidelines contain other important protection measures such as excluding pets or requiring them to be leashed during the plover breeding season, and restrictions on kite-flying in breeding areas. These protection measures were not always popular, and much of the displeasure was directed at MassWildlife. However, the extremely low plover population size necessitated immediate and decisive action to address threats and promote recovery.

Once these key protection measures were in place, it soon became apparent that plovers could tolerate significant recreational activity and even thrive on some of our busier beaches. And although the guidelines did result in seasonal restrictions on over-sand vehicle use, and portions of beach symbolically fenced, most recreational activity continued without major disruption. Over time, more and more of the Commonwealth's beaches were managed in accordance with the guidelines, and beach managers took on more responsibility for monitoring and managing nesting plovers and terns. This sometimes included proactive management well beyond the guideline requirements, for example the use of predator exclosures around nests to reduce predation risk. This commitment to plover management on the part of beach operators and owners, including many municipalities, has led to a significant increase in the Massachusetts plover population. From 1986–2015, the population increased almost five-fold, from 139 to 687 breeding pairs (Figure 1). As of 2013, the Massachusetts plover population alone exceeded the USFWS population size recovery goal for all of New England, set at 625 breeding pairs. Although plovers have generally increased across their range since being listed, population growth in Massachusetts has been particularly robust as compared to other regions of the Atlantic Coast. As a result, the Massachusetts population represented approximately 18% of the Atlantic Coast population in 1986 as compared to approximately 38% today.

Photos © Bill Byrne

Scott Melvin: A Leader in Piping Plover Conservation

Scott Melvin, former Senior Zoologist with the Natural Heritage and Endangered Species Program, was an internationally recognized leader in Piping Plover conservation. For over 30 years, Scott led the Commonwealth's efforts to protect Piping Plovers. This task wasn't always easy—especially in the early years when there was little familiarity with the protection measures called for in the Guidelines. Through a combination of pragmatism, good humor, technical expertise, and perseverance, Scott was often able to find common ground with those of opposing views and win their respect for his unwavering commitment to conservation. Scott also mentored many biologists entering the field, and recognized that working with beach-nesting birds provided an important real world learning opportunity to train the next generation of practical-minded natural resource managers. Scott passed away prematurely in 2014. MassWildlife is working with the Massachusetts Outdoor Heritage Foundation to establish the Scott Melvin Memorial Fund to honor Scott's memory and his enduring contributions to wildlife conservation. Funds will be used to advance coastal waterbird conservation, in particular by providing plover and tern internship opportunities and small research grants to graduate students entering the field. If you wish to make a contribution to the Melvin Memorial Fund, please send a check payable to "Mass. Outdoor Heritage Foundation" to P.O. Box 47, Westborough, MA 01581, email info@massoutdoorheritage.org or call (413) 230-4945. Be sure to write "Melvin Fund" on the memo line. Due to generous support from donors, the first $2,500 in contributions received will be matched 1:1.

Photo © Louis Bevier

STATEWIDE HABITAT CONSERVATION PLAN

The recovery of the plover in Massachusetts is a conservation success that illustrates what can be achieved when strategic endangered species regulation is combined with community and landowner support. It also illustrates the need, and, in fact, the responsibility of regulators to adjust their approach in response to changing realities on the ground. Over time, a growing plover population led to more restrictions on recreational beach use. For example, more birds increased the chances that a pair would nest in a major beach access trail, or even a parking lot. Similarly, higher numbers of birds led to longer off-road vehicle closures and increased chances that a single late-nesting pair could create a bottleneck, restricting access to miles of beach. This created a perception among some people that continued increases in the plover population would lead to ever-increasing restrictions on recreational beach use. There was also a growing sense that beach operators and landowners, who were implementing the guidelines, sometimes at considerable expense, were being penalized for conservation actions that were effective at increasing plover population size. Yet from a conservation perspective, significant increases in the plover population created an opportunity to allow more management flexibility for recreational beach operators without putting the plover population at risk.

In this context, MassWildlife engaged a diverse array of stakeholders including municipal officials, beach managers, representatives of recreational user groups and non-profit conservation organizations, to re-examine plover management. Because the plover is federally listed, any changes to the regulatory approach would require USFWS approval, so the USFWS was an important participant in the stakeholder process. The group assisted MassWildlife in developing a Statewide Piping Plover Habitat Conservation Plan (HCP) which was a prerequisite for obtaining a permit from the USFWS to allow increased management flexibility. MassWildlife applied for this "umbrella" permit, thereby enabling individual beach operators to obtain Certificates of Inclusion to participate in the statewide permit. This approach greatly streamlined the permitting process for beach operators who would no longer need to apply for individual federal permits, a long and arduous process.

Photo © Bill Byrne

STATEWIDE PIPING PLOVER HCP
KEY ELEMENTS

Limited authorization of "**covered activities**" that deviate from the plover protection guidelines to facilitate beach recreation (e.g. off-road vehicle use, reduced symbolic fencing)

Impact-minimization protocols for each covered activity to protect plovers

Statewide limits on covered activities that are decreased if population declines and increased if population increases (never more than 7% of broods and nests)

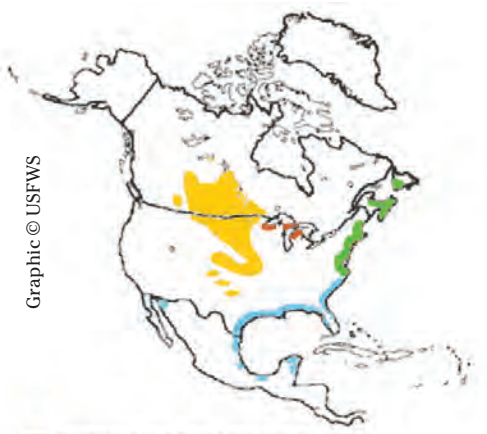
Net-benefit conservation projects (mitigation) to advance plover conservation that more than offset any impacts associated with the covered activity, resulting in a "net benefit" to the species in Massachusetts (e.g. selective predator management, increased law enforcement)

Our goal for the HCP was ambitious; to increase plover conservation and recovery while simultaneously increasing recreational opportunities. How could we reconcile these two seemingly contradictory goals? First, we identified certain "covered activities" that potential HCP participants could request to engage in on a limited basis to improve recreation. For example, continuing to operate a major beach parking lot even if unfledged chicks were in the vicinity, or reducing the amount of symbolic fencing required adjacent to a nest to keep open a major beach access trail. Second, impact-minimization protocols were developed for each covered activity to minimize risk to plovers. For example, if off-road vehicles are allowed in the vicinity of unfledged chicks, a narrow travel corridor must be delineated, chicks must be monitored to detect their approach to the travel corridor, a passenger must walk in front of each vehicle within the active chick zone, and vehicle travel restricted to no more than six hours per day. Finally, strict statewide limits were placed on the number of broods and nests that may be exposed to covered activities to ensure that only a small fraction of the population will be exposed. At least 93% of nests and broods will continue to be managed in strict accordance with the guidelines. However, a key element of the HCP is that as the statewide population of plovers increases, more Certificates of Inclusion can be issued, with reductions required if the population declines. This approach ensures beach operators that they will not face increased restrictions for sound management of plovers and their habitats, but rather will be rewarded with increased management flexibility.


Photo © Bill Byrne

The covered activities provide significant benefits to beach users and operators, while the impact-minimization protocols and statewide limits on covered activities ensure that the HCP will not harm the plover population. But what about benefits to plover conservation? The benefits derive from the HCP mitigation strategy. Plan participants can fund or carry out a variety of conservation actions to advance plover conservation including selective predator man-

GLOBAL RANGE



Graphic © USFWS

Northern Great Plains Population
Great Lakes Population
Atlantic Coast Population
Wintering Range (all populations)

The global range of the Piping Plover is limited to three distinct subpopulations. The Atlantic Coast population ranges from Newfoundland and Nova Scotia south to South Carolina. The Great Lakes population is limited to isolated patches of suitable shoreline along Lakes Superior, Michigan, and Huron. The Northern Great Plains population nests on shorelines and sandbars of large lakes and rivers, generally from western Ontario to eastern Alberta, through the Dakotas south to Nebraska. The Atlantic Coast and Northern Great Plains populations are listed as Threatened and the Great Lakes population is listed as Endangered pursuant to the federal Endangered Species Act.

Photo © Bill Byrne






Photos © Bill Byrne

Plover Monitors continually collect data from individual nesting pairs and interact with beach users to educate them on Piping Plover management activities.

agement, increased law enforcement, and experimental habitat improvements that could become increasingly important as sea level rise associated with climate change increasingly threatens breeding habitat. It is important to note that these proactive conservation measures could not have been required through the normal MESA regulatory process focused on implementing the guidelines. Only by engaging with diverse interests in a negotiated permitting process could we find common ground and creative solutions to benefit both plover conservation and recreational beach users.

In July 2016, after a public comment process and environmental assessment, the USFWS approved the Massachusetts Piping Plover Statewide HCP. The first season of implementation was very successful, with the Towns of Orleans and Plymouth leading the way, and we look forward to increased beach operator participation in the program in 2017. MassWildlife is indebted to the diverse array of stakeholders, such as state and federal natural resource agencies, conservation organizations, coastal municipalities, beach buggy associations, and others, who worked collaboratively to find common ground and develop a HCP that will truly increase both plover conservation and recreational beach opportunities in the Commonwealth.

Although Piping Plovers in Massachusetts are continuing to thrive, climate change and rising seas may increasingly threaten nesting habitat and could lead to increased hardening of shorelines with engineered structures, resulting in further habitat loss. Whatever the future may hold, MassWildlife will continue to take a pragmatic approach to endangered species regulation that emphasizes conservation outcomes over bureaucratic process. And we will continue to engage communities in proactive conservation partnerships that are mindful of community needs and competing interests.

About the Author

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