

Appendix G
Piping Plover Habitat Restoration
Project Summary

Project Name:

Wisconsin Point Bird Sanctuary Piping Plover Nesting Habitat Restoration

SLRAOC Management Action: 2.05**History:**

Piping Plovers were added to Wisconsin's endangered species list in 1979 and listed as federally endangered in 1986. In the Great Lakes region, Piping Plovers use sparsely vegetated beaches, cobble pans, and sand spits to breed and raise their young for a period of approximately three to four months, annually. Wintering grounds range from North Carolina to Florida and along the Florida Gulf Coast to Texas, Mexico, and the Caribbean Islands. Threats to Piping Plovers include the following: habitat destruction and degradation, human disturbance, and contaminants. Plovers are also impacted by the genetic and geographic consequences of their small population size (U.S. Fish and Wildlife Service, 2003).

**Plover habitat management efforts at Wisconsin Point Bird Sanctuary and Shafer Beach**

The Wisconsin Point Bird Sanctuary is in an easement for common tern (endangered in Wisconsin) and piping plover (federally endangered) habitat. In 2014, there were just 70 breeding pairs of piping plover in the Great Lakes, with most pairs nesting in the Lake Michigan basin (43 pairs) and only 12 pairs in the Lake Superior basin. The Wisconsin Department of Natural Resources (WDNR) has actively managed for piping plover in the St. Louis River estuary since 1980. In 1980, the Barker's Island Bird Sanctuary was established cooperatively by the WDNR and City of Superior at the east end of Barker's Island. Piping plover nested there from 1957 through 1971. Beginning in 1982, WDNR installed up to 10 plover decoys and a sound system that used adult vocalizations on a continuous loop at the Barker's Island Bird Sanctuary in an unsuccessful attempt to attract breeding adults. In 1989, the City of Superior designated the Bird Sanctuary on the Allouez Bay-side of Wisconsin Point as mitigation for developing the property on Barker's Island and losing that habitat. The Wisconsin Point property was given to WDNR, cleared with a rotovator, and a chain-link fence was installed around the perimeter to deter traffic. The St. Louis River Alliance (SLRA) conducted a habitat restoration project in the 1990's at the Bird Sanctuary with weed fabric and tree removal. The WDNR actively managed this property for common terns and piping plover until 2005, including vegetation control and monitoring. None of the habitat management were successful in attracting either terns or plovers to nest on the property. Interstate Island was identified as a preferred alternative tern nesting area. After 2005, WDNR discontinued management at the Bird Sanctuary, and common tern management efforts were re-directed at Interstate Island.

Management was started again in 2011, when SLRA received a grant from the U.S. Fish and Wildlife Service (USFWS) to undertake habitat restoration for piping plover on the Bird Sanctuary property (10 acres) and at Shafer Beach (~25 acres). The project managed habitat from 2012 – 2017. Through SLRA's partnership with Douglas County, USFWS, WDNR, and City of Superior, restoration at the Bird Sanctuary and Shafer beach has included eradicating invasive species, excavating and sloping the beaches, and clearing wood and debris. At Shafer Beach, the County cleared shrubs along the bluff adjacent to the beach to increase the distance between the waterline and the treeline. SLRA developed curriculum and outreach materials to educate over 200 children and adults about piping plover and also trained volunteers to monitor the beach for piping plover and educate beach-goers in an effort to minimize human and dog disturbances at the beach. Ten plover decoys were made in 2013 and were used in conjunction with a playback system in an attempt to attract breeding piping plover to the

Wisconsin Point and Shafer Beach sites. Typically, 1 – 3 piping plover are observed each year on Wisconsin Point and MN Point.

Management action 2.05 was determined necessary to restore historically-lost nesting habitat for the endangered Piping Plover as part of the BUI and support the 2003 USFWS Great Lakes Recovery Plan for the Piping Plover (U.S. Fish and Wildlife Service, 2003). The 2003 Recovery Plan’s ultimate objective is to remove the Great Lakes population from the list of Threatened and Endangered Species, requiring that specific recovery criteria for population size, reproduction, habitat, and long-term protection are met. Management action 2.05 was officially included in the SLRAOC “Roadmap to Delisting” in 2013 (Minnesota Pollution Control Agency and Wisconsin Department of Natural Resources, 2013).

Project Goal:

The project goal was to increase available Piping Plover stopover and nesting habitat as well as to create habitat that is:

- long lasting and requires minimal maintenance
- resilient to changing water levels and storm events, and
- beneficially uses clean sand dredged from Duluth/Superior Harbor

Project Outcome:

- Created 14 acres of nesting and foraging habitat with 3 cobble nesting pans
- Utilized 87,485 CY of dredge material (sand) from the Duluth/Superior Harbor

Project Coordinates (UTM center-point): 46.700833, -92.011866

Start and End Dates: 2017-2019 design and implementation; 2020-2023+ establishment phase

Lead Agency: Wisconsin Department of Natural Resources

Project Manager: Cherie Hagen, Lake Superior Basin Supervisor, Wisconsin DNR

Design Metrics:

- 14 acres of nesting and foraging habitat for Piping Plover including specific metrics in Table 1.
- Utilized 87,485 cubic yards of dredge material from Duluth/Superior Harbor

Funding:

Funding Source	Amount
EPA Administered Great Lakes Restoration Initiative	\$4,000,000
TOTAL COST	\$4,000,000

Project Partners:

- U.S. Fish and Wildlife Service
- University of Wisconsin Sea Grant
- University of Wisconsin Superior- Lake Superior Research Institute
- WI Department of Natural Resources

Project Summary:

WDNR coordinated the project with support from a Restoration Site Team (RST) of local and regional species experts. The RST evaluated SLRE sites for their potential to attract and retain a Piping Plover colony, ultimately choosing the Wisconsin Point Bird Sanctuary (Bird Sanctuary). The Bird Sanctuary site is a fenced-in area owned by the WDNR. WDNR, USWFS, Douglas County, and the St. Louis River Alliance (SLRA) have all supported efforts to actively manage the Bird Sanctuary site since the 1980s for both Piping Plovers and Common Terns. Past management activities included grading, vegetation control, signage, fencing, removal of large woody debris, monitoring, and public outreach. The area is closed seasonally from April 1 through August 1 in order to reduce human impacts during migratory bird season.

The USACE evaluated historic water levels, resulting in a design incorporating target elevations that minimize impacts of water variability and shoreline erosion in the establishment of plover habitat. Beach widths, slopes, and open areas for breeding, nesting, and foraging were designed based on recommendations from RST species experts. The RST worked closely with the USACE to move the project from concept to final design, with the final design completed in late 2018.

The final design created approximately 14 acres of open sand and cobble beach suitable for Piping Plover nesting and foraging habitat. The sand required to construct the beach was obtained through annual Operations and Maintenance dredging of the federal navigational channel by USACE. WDNR developed physical and chemical criteria for these construction materials to ensure their suitability for Piping Plover. The USACE awarded a contract for project construction. In 2019, approximately 87,485 CY of approved dredged materials were placed to extend the existing shoreline and stabilize the slope from erosion, creating 14 acres of habitat. The existing spit feature was widened to encourage long-term connectivity, and a new beach was created. Following sand placement, the habitat was enhanced with cobbles, native dune grass restoration and a fence upgrade to deter predators. The project was completed in late 2019.

Detailed Project Description:

Planning and scoping of plover habitat enhancements has been ongoing since 2011 with design for management action 2.05 beginning in 2017. Partners worked closely with USACE engineers, researchers and species experts to design Piping Plover habitat with the following considerations:

- Established minimum habitat design criteria for species
- Using historic high water levels 604' IGLD85, targeting a minimum of 30 year habitat lifespan
- Installed buoys in Allouez Bay monitoring wave heights in various conditions
- Conducted hydrodynamic and sediment transport modeling
- Analyzed sediment grain size and chemistry of dredge material from potential source locations in the Duluth/Superior Harbor
- Established WDNR criteria for acceptable dredge material for project
- Identified acceptable dredge material in East Gate Basin to construct beach

The design process recognized that restoring plover nesting habitat would provide ancillary benefits to the estuary such as manoomin (wild rice), fish spawning, and dual use habitat for other shorebirds (USACE - Detroit District, 2017).

After several years of planning, construction of the beach habitat was completed in just three months, from August through October 2019. The US Army Corps of Engineers (USACE) contracted with the Roen Salvage Company to lead construction with continued involvement and communication with the partner team. After the existing site was prepped and tern island partially demolished, beach construction began, which involved sand (dredged material) being hydraulically placed both below and above the water to obtain the design slope and elevations. Substantial construction was completed in late 2019.

This is the first Wisconsin project in the estuary that beneficially uses dredge material to restore fish and wildlife habitat. This is an excellent example of how we can collaborate in a working harbor to restore endangered species habitat and ensure navigation channels are open for shipping and commerce. The St. Louis River Area of Concern Remedial Action Plan (SLRAOC RAP) identifies Piping Plover as a target species in the Degraded Fish and Wildlife Populations Beneficial Use Impairment (BUI) with a goal to increase available Piping Plover stopover and nesting habitat. Biologists are documenting increasing numbers of this tiny shorebird, so now is a perfect time to restore additional habitat as they seek out places to rest and nest. Not only does habitat restoration achieve AOC BUI goals, but it also increases critical habitat needed to help meet the USFWS Great Lakes Piping Plover recovery population goal.

Partners will continue teaming up for Piping Plover, focusing efforts from 2020 through 2023+ on habitat establishment and management, outreach and education, and monitoring.

Post-construction monitoring and establishment:

Goals and outcomes of the establishment phase- 2020-2023:

- Assess habitat twice yearly to identify actions necessary to maintain suitable habitat while maintaining minimum habitat features (Table 1)
- Conduct actions to maintain suitable habitat (i.e. remove unwanted vegetation/wood, maintain slopes)
- Develop education and outreach materials to protect Piping Plover habitat from human activity at the site
- Monitor for Piping Plovers, document behavior, nesting, fledgling survival and success
- Nest protection and predator control in coordination with USFWS

Outlined below is the proposed work that will be conducted as part of the Establishment Phase. The existing federal and state permits issued for the project construction will apply for 5 to 3 years respectively. Depending on the method selected for woody debris removal (burning) or invasive plant control (herbicide) additional state

and local permits may be required. We will be applying standard USFWS and WDNR methods for habitat assessment and management.

1. Native dune grass will be planted near foraging areas (up to 1.5 acres).
2. Habitat assessments will be conducted by WDNR, USFWS and St. Louis River Alliance species experts to verify if the habitat meets the established criteria and to identify any actions needed
3. Habitat management actions may include the following:
 - Woody debris removal
 - Invasive plant control
 - Unwanted vegetation management to maintain open beach in designated nesting area
 - Shoreline grading to ensure desired slope for species is maintained, as needed
 - Cobble supplement for nesting pans, as needed
4. Property management actions below will be conducted by WDNR staff:
 - Access road gate installation
 - Wildlife area closure sign installation and removal before and after the nesting season

Table 1: Wisconsin Point Bird Sanctuary Minimum Piping Plover Habitat Feature Criteria

Habitat Feature	Design Metric	Baseline Measurements March, 2020
1. Total Beach Length	≥ 0.52 km (0.32 mile)	0.98 km (0.61 mile)
2. Beach Slope	≤ 10%	<10%
3. Available Nesting Habitat	≥1 ha (2.5 ac)	5.68 ac
4. Nesting Habitat Width	≥50 m (164 ft)	369ft
5. Tree Line Distance	≥91 m (300 ft)	N/A
6. Vegetation Cover	≤5%	<5%
7. Woody Debris Cover	≤5%	<5%
8. Cobble Pan Dimensions	(1) 50m (164 ft) x 30 m (98 ft)	15, 432 sq. ft.
	(2) 50m (164 ft) x 30 m (98ft)	20,337 sq. ft.
	(3) 50 m (164ft) x30 m (98 ft)	9,110 sq. ft.
Total cobble pan area	48,216 sq. ft.	44, 879 sq. ft.
9. Cobble Pan Composition	60% Cobble, 40% Gravel	60/40
10. Cobble Pan % Cover	30-60% Cobble, 70-40% Sand	40% Cobble/Gravel 60% Sand

Reports, Resources, Documents: Project documents listed are archived with USACE and WDNR

- Project fact sheet <https://widnr.widen.net/view/pdf/y07izhklm/undefined>

- AOC story map:
<https://mpca.maps.arcgis.com/apps/MapJournal/index.html?appid=d60723ef1a4042d7932bb95208b7a1a6>
- AOC video highlighting Plover habitat restoration: <https://youtu.be/5XZJPMOLqFk>
- 2017 USACE technical memo
- USACE plans and specifications as awarded (June 21, 2019)
- Establishment phase habitat assessment protocol and datasheet
- WDNR site management plan (2022)

Date Prepared:

3-7-2022

Attachment A. Before Photos:



Pre-project vegetation and debris



Pre-project aerial view

Attachment B Construction Photos:





August 2019



September 2019



October 2019

Material placement progress aerial images

Attachment C After Photos:



completed cobble pan

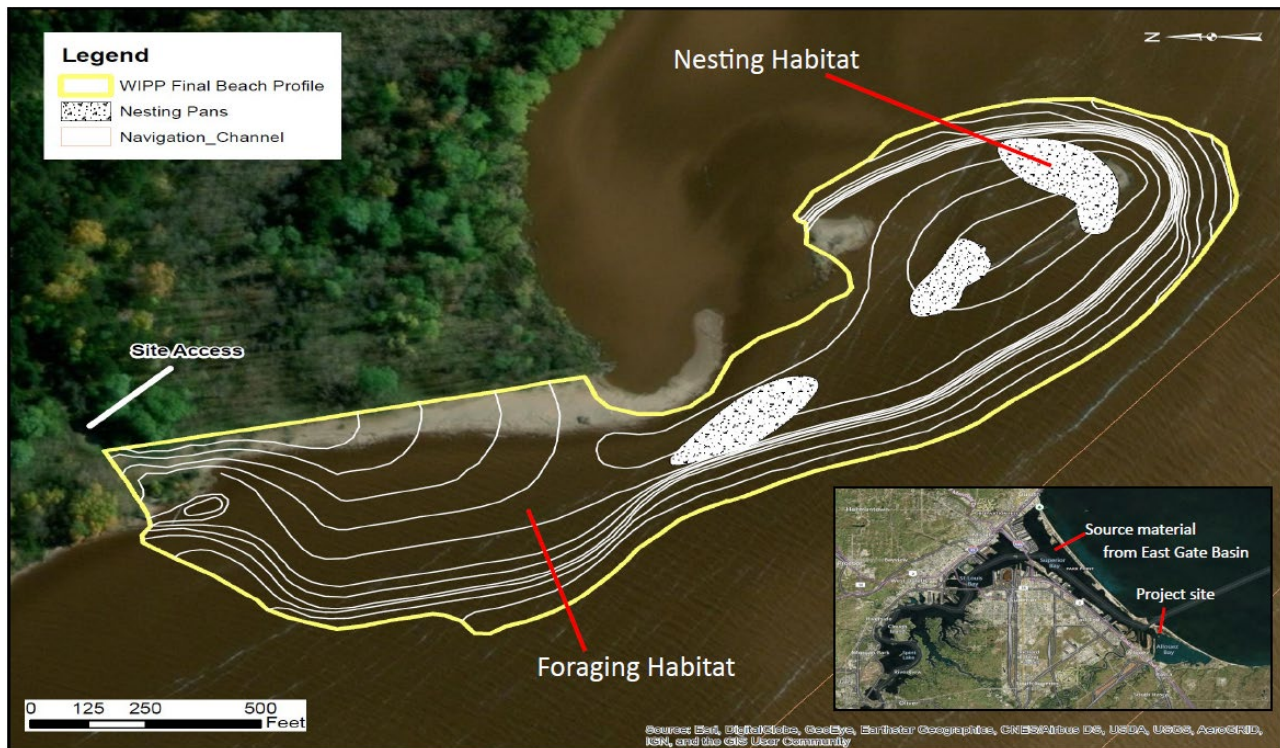


Completed site and fence (2020)

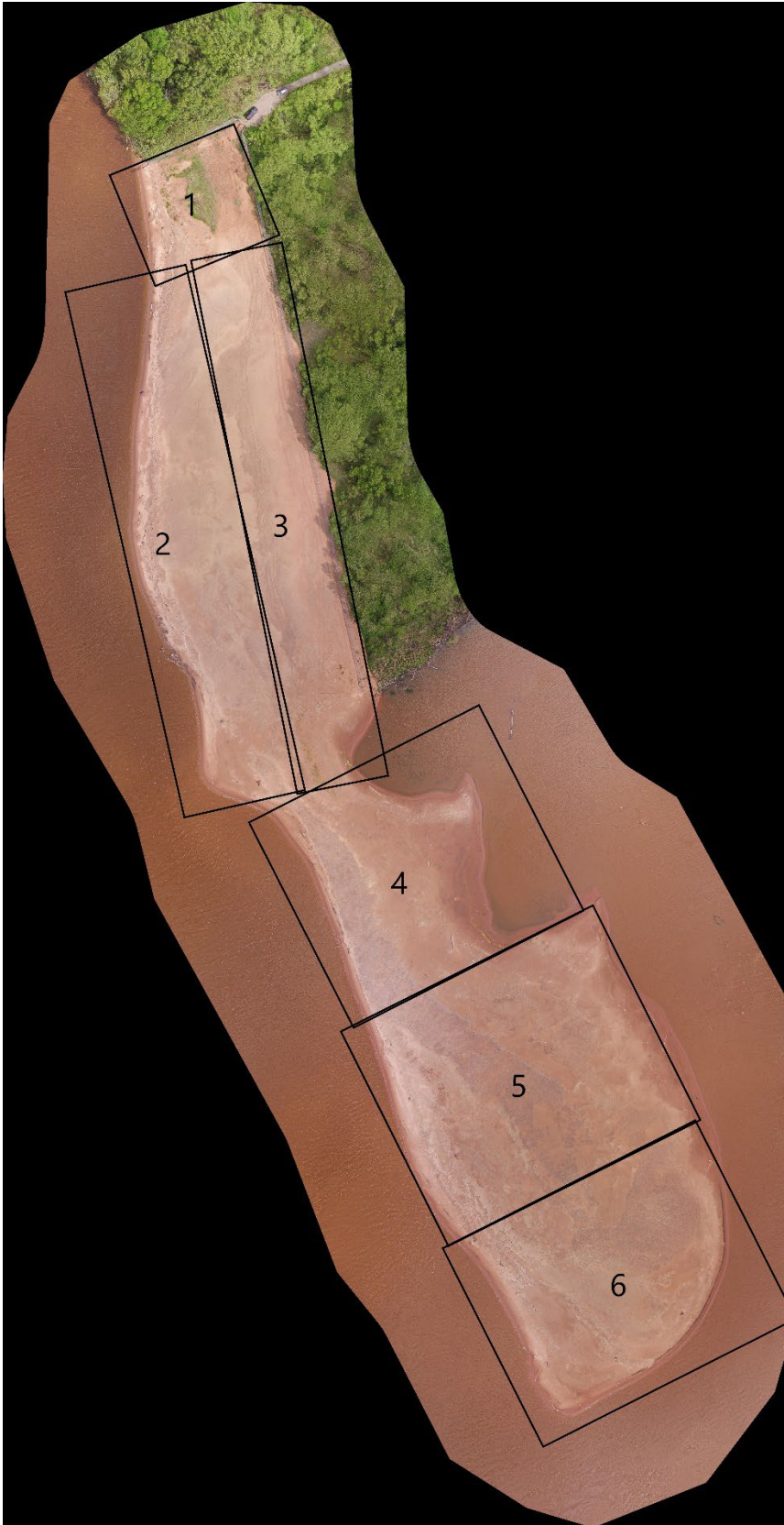
Attachment D: Project Maps:



Source material location



Concept design map



Establishment phase management zones