

# Bad River Natural Resources Department

## Long Island Piping Plover Monitoring

# 2018 Season Summary

Prepared by Royce Galindo and Eric Andrews

The plover monitors conducted daily surveys, weather permitting, between 5/24/18 and 8/2/18. Three plover nests were confirmed, and six chicks were hatched. On 7/3 four chicks were banded, and on 7/11 the team banded two more. Two plover chicks successfully fledged this season, on 7/21 and 7/24.

While reading nest descriptions, please consult the glossary and the maps in Appendix C.



### Nest 1 - Dune

Lat/Long: N 46.71110, W -90.76366

Female: O,b<sup>059</sup>:X,-

Male: X,G/O:O<sup>Y</sup>,G

Nest discovered: 5/25 (2 eggs)

Exclosure Installed: 5/26

Total Eggs Laid: 4 eggs

Start of Incubation: 5/30

Chicks hatched: 3

Chicks fledged: 1

Hatch date: 6/25

Banding date: 7/3

Chick band combinations:

1. X,O<sup>R</sup>:-,G<sup>188</sup> (Fledged 7/24)
2. -,G<sup>318</sup>:X,O<sup>Y</sup> (Last seen 7/22)
3. X,O<sup>B</sup>:-,G<sup>187</sup> (Last seen 7/8)

The adult male was the first pair member found on 5/24. Both adults were seen at the nest between 5/25 and 6/25. The unhatched egg was collected for analysis. The female was last observed on 7/20. The male was last observed on 8/2, foraging at the northern Chequamegon Point beach, nearby the Point nest.

## Visitation

Visitors and their boats often settled on the stretch of beach to the north of this site. While walking along the beach, visitors frequently crossed in front of the nest site. This disturbance consistently caused the incubating adult to flush off the nest until the disturbing individual left the vicinity.

## Site Description

Dune was near the northern end of the southern nesting beach. The dominant substrate was sand and the dominant vegetation type was dune grass. The nest cup was nestled among four tufts of grass. Four large driftwood logs were scattered about the nest site, and the nest was situated near the foot of one log. There were little to no cobblestones surrounding the nest, and no stones were used to build the nest itself.



Figure 1. The male pair member relieves his partner from incubating duty.

Table 1 describes the Dune nesting area in measurements from the nest cup to surrounding features.

Attribute*	Wash zone	Wreck line	Cobble Pan	Foredune	Backwater	Treeline
Distance from nest in feet	116	65	45	55	79	528

\*All attribute definitions can be found in the glossary on p. 21.





## Nest 2 - Cobble

Lat/Long: N 46.70610, W -90.75723

Female: X,-:O,Y<sup>24</sup>

Male: X,-:O,-

Nest discovered: 5/27 (1 egg)

Exclosure Installed: 5/27

Total Eggs Laid: 4

Start of Incubation: 6/1

Chicks hatched: 1

Chicks fledged: 1

Hatch date: 6/26

Banding date: 7/3

Chick band combination:

1. X,G/O:O<sup>G</sup>,G<sup>241</sup> (fledged 7/21)

The pair was first seen on 5/25. Due to the location of the nest near the shoreline, on two occasions (6/15 and 6/24) the nest was washed away by large waves caused by high winds (see figures 2 and 3). Two eggs were recovered by the pair after 6/15, and after 6/24 they managed to recover one last egg. Despite the disturbances, the pair continued to incubate, resulting in a healthy chick hatched and fledged. The adult female departed on 7/20, and the male departed on 7/21.

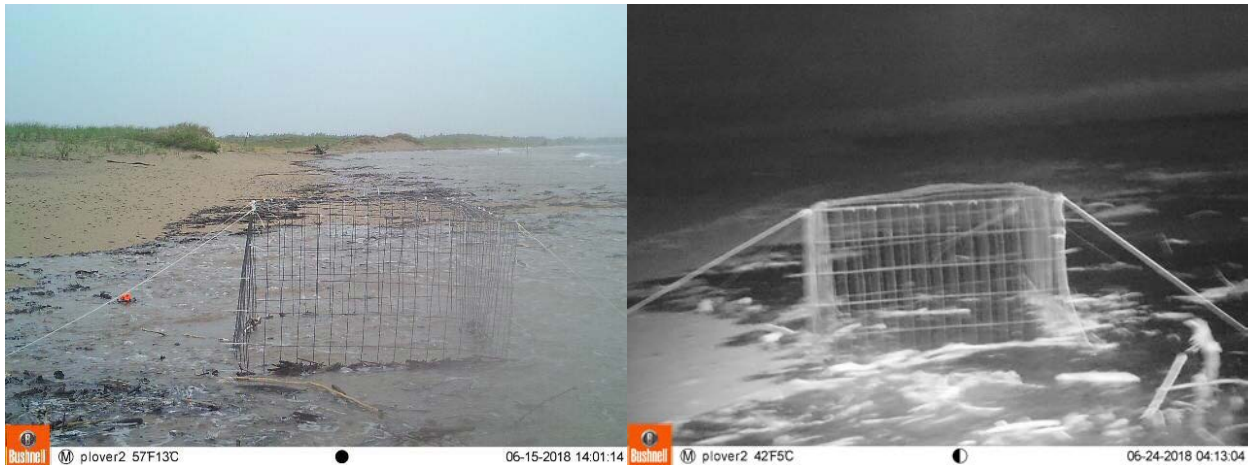
### Site Description

The Cobble nest was situated in the center of the beach between the shoreline and the foredune. There was a high percentage of cobbles and small driftwood on the ground surrounding the nest, and the cup was lined with cobbles. There was no vegetation close to the nest, but there was one large willow bush at the edge of the foredune nearby.

Table 2 describes the Cobble nesting area in measurements from the nest cup to surrounding features.<sup>1</sup>

Attribute	Wash zone	Wrack line	Cobble Pan	Foredune	Backwater	Treeline
Distance from nest in feet	35	15	0	32	N/A	609

<sup>1</sup> Measurements were taken at the end of the season at all nest sites. It should be noted that beach conditions change constantly over the course of the season and some of these numbers should be considered approximate, not exact.



Figures 2 & 3. A trail camera captured large waves flooding Cobble during the day of 6/15 and the early morning hours of 6/24.



### Nest 3 - Point

Lat/Long: N 46.73152,

W -90.80666

Female: X,-:O,B/O/B

Male: X,G/O/G:O<sup>G</sup>,G

Nest discovered: 6/7 (4 eggs)

Exclosure Installed: 6/8

Total Eggs Laid: 4

Start of Incubation: Unknown

Chicks hatched: 2

Chicks fledged: 0

Hatch date: 7/4

Banding date: 7/11

Chick band combinations:

1. X,-:O<sup>G</sup>,G<sup>310</sup> (Last seen 7/31)
2. X,O<sup>Y</sup>:-,G<sup>20</sup> (Last seen 7/12)

The nest was first discovered on 6/7 at the northern beach of Chequamegon Point, the first nest in this area since 2013. Incubation continued through 7/4, when two eggs were hatched and two abandoned. These eggs were collected for the U.S. Fish and Wildlife Service for analysis.





Unfortunately, neither of the chicks lived to fledge, with the first chick disappearing two days after banding. The second chick survived until 8/3, when it was found dead not far from the old nest cup. Throughout the season both chicks had behaved unusually (for example, choosing to halt and lie still on the open sand instead of continuing to flee from the monitors) possibly due to malnourishment or other neurological conditions.

Figure 4. Instead of fleeing, the freshly-banded Point chicks remain motionless after being released.

The Point male was last observed on 7/13, when the chicks were only 10 days old. At the tail end of the season, the Dune male X,G/O:O<sup>Y</sup>,G (born in 2013 to X,-:O,B/O/B, the Point female) was repeatedly observed in the territory starting 7/26, usually foraging. At times, this bird was observed in close proximity to the chick and the Point female without aggression from either bird, and appeared to exhibit a limited amount of paternal behavior towards the chick. He remained at Point with the chick even after the Point female left on 7/30 and until the day before the chick was found dead on the beach.

#### Site Description

The Point nest was situated within the broad cobblepan stretching along the beach east of the Chequamegon Point Lighthouse. There was little surrounding vegetation, with only thin bands of grasses among the wrack line to provide cover. There was also an excessive accumulation of driftwood along the entirety of the beach. These large deposits of wood sometimes created barriers to plovers attempting to traverse the beach, and also impacted their ability to keep their distance from monitors as well as evade predators, such as dogs.

One close call that should be mentioned occurred on 7/14, when a fishing boat carrying three hunting dogs beached directly where the remaining chick and adult were foraging. One of these dogs, wearing only a shock collar, jumped into the shallow water and made straight for the birds on the beach. The two plovers tried to flee directly inland over wide, dense clumps of driftwood, but even with several seconds of warning the birds were still in danger by the time the monitor physically restrained the dog and warned its owner to keep the other dogs in check. If the monitor had been standing even an extra 50 feet away, there very well may have been a death that could be partially attributed to the presence of too much driftwood.

Table 3 describes the Point nesting area in measurements from the nest cup to surrounding features.

Attribute	Wash zone	Wrack line	Cobble Pan	Foredune	Backwater	Treeline
Distance from nest in feet	71	36	0	31	199	312



Figure 5. A section of Point beach with driftwood buildup.

## Plover Behavior

One territorial dispute was observed over the course of the season on 6/27. Oddly, the dispute didn't occur between any breeding pairs, but two intruding females at Point beach. Both intruders performed a parallel walk and other aggressive displays towards each other by puffing up and charging. This went on for several minutes, until the Point male intervened and drove them away from the beach. These two females—X,G/O:O<sup>R</sup>,G and X,G/O:O<sup>B</sup>,G, the same brood combination as the Dune male—were observed foraging at both nesting beaches and interacting with each nesting pair multiple times during the season.

## Predators

Evidence of potential predators found on the nesting beach include Merlin, American Crow, Common Raven, dog, coyote, raccoon, Herring and Ring-billed Gull, Red-tailed Hawk, and Great-horned Owl (see owl tracks to right). A Merlin was spotted far north of the Dune nest on 5/24, the first day of observations, but was only ever heard once afterward, near the camp. American Crows had a consistent presence along both nesting beaches, but there were fewer Common Ravens. The trail camera at Cobble picked up a raven circling the nest enclosure on 6/24 (twice in one morning), 6/26, and 6/27 (see figures 6-8). It is possible that it learned there was a food source within the enclosure.







Figures 6 - 8. A Common Raven investigates the Cobble enclosure after the second flooding event (top). It is likely the same bird visited the enclosure again on 6/26, the day the single Cobble egg hatched (middle), and then the day after (bottom). Note that the enclosure was moved on the afternoon of 6/26 to protect the newly-hatched, mostly immobile chick.



Coyote tracks were also observed regularly along beaches and in the dunes between the northern and the southern nesting beach. A coyote was observed directly by monitor Andrews on 6/29. The coyote was observed approximately 50 yards north of the Cobble nest. At the time of observation, the coyote did not appear threatened by the monitor's presence and approached within 25 yards of the monitor. Raccoon tracks were recorded twice this season, but only on non-nesting beaches.



Large contingents, sometimes reaching numbers in the low 200s, and smaller groups of Herring and Ring-bill Gulls were observed daily on both nesting beaches. Great Horned Owl tracks were observed on the northern beach on 7/14 and on the southern nesting beach on 7/23. At the north beach, the tracks were observed near the Chequamegon Point Lighthouse. Later, on 7/19, four owl pellets (image below) were also found near that lighthouse. No bird remains were found within the pellets when dissected. On the southern nesting beach, the owl tracks were observed less than 100 yards south of the Dune nesting site. It should be noted that these owl tracks were found the same day that plovers were seen missing.

At the Point beach, one chick was first found missing on 7/13 and the adult male was first found missing on 7/14. One of two remaining Dune chicks was last seen 7/22, the day before tracks were found on the south beach. It should also be noted that anecdotal evidence from APHIS-WS in Florida report observations of a Great Horned Owl targeting shorebirds for food, hunting them by walking along the sand and pouncing on flightless chicks and adults doing broken wing displays. Given our evidence, it is possible that a local Great Horned Owl is exhibiting similar targeting behavior, and should be flagged for follow up.

For more track and scat images, see Appendix A.



## Banding

Banding occurred on the southern nesting beach on 7/3 and at the northern beach on 7/11. The process went smoothly and no chicks showed signs of injury on the south beach, but the visit to the north caused some concern. The two chicks at Point seemed small and weak for their age. When X, O<sup>Y</sup>:-, G<sup>20</sup> was about to receive its bands, it went limp in Monitor Andrews' hand. When released, instead of promptly fleeing, both chicks had to be coerced from their bags and sat still on the sand for a few moments before staggering away from the banding crew (see figures 4 and 12).

Figure 9. Peggy Burkman of the National Park Service holding the "Miracle Chick" of Cobble.

This year's banding crew consisted of Sumner Matteson of the WDNR; members of the National Park Service, including Peggy Burkman; members of the Bad River Natural Resources Department, including Lacey Hill-Kastern; the two current plover monitors, Eric Andrews and Royce Galindo; and Abi Fergus of the BRNRD.

Figure 10. The Dune pair put on several broken wing displays as their chicks were banded.





Figure 11 and 12.  $X, O^R, G^{188}$ , one of the two chicks who fledged, runs from the banding crew at a healthy pace (left).  $X, O^G, G^{310}$ , the longer-lived Point chick (nicknamed "Shorty", for its small size) stops on the sand to steady itself after release.



## Trail Cameras

Thanks to the assistance of USDA APHIS Wildlife Services, the Piping Plover monitoring program was able to install three trail cameras to help monitor the nests this year. The cameras were initially set up on 6/3 and 6/4 at nests Dune and Cobble respectively, and the third camera was installed on 6/9 at the Point. These cameras were motion activated, and when triggered, sent images day or night to an app so the monitors would receive semi-real time updates on the status of nests. These cameras remained aimed at the nest enclosures while the pairs were incubating, and once the chicks hatched they were adjusted to give us a wider view of the beach to gather information about human and wildlife traffic.

These images proved instrumental in understanding the disturbances to the Cobble nest when it was flooded multiple times, and several images of a curious raven alerted monitors to take extra care of the Cobble nest as the hatching date approached. While there were some difficulties in aligning and maintaining the cameras in the field, as well as some connectivity issues at the north beach, the monitoring team is very optimistic about further applications of these cameras and would highly recommend their continued use in greater capacity in the coming seasons.



Figure 13. The trail camera offers an intimate window into life around the plover nests.



## Visitation and Human Impact

Over the course of the season, 142 boats were observed visiting Long Island with a total of 467 visitors. Of the visitors observed, 166 were contacted by the attending monitor. A total of 37 dogs were observed (34 of which were observed off leash). When a dog was seen off leash, the monitor would contact the owner of the dog, who usually either immediately leashed the dog or left the beach. On rare occasions, dog owners refused to leash their dogs; in these instances, the monitor would pay close attention to the individual to make sure the dogs did not enter the enclosed nesting areas or harass any birds.

Visitor traffic was especially high during the Independence Day weekend as well as the following weekend, with large groups landing on the beach to celebrate the holiday and fair weather. During the period from Friday, June 29th to Sunday, July 8th (with the 4th falling on Wednesday), the beach saw a total of 38 boats bearing 134 visitors. This 10 day period accounted for almost 30% of the total visitor traffic observed during the plover nesting season.

Low flying planes routinely passed over the beach, presumably heading to/from the Madeline Island airport. Tail numbers of exceptionally low flying planes were recorded on three occasions. Most notably among these instances was on 6/23, when a trio of planes made two passes in a line along the beach, including a pass where two of the planes were less than 50ft above the beach.

Figure 14. A trio of kitesurfers were observed on 6/24, taking advantage of the high winds that flooded the Cobble nest (pictured in foreground)





## Weather

There were 14 rain events in the area between 5/24 and 8/3, approximately 9 of those reaching thunderstorm status. The most precipitation was accumulated between 6/15-6/17 at approximately 7 inches. The hottest day reached 95°F and the coldest day reached 38°F, with an average temperature of around 62°F. The windiest day was 6/15, with a max wind speed of 28 mph. <sup>2</sup>



## Avian Mortality on Chequamegon Point

Throughout this season, the plover monitors observed a number of avian carcasses, including one Piping Plover chick, on the Chequamegon Point beaches. See Table 4 for a full list of waterbird mortalities on Chequamegon Point this season.

The deceased plover chick was the final remaining non-fledged chick under observation by the monitors, and was a member of the Point brood (X,-:O<sup>G</sup>,G<sup>310</sup>). The chick was found wholly intact, with no clear signs of predation. Initial necropsy found signs of trauma to head and intestines.

Table 4 lists waterbird carcasses observed on Chequamegon Point. All birds were found on the lakeside beaches.

Date	Species	Condition of Carcass
6/9/18	Herring Gull (adult)	Intact, signs of possible predation
6/20/18	Common Merganser (adult male)	Intact, signs of possible predation
6/21/18	Common Loon (non-breeding)	Intact, no clear signs of predation
7/4/18	Common Merganser (chick)	Intact, no clear signs of predation
7/8/18	Herring Gull (adult)	Intact, no clear signs of predation
7/22/18	Herring Gull (adult)	Advanced state of decomposition
7/27/18	Unknown waterfowl	Advanced state of decomposition
8/3/18	Piping Plover (chick)	Intact, no clear signs of predation

<sup>2</sup> Weather history provided by La Pointe, WI weather station (KWILAPOI6) and Ashland Kennedy Memorial station (KASX). Accessed via Wunderground.com.

Due to the fact that several waterbird carcasses were found without obvious signs of predation, the prevailing theory among the monitors for the cause of these mortalities is a possible outbreak of avian botulism or other illness. Avian botulism affects the nervous system of birds, degenerating neurological function and paralyzing muscles. Affected birds usually have poor function of the wings and legs, and sometimes lose ability to hold their head up.<sup>3</sup>

Lastly, it is hypothesized that the heavy rain events earlier in the summer, during which a reported 75 million gallons of untreated water were washed into the Chequamegon Bay, may have contributed to conditions in which avian botulism may potentially thrive.



The majority of the carcasses (six of the eight) were observed on the stretch of land closest to Chequamegon Point, along the channel, and two carcasses were found along the southern beach, facing the greater body of Lake Superior. It should be noted that this theory is unconfirmed. A Herring gull and the plover chick were sent to Madison, Wisconsin for a full necropsy; hopefully the results will shed some light on this mystery.

Figures 15 & 16. Two lives cut tragically short: the remains of the Point chick (above right) and a Common Merganser chick (above).

<sup>3</sup> Information on avian botulism provided by USGS National Wildlife Health Center. Accessed via [www.nwhc.usgs.gov/disease\\_information/avian\\_botulism](http://www.nwhc.usgs.gov/disease_information/avian_botulism)



## Special Thanks

We would like to acknowledge everyone involved with this season! Thanks to Sumner Matteson for venturing north to Chequamegon Point from Madison twice to make banding happen. Thanks to Peggy Burkman for coordinating with and assisting the plover monitors on the island. Thanks to the members of the Bad River Natural Resources Department and the National Parks Service, as well as Sumner Matteson, who returned once again to Chequamegon Point to help remove driftwood from the nesting beach. And finally, thanks to our partners: The National Park Service, U.S. Fish & Wildlife Service, the Bad River Tribe, Wisconsin DNR, the Nature Conservancy, the Johnson Family, and the WISKERT Corporation. See you next year!



Figure 16. Piping Plover Detective Sumner Matteson & Lacey steel themselves for a morning of intense chick banding.



## Appendix A: Predators and Other Tracks

Additional photos of tracks, scat, and creatures that were present all along Chequamegon Point.



Figures 1 and 2. Bear sign; scat and tracks on the bayside beach.



Figure 3.  
Raccoon tracks  
on a lakeside  
beach.





Figure 4. Great Horned Owl tracks with plover tracks. Photo taken by Eric Andrews on the southern nesting beach on 6/23, the day after the last reported sighting of chick -G<sup>318</sup>:X,O<sup>Y</sup> from the Dune brood.

Figure 5 (below left). Corvid tracks with plover tracks on the southern nesting beach.

Figure 6 (below right). Great Blue Heron tracks on the bayside beach.





Figure 7. North American River Otter tracks.





Figure 8.  
Image of  
coyote  
captured by  
trail camera at  
Dune nest.



Figure 9.  
Image of  
coyote  
captured by  
trail camera at  
Cobble nest.



## Appendix B: Other Waterbirds on Chequamegon Point

Chequamegon Point is home to a wide variety of shorebirds and seabirds and is a great stopover habitat for migrants. The monitors this year recorded the presence of several different species, including Semipalmated Plover, Spotted Sandpiper, Killdeer, Ruddy Turnstone, Short-billed Dowitcher, Double-crested Cormorant, and more.



Figure 1. This Whimbrel stayed on Chequamegon Point for close to a week.



Figure 2. Two Black-bellied Plovers captured through a spotting scope.



Figure 3. A large flock of 48 American White Pelicans was counted off shore at the north Beach before takeoff.



Figure 4. A Sanderling devours a moth.



Figure 5. Several Semipalmated Sandpipers were seen at both nesting beaches, Don't confuse them for Least Sandpipers!



Figure 6. A Lesser Yellowlegs rests alongside two Least Sandpipers at the north beach.



## Appendix C: Maps of Plover Nests on Chequamegon Point

From what we've learned this year, the nesting beaches of Chequamegon Point are in need of some extra care. After what some might call a disappointing season where a scant two chicks were fledged, all of the Piping Plover Project partners should look into brainstorming and implementing new efforts that will help the plovers toward success rates much higher than that of 2018. By using maps, we can methodically apply new plans to take direct action on the beaches and create positive impacts for the birds who need our help.



Figure 1. A map of this year's plover nesting sites.

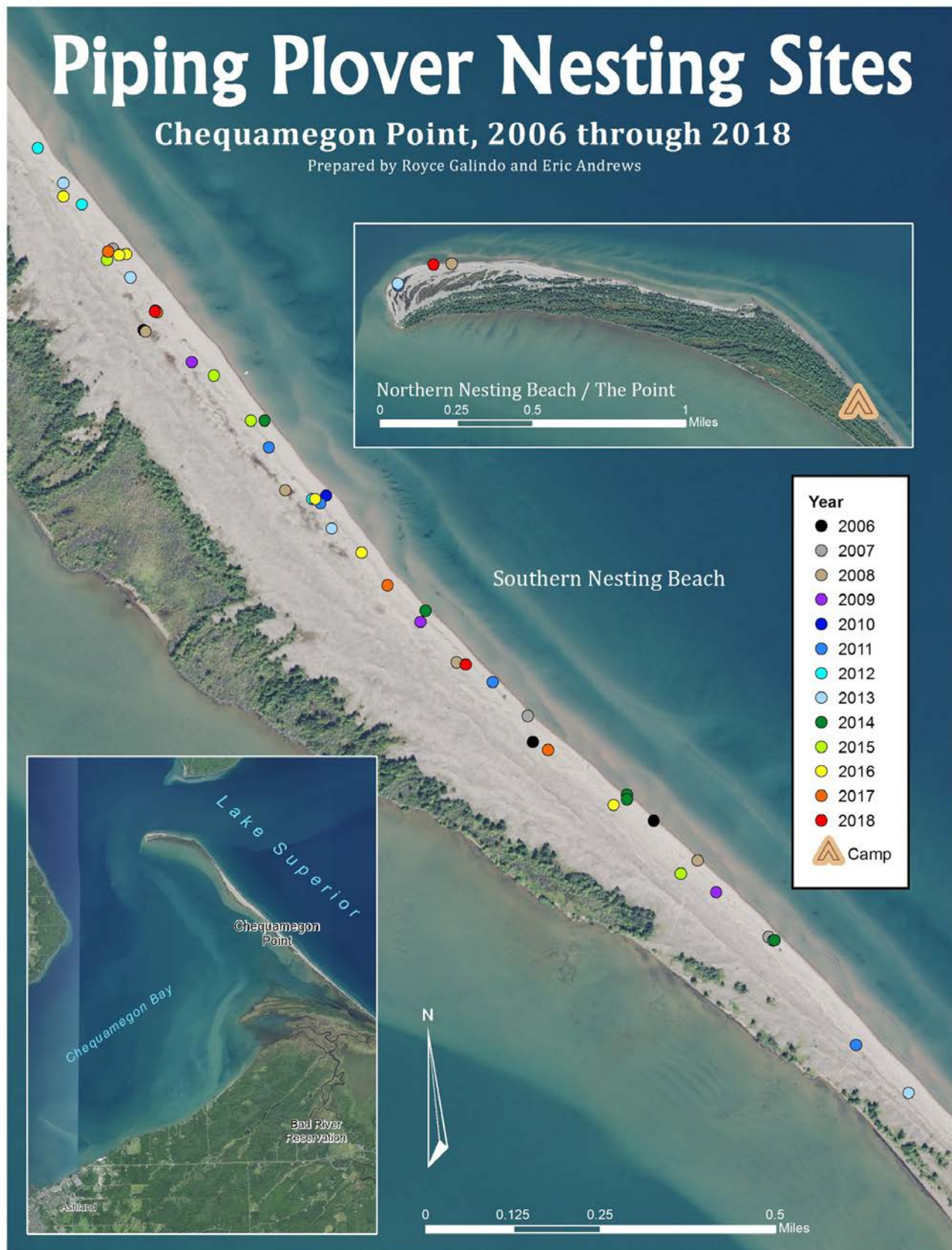


Figure 2. Plover nesting sites throughout the years (2006 - 2018).



# Glossary

<b>Backwater</b>	A stagnant body of water lying within the dune system, isolated from the lake by the beach and foredune. Usually contains different vegetation than the surrounding dunes.
<b>Cobble Pan</b>	The strip of beach parallel to the shore where cobblestones have been most densely deposited by the tide.
<b>Fledged</b>	The point reached in a juvenile plover's life when its flight feather growth allows for the ability to fly.
<b>Foredune</b>	The dune ridge in a system of dunes that is closest to the shoreline.
<b>Treeline</b>	The belt where the dune system transitions into forest habitat; the edge of the dunes where trees begin to grow.
<b>Wash Zone</b>	The region of the shore line within which waves break.
<b>Wrack Line</b>	The impermanent line of debris, usually dark organic material, that is deposited on the beach by the tide.