

# Piping Plover Monitor Training Manual

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## Piping Plover (*Charadrius melodus*) Natural History

### **Description:**

Adult Piping Plovers are a small bird the color of sand. During breeding season they have a black band between their eyes and a black neck band that may be complete or incomplete. The legs and base of bill are orange, while the tip of the bill is dark. The male and females are nearly identical, but the females have relatively lighter neck bands and lighter orange parts; the easiest way to tell a male and female of the pair apart is to do it while looking at them side by side. The hatchlings are the same color but smaller than the adults and have a fuzzy appearance. Fledged plover chicks are approximately the same size as adults, but lack the dark bands, have paler legs and all dark bills and may still have a slightly fuzzier appearance. Once the breeding plumage of the adult fades, they look almost identical except that the juveniles are a darker shade.

Piping plovers will live an average of 5-8 years, but may live longer. They are able to breed the spring after they are born (almost 1 year old).



Adult



Juvenile



Hatchling

### **Population:**

There are 3 populations in North America, the Cape Cod populations belonging to the Atlantic Coast Population extending from Newfoundland to North Carolina. The 2<sup>nd</sup> population is a small group occurring at the Great Lakes and the 3<sup>rd</sup> is the Northern Great Plains population located from Nebraska to Manitoba. The Piping Plover has been listed as threatened since 1986 and the population has greatly increased from 790 pairs to 1,831 pairs in 2009. The goal is 2,000 pairs. The pairs in Massachusetts have increased from 137 to 591 pairs in 2010.

During non-breeding season the piping plover winters on beaches along the Gulf of Mexico and the southern coast from South Carolina to Texas. They also reach into the Bahamas and Greater Antilles, but are not found outside of North America.

## **Breeding Calendar:**

Arrival dates and location of nests: March 15<sup>th</sup> through July 10<sup>th</sup> (the latest nest recorded in MA is currently July 6<sup>th</sup>).

Eggs and Incubation: April 15<sup>th</sup> through August 10<sup>th</sup> (the earliest nest recorded in MA is currently April 17<sup>th</sup>).

Hatch dates: May 22<sup>nd</sup> through August 1<sup>st</sup> (adults may still incubate eggs that will not hatch, hence incubation dates continuing longer than hatch dates. It is likely if all eggs have not hatched by August they will not fledge in time to leave for wintering grounds).

Care of young: May 22<sup>nd</sup> until the end of August

Fledge dates: June 16<sup>th</sup> through August

Departure: Most Piping Plovers leave Massachusetts by the end of August, with some leaving in September.

## **Nesting behaviors:**

Piping Plovers typically return to the beaches where they have nested before and they often already have their mate when they get there. They are territorial and there is only one pair per territory. When first arriving on the beach males establish the territories and conduct courtship flights and calls for the females. The territories range in size depending on available habitat and the amount of birds, but they include an area for the nest and an area of beach for foraging. Preferred nesting habitat is open, flat beach with little vegetation. This type of habitat is generally found in areas that are most impacted by storms, making many Cape Cod beaches prime areas (Cape Cod has the largest concentration of Piping Plovers in New England, 67% in 2010).

Once the territory and pairs are established, mating will occur. The males will make scrapes, or small circular bowls, by kicking sand behind them. The female will come inspect the scrape while the male stands in front of her with his hind tail feathers spread. Eventually, if the female finds a scrape acceptable they may mate. The male will stand tall and rapidly kick his legs (high-stepping) while walking towards the female, if she allows he will mount on top; mating lasts about 30 seconds to a minute. For a video of the high-stepping and mating use this link:  
<http://www.youtube.com/watch?v=ufRXSGxCERU>



Scraping



Inspecting scrape



Male beginning high step

### Presence of Eggs:

Soon after mating occurs the female will begin to lay the eggs in the chosen scrape. If this is the pair's first nesting attempt it will almost always have 4 eggs upon completion. The eggs are laid one at a time, approximately every other day, for about a week. If a pair loses a nest, there may be fewer than four eggs in subsequent nests. The eggs are well camouflaged, each one being the color of sand with dark speckles. After the final egg has appeared the nest should be incubated at all times by one of the adults. The adults take turns between incubating and foraging. The length of incubation ranges, but is typically 26 days. Therefore, the estimated hatch date is determined by counting 26 days from the day the 4<sup>th</sup> egg is laid. If an incomplete nest is lost, re-nesting may continue immediately (often resulting in nests with fewer than 4 eggs, but not necessarily). If a complete clutch is lost, re-nesting may take around a week to occur. Predators (including humans) may cause the incubating bird to leave the nest if they feel threatened. They will often run ahead and begin to false incubate, drawing the predator away from the actual nest. Once they no longer feel threatened the bird should quickly return to the nest. It is important to flush birds as little as possible to protect the eggs from weather and predators. Often times the adults will do a "broken wing" display to keep the predator focused on the bird instead of the nest. This is a sign of stress and means you should move away from the bird. However, for monitors this can be a sign that there is a nest around, if one has not already been located.



An adult Piping Plover doing a broken wing display.

## **Nest Loss:**

There are several possible reasons for nest loss:

- **Predation:** This is the most common reason for nest loss. Common predators are crows, coyotes, fox, skunks, cats, raccoons and gulls.
- **Washing away of nests:** This can occur when a pair chooses to nest in an area that is not often in the high tide area. When moon tides or storm tides arrive, the nest is suddenly under water.
- **Nest abandonment:** A nest can be abandoned for several reasons. The adults may feel increased pressure from predators in the area and decided to vacate, or, if they nest near an area with a high population of beach-goers they may be disturbed long enough to decide not to return. The end result is the nest being predated.
- **Crushed nests:** This type of nest loss is not common, but is caused by people ignoring the fencing and walking through the area or letting their dogs walk through the area. Off road vehicles may also crush a nest if fencing has not been erected or the operator chooses to ignore fencing.

When a nest has been lost it is important to take down information about the cause of loss including the following:

- Was this a partial or full nest loss? Partial nest loss is very rare; in most instances all eggs in the clutch are lost.
- Is there anything left in the nest bowl such as egg fragments or yolk? Using your hand, dig in the nest bowl and make sure no eggs were covered by sand and sift through the sand with your fingers to find in pieces of egg or yolk.
- Walk in increasing circles around the area and note if any egg fragments are noticed. Also, take note of all types of possible predator tracks (including any human tracks that should not be there).
- How close are any predator tracks to the nest bowl? Are any tracks leading directly to the nest bowl?
- Were there any increments of poor weather in the days before the nest loss?
- Were both adults present in the days before the nest loss? Is it possible any adults were taken causing incomplete incubation and resulting in a more exposed nest? Is it possible the nest could have hatched?

There is a "Nest Loss Data Sheet" included at the end of the Training Manual that will ensure all necessary data is recorded.

## **Chicks:**

Near the end of the 26 day incubation period the eggs will begin to hatch, usually all within about a 24 hour period. Keep in mind incubation may actually be shorter or longer than 26 days, so it is important to make sure nests are checked on a daily basis as the hatch date approaches. If hatch dates are missed, beaches that allow off-road driving

may not be closed in time. Chicks are precocial, which means they have feathers and are up and moving in a short amount of time. Within a few hours of hatching, the chicks may begin walking around; they will return to the scrape to be brooded (protected from weather) by an adult. The new chicks are very difficult to see unless they are moving around. The chicks feed themselves, but the adults lead them to the foraging area. . It is important to keep an eye on the chicks and adults to determine where they will forage in case parking lots or roadways need to be temporarily closed; knowing where the adults are foraging before their nest has hatched is also a good indication of where they may take their chicks. At first chicks typically stay near the nest area, but will soon begin to travel far distances and travel further away from the adults. The chicks grow rapidly and if they reach 10 days old their chance for survival greatly increases. After approximately 23-28 days the chicks may fly short distances and are considered fledged. For the purpose the official state census chicks are considered fledged at 25 days of age. However, for the purpose of opening beaches to ORVs chicks are not considered fledged until 35 days old. This is in order to be sure the chicks are able to fly and move out of the way of oncoming vehicles.

Chick loss is difficult to determine since it does not occur in one isolated spot (as in nest loss) and there is often no conclusive evidence present. If the beach is highly disturbed, chicks may not receive adequate food, making them more vulnerable to predation. Adults may also become more distracted, again leaving chicks more vulnerable. A chick's reaction to danger is to stay still and crouch down into a rut in the beach (tire tracks, foot prints, etc.) and they rely on camouflage. This can result in the chicks being stepped on or crushed by a vehicle (if off road driving is still allowed without being monitored). If there are instances of rain, or unusually hot or cold weather chicks may also die due to exposure but any remains are often quickly scavenged.

## Locating Piping Plovers and Nests

### **Locating Adult Plovers:**

Plovers are most active during outgoing tides ( $\frac{1}{2}$  hour after high tide to  $\frac{1}{2}$  hour after low tide) and morning light is the best for locating birds.

Listen for their calls; they are often heard before they are seen (it is helpful to research the different calls they may make such as warning call, mating call, alarm call, etc.).

Use binoculars to scan the area ahead of you before you begin to walk on the beach where the birds can see you. Continue to scan ahead and behind you as you walk; they will often hide and then come out after you have passed by. It is also helpful to kneel down when spotting for plovers so that they stick out above the sand.

Locating plover tracks in the sand is a very effective way of determining where plovers have been present and where they may nest. Areas of dense tracks above the high tide line may lead you to potential scrapes that may be used for a future nest.



## **Locating Nests:**

When you believe a pair may have begun nesting, walk slowly, in a weaving pattern, through their territory. Be careful of each step taken to avoid stepping on a nest.

Following tracks in the direction of increasing density may lead you to a nest as this will be the area the adults visit most frequently.

A nest is often partially or completely hidden by vegetation, but is usually not further than a few meters from the start of the vegetation line.

Nests may be easy or hard to find based on the stage of egg laying, behavior of pairs or the location of the nest.

### Easy nests:

Nests that have begun to be incubated full time are often easier to come across. The adult will stay on the nest until the monitor becomes closer and then they will quickly walk away from the nest, make a lot of peeping noises and will begin to do a broken wing display. Be aware of birds that suddenly seem to appear as they may have just vacated a nest.

If you suspect a plover has a nest nearby, walk away and crouch down and watch the bird with binoculars until they walk back to their nest. The distance you have to move away before the bird will return to its nest varies depending on the pair.

If you see an adult go back to the direction it came from and settle down in the sand, that is most likely a nest. Before getting up and walking directly to the nest, locate some landmarks that are around the nest to make it easier to locate when the adult walks away as you approach.

### Hard nests:

Plovers do not begin full time incubation until the final egg of the clutch is laid and they may only visit the nest at infrequent intervals. As a result finding an incomplete nest is often more difficult. Other "hard" nests are those of pairs that are very wary, nests located in dense vegetation, pairs that are rarely spotted together and no mating behavior has been seen, or nests located on materials where tracks cannot be seen or eggs are even more camouflaged.

Learning how to find an incomplete nest takes time and involves interpreting tracks in the sand and plover behavior. From mid-April through June the presence of a pair should raise suspicion that they will lay soon, even if they are not agitated. If a site has already been monitored frequently and the birds have been seen engaging in territorial or mating behavior, or multiple nest scrapes are found, it is a clue that egg laying has occurred or will shortly.

It is important to find incomplete nests for several reasons. The most important reason is that it is not possible to accurately predict a hatch date of a nest that is not found before the final egg is laid. This could cause problems when dealing with ORV

restrictions or parking lot closures. It is also important to find a nest before it is complete because with each passing day the chance increases that the eggs will be predated before ever detected leading to less accurate information being submitted at the end of the season. Also, the sooner a nest is found, the sooner it can be determined if a predator exclosure should be used.

There is a "Nest Attempt Data Sheet" at the end of the Training Manual to ensure that all necessary data is recorded.

### **Monitoring Guidelines:**

In general a site with active piping plovers should be monitored as often as possible (once a day is best but not always feasible). A field book should be taken at all times to record the information of each visit.

#### What to keep track of:

- Current date and site name that you are currently visiting
- General weather: Approximate temperature, precipitation, sun/clouds, high or low tide. If the weather was poor the night before make a note of it in case an adult, chicks or eggs have gone missing due to weather.
- As you are walking through an area make note of any adults seen and what their activities are. If it is unknown if they have a nest, observe them for a longer period of time. Keep track of any mating or courtship displays or if you see an adult scraping. When walking in a pair's territory take note of how many scrapes are seen and if those scrapes are visited often by an adult.
- When there are nests, check on how many eggs are present. Once a full clutch is reached it is sufficient to check to make sure an adult is incubating and just check the egg number every few days. Take down the GPS coordinates of every nest and plot them on a map.
- Once there are chicks, keep track of how many there are on each visit and how old they are on that particular day.
- If there is ever an adult/egg/chick loss note it in the field book and search the area for any evidence of what the cause could have been. Such evidence could be bird remains, predator tracks not previously noted, egg fragments, yolk in the nest bowl, etc.
- If there is an egg loss, be sure to note distance of predator tracks from the actual nest bowl and include all predator tracks seen in the vicinity, not just the tracks of the suspected predator. It may also be helpful to take pictures of the nest bowl and surrounding area.
- Keep track of all important dates: what day a nest was found, when it was a complete clutch, expected hatch date, actual hatch date, beach closures and other restrictions



due to plovers, fledge date, etc. These are all useful dates when filling out the census forms at the end of the season.

-When there is more than one monitor during a season, have a place in the office to keep track of who visited what beach and when. Keeping track of this helps ensure that each site is visited as much as possible. Census forms also ask for how often a site was visited during certain periods.

-When there are multiple monitors make sure to keep each other informed of what you have seen during your visits. If you do not see each other daily either have a notebook in the office where you can write the important findings of each day or send email updates.

-Make sure to look closely at the census forms early in the season so you can ensure that all important information is being tracked.

-Have a tape measure, mallet and fencing materials handy in order to measure track distances from nest bowl and to repair damaged fencing or to move fencing to provide better nest protection.

## Nest Loss Data Sheet

Date \_\_\_\_\_ Site \_\_\_\_\_ Nest \_\_\_\_\_

Name \_\_\_\_\_

Date failed \_\_\_\_\_ ( \_\_\_\_\_ estimated or \_\_\_\_\_ known)

Date nest last seen with adults present \_\_\_\_\_

Date nest last monitored \_\_\_\_\_

Cause of nest loss:

Abandoned \_\_\_\_\_

Predated \_\_\_\_\_

Washed away \_\_\_\_\_

Vandalism \_\_\_\_\_

\_\_\_\_\_ known or \_\_\_\_\_ suspected

Describe weather between the dates nest was last observed and date it was found to be lost:

How many days has nest been incubated? \_\_\_\_\_ Is it possible it hatched? \_\_\_\_\_

Walk concentric circles around nest and note any tracks present and distance from nest. If possible take pictures of tracks and any evidence of that may help in determining why nest was lost.

Conclusion as to what caused nest loss \_\_\_\_\_

Scale of 1 through 5 (1 being very little, 5 being very high) how confident are you in your determination of what caused nest loss \_\_\_\_\_ explain:

## Nest Data Sheet

Site \_\_\_\_\_ Nest # \_\_\_\_\_

Latitude/Longitude \_\_\_\_\_

Who found nest? \_\_\_\_\_

Dates: (ranges are o.k.)

Nest located: \_\_\_\_\_

1<sup>st</sup> egg laid: \_\_\_\_\_ (\_\_\_\_ estimated \_\_\_\_ known)

2<sup>nd</sup> egg laid: \_\_\_\_\_ (\_\_\_\_ estimated \_\_\_\_ known)

3<sup>rd</sup> egg laid: \_\_\_\_\_ (\_\_\_\_ estimated \_\_\_\_ known)

4<sup>th</sup> egg laid: \_\_\_\_\_ (\_\_\_\_ estimated \_\_\_\_ known)

Estimated hatch date (26 days from 4<sup>th</sup> egg being laid) \_\_\_\_\_

Actual hatch date: \_\_\_\_\_ # of eggs hatched \_\_\_\_\_

Are either of the adults banded? If so, what is the color/type/location of bands?

Describe nest site (vegetation amounts, substrate, location):

Dates chicks lost: #1 \_\_\_\_\_ #2 \_\_\_\_\_ #3 \_\_\_\_\_ #4 \_\_\_\_\_

Causes:

Estimated fledge date (25 days from hatching) \_\_\_\_\_

Date beach will be open to ORVs (31 or more days from hatching) \_\_\_\_\_

Total # of fledged chicks: \_\_\_\_\_ Date site last monitored: \_\_\_\_\_