Restoration Progress Report for the Lower Fox River and Green Bay Natural Resource Damage Assessment



Fox River/Green Bay Natural Resource Trustees

February 2013

Prepared by:
Stratus Consulting

FOX RIVER
GREEN BAY
Natural Resource Trustee Council

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The **Wisconsin Department of Natural Resources** is dedicated to the preservation, protection, effective management, and maintenance of Wisconsin's natural resources. It is the one agency charged with full responsibility for coordinating the many disciplines and programs necessary to provide a clean environment and a full range of outdoor recreational opportunities for Wisconsin citizens and visitors. http://www.dnr.state.wi.us/

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The **Menominee Indian Tribe of Wisconsin's Environmental Services Department** aims to serve the Menominee Nation by defending the environmental integrity of the land, air, and water base which makes up the cultural and earth resources of the Menominee People. The protection of these resources will help to assure they are sustained for future generations of Menominee. http://www.menominee-nsn.gov/

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Contents

Introduction

Starting in the mid-1950s, Lower Fox River paper companies and associated waste treatment facilities began to release polychlorinated biphenyls (PCBs) to the Lower Fox River/Green Bay ecosystem. These releases resulted in adverse impacts ("injuries") to natural resources, including to surface water and associated sediments, as well as to wildlife, including birds and fish. This Restoration Progress Report presents an overview of the actions taken by the Lower Fox River and Green Bay Trustees[I.1] to restore these resources, as described in the 68 restoration project summaries included in this report.

Through a process known as natural resource damage assessment (NRDA), the Trustees have evaluated these injuries to natural resources[I.2] and determined what actions are necessary to restore or replace the resources as compensation to the public. Authority to act on behalf of the public is given to Trustees under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or "Superfund," and the Clean Water Act.[I.3] Under CERCLA, the Trustees focus on restoration of natural resources, while the U.S. Environmental Protection Agency, working with the Wisconsin Department of Natural Resources, supervise the cleanup and remediation activities for the Lower Fox River (e.g., dredging and removal or capping of contaminated sediments). Cleanup activities reduce risks to human health and the environment, but do not necessarily restore natural resources, which is the objective of the restoration activities undertaken by the Trustees. The parties responsible for the release of PCBs into the environment ultimately bear the cost of both cleanup and restoration.

NRDA Activities and Findings

Documents prepared as part of the Lower Fox River/Green Bay NRDA detail the natural resource injuries and the compensation necessary to offset these injuries.[I.4] Injury evaluation activities were guided by an assessment plan released in August 1996 and three subsequent addenda. The injury studies included an evaluation of PCB transport in the environment ("pathways analysis"), an evaluation of injuries to surface water and sediments, an evaluation of injuries to walleye and other fish, an evaluation of injuries to birds, and an evaluation of the fish consumption advisories that resulted from PCB contamination in fish tissue. The Trustees also determined the economic damages that resulted from PCB injuries, which included quantifying the recreational fishing damages from fish consumption advisories and quantifying the amount and types of restoration required to offset these PCB injuries.

The NRDA studies undertaken by the Trustees focused on evaluating the environmental impacts of the PCB releases into the Lower Fox River/Green Bay ecosystem. The studies have documented the presence of elevated concentrations of PCBs in surface water and sediment, as well as in the tissues of

[I.1] The Trustees are organized into a Trustee Council that includes the State of Wisconsin, the Menominee Indian Tribe of Wisconsin, the Oneida Tribe of Indians of Wisconsin, and the U.S. Department of the Interior (represented by the U.S. Fish and Wildlife Service and the Bureau of Indian Affairs). The Trustee Council was formed in 2002 when the Trustees memorialized their participation in the Trustee Council through a Memorandum of Agreement. The State of Michigan participated in the Trustee Council from 2002 to 2009. The National Oceanic and Atmospheric Administration has provided technical assistance to the Trustees.

[I.2] Under the regulations developed by the U.S. Department of the Interior for conducting NRDAs, an injury is defined as a measurable adverse change in the quality or viability of a natural resource. See 43 CFR § 11.14 (v).

[I.3] 42 U.S.C. § 9607(f) (Trustee authority under CERCLA); 33 USC § 1321(f)(4) (Trustee authority under the Clean Water Act).

[I.4] All documents available at http://www.fws.gov/midwest/es/ec/nrda/FoxRiverNRDA/index.html (accessed January 21, 2013).

plankton, forage fish, predatory fish, and birds in the Lower Fox River/Green Bay ecosystem. PCBs were found in fish from various habitats, including coastal wetlands, coastal beaches, near-shore areas, and open water. Study results established a direct link between these elevated PCB concentrations and adverse health effects in walleye (*Sander vitreus*). Birds from the Lower Fox River/Green Bay area also had consistently higher tissue concentrations of PCBs than birds from similar areas with no PCB releases. The studies documented that exposure to these concentrations of PCBs has adversely affected the health of Forster's tern (*Sterna forsteri*), common tern (*Sterna hirundo*), double-crested cormorant (*Phalacrocorax auritus*), and bald eagle (*Haliaeetus leucocephalus*) in the Lower Fox River/Green Bay ecosystem.

Because organisms accumulate PCBs from the food they eat, PCB concentrations tend to be higher in predator fish such as walleye and brown trout (*Salmo trutta*) than in prey species (i.e., forage fish). To protect human health, Wisconsin and Michigan have issued fish consumption advisories for species such as carp (*Cyprinus carpio*), brown trout, lake trout (*Salvelinus namaycush*), rainbow trout (*Oncorhynchus mykiss*), walleye, Chinook salmon (*Oncorhynchus tshawytscha*), splake (*Salvelinus namaycush*), white bass (*Morone chrysops*), lake sturgeon (*Acipenser vulvescens*), and coho salmon (*Oncorhynchus kisutch*). The State of Wisconsin has continued to warn against consuming fat or skin from mallard ducks (*Anas platyrhynchos*) in the Lower Fox River and Lower Green Bay because of the PCB exposure risk to people.

Restoration Planning

In 2000, the Trustees completed a Restoration and Compensation Determination Plan (RCDP), which presented a planned approach for restoring injured natural resources and compensating the public for losses caused by PCB releases. The RCDP summarizes the previous injury determinations, completes the economic valuation of damages, and evaluates the type and scale of environmental restoration to compensate the public for the PCB injuries. The RCDP also provides an estimate of recreational fishing losses resulting from PCB-caused fish consumption advisories from 1980 (when CERCLA was enacted) to 2000.

The RCDP provides examples of different mixes of restoration projects, under various remediation scenarios, which would provide the public with natural resource services that would compensate for PCB-caused losses from the year 2000 into the future. The mixes of restoration projects in the RCDP include the following types of restoration: wetland preservation, wetland restoration, nonpoint source runoff control, and improvements to outdoor recreational facilities.

In 2003, the Trustees published a Joint Restoration Plan and Environmental Assessment (RP/EA)[1.5] for the Lower Fox River/Green Bay area that built on the restoration analysis presented in the RCDP. It describes restoration action alternatives (projects) that would compensate for PCB-related injuries to natural resources. The RP/EA includes four categories of natural resource restoration projects: (1) wetlands and associated upland habitat preservation, reestablishment, or enhancement projects; (2) fishery resource enhancement projects; (3) aquatic, near-shore, and riparian habitat quality improvement projects; and (4) natural resource-based public use enhancement projects.

The types of restoration projects described in the RP/EA were based on the analysis presented in the RCDP. The RP/EA category of wetlands and associated upland habitat preservation, reestablishment, or enhancement corresponds to the RCDP restoration categories of wetland preservation and wetland restoration. The RP/EA category of

[1.5] Available at http://www.fws.gov/midwest/es/ec/nrda/FoxRiverNRDA/documents/restorationplan/finaljune2003.pdf.

aquatic, nearshore, and riparian habitat improvement was established by the Trustees as a modification to the nonpoint source runoff control category of the RCDP, with the intention of implementing restoration projects that directly benefit the aquatic, nearshore, and riparian resources that are harmed when water quality is impaired (see page 68 in the Section 3 introduction for further discussion). The RP/EA category of fishery resource enhancement is intended to benefit fishery resources in Green Bay to offset recreational fishing losses. The RP/EA category of natural resource-based public use enhancement corresponds to the RCDP category of improvements to outdoor recreational facilities. The RP/EA establishes initial quantitative goals for each category, but notes that over time, these goals could change based on available settlement funds, restoration opportunities, and restoration costs.

The RP/EA also advances the restoration planning process by establishing priorities and criteria for project selection within each restoration category to meet the priorities, policies, missions, goals, and previous planning efforts of the Trustees. Specifically, the Trustees expressed preference for projects that:

- Required NRDA settlement restoration funds for implementation (i.e., full funding was not available from other sources).
- Restored, enhanced, or protected natural habitat functions that were self-sustaining and essential to maintaining the habitat.
- Provided long-term benefits that would begin soon after project implementation.
- Provided a broad scope of measurable benefits to a wide area or population, and benefited more than one injured natural resource.
- Used reliable, proven methods to achieve objectives, were based on valid assumptions, were feasible within the proposed budget, and provided a high ratio of expected benefits to expected cost.

In addition, the Trustees evaluated individual projects for their cultural value to the Indian Tribes of the area, whose cultural practices were affected by the release of PCBs to the Lower Fox River and Green Bay area.

The final settlement with the Fort James Operating Company (now Georgia Pacific) and partial settlements with other potentially responsible parties, including Appleton Papers, Inc.; NCR Corporation; P. H. Glatfelter Company; and the WTMI Company (formerly known as Wisconsin Tissue Mills, Inc.), provided NRDA settlement funding for the Trustees to conduct natural resource restoration. Additional restoration funding was also obtained through a final settlement with 11 parties[1.6] that were considered to bear a minimal share of the liability for PCB contamination. The Trustees initiated NRDA restoration in 2002, and continue these projects today through the efforts of the Trustees and other public and private partners working with the Trustees. In addition, the Fort James Operating Company, the WTMI Company, and P.H. Glatfelter directly acquired land for natural resource restoration and preservation, and conveyed this land to the State of Wisconsin for management as part of their settlement.

Overview of Restoration Progress Report

This Restoration Progress Report describes the restoration projects completed by the Trustees through June 30, 2012, using funding received from final and interim settlements with some of the parties responsible for releasing PCBs. In many cases, the Trustees' partnership approach resulted in additional leveraged funds to increase the scope of a restoration project beyond what could have been achieved with NRDA settlement funding alone.

Using these funds, a wide variety of restoration projects have been implemented in the Lower Fox River/Green Bay ecosystem (see map on page 6).

[1.6] The parties included in the "de minimis" settlement included four paper companies, two sewerage districts, three industrial companies, a railroad, and a public utility.

The Trustees have directed $38.4 million in NRDA settlement funds to project partners for project implementation. Goals for wetlands and associated uplands habitat restoration have been met, and substantial progress has been made toward achieving the goals for the other restoration categories. The completed projects have helped to remedy some of the injuries to natural resources caused by the release of PCBs to the Lower Fox River and Green Bay area.

This Restoration Progress Report is organized by the restoration categories presented in the RP/EA (with wetlands and associated uplands habitat preservation separated from restoration):

- Section 1 – Wetlands and Associated Uplands Habitat Preservation
- Section 2 – Wetlands and Associated Uplands Habitat Restoration
- Section 3 – Aquatic, Nearshore, and Riparian Habitat Quality Improvement
- Section 4 – Fishery Resource Enhancement
- Section 5 – Natural Resource-based Public Use Enhancement.

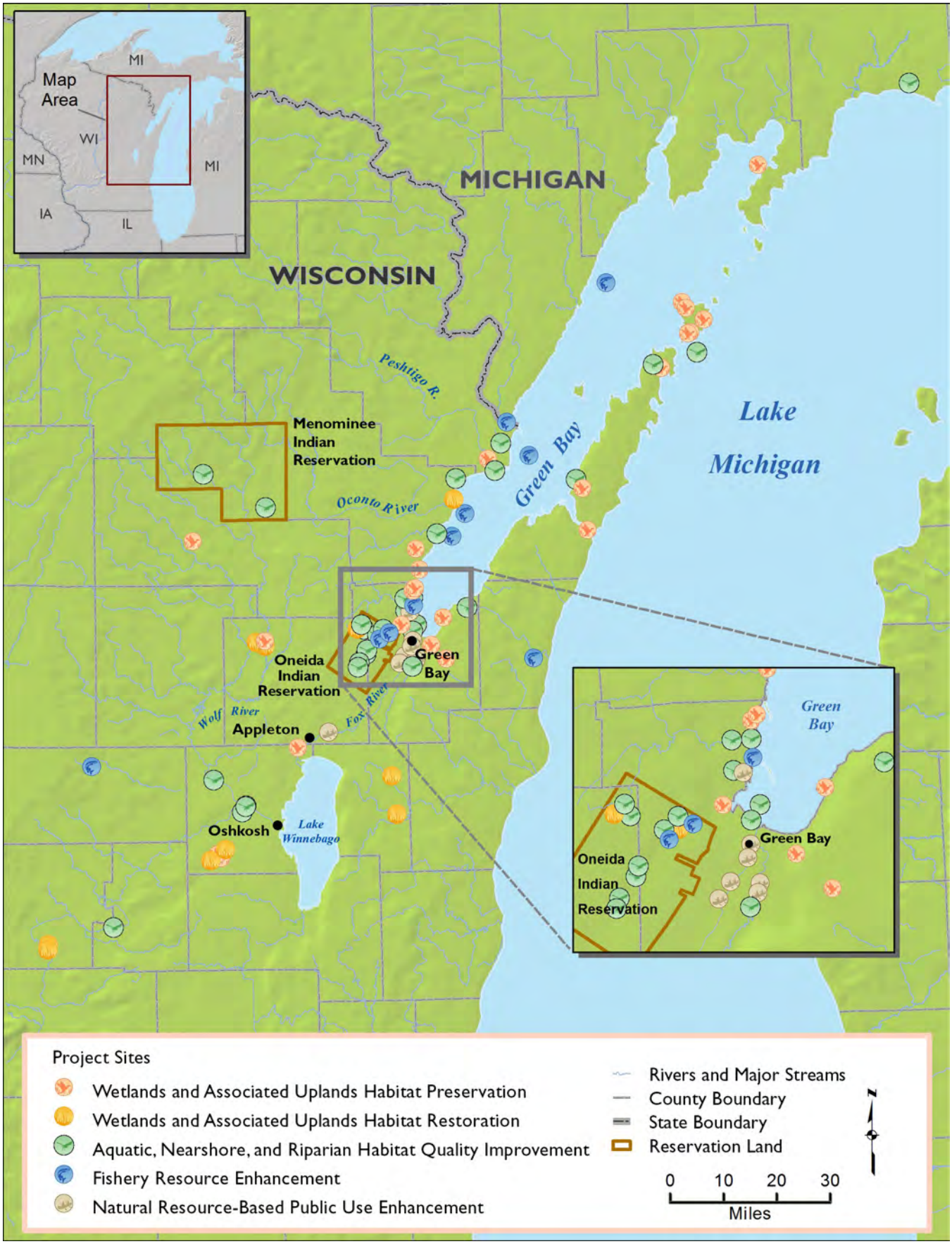
Each section includes a summary with an overview of restoration accomplishments in that category, as well as a map and table that lists all of the projects in that category. Individual project summaries follow, which include descriptions of each project, including goals, resource benefits, accomplishments, and funding.

Section 6 presents a description of restoration progress as of June 30, 2012, which includes a specific evaluation of progress toward Restoration Plan goals, a summary of funds received and expended, an overview of Trustee organization and management, and a description of the contributions of NRDA restoration to landscape conservation in the Great Lakes.

Category	Goal in Restoration Plan and Environmental Assessment
Wetlands and Associated Uplands Habitat Preservation	Preserve approximately 9,900 acres of wetlands and ecologically associated uplands
Wetlands and Associated Uplands Habitat Restoration	Reestablish or enhance ("restore") approximately 3,300 acres of wetlands and ecologically associated uplands
Aquatic, Nearshore, and Riparian Habitat Quality Improvement	Protect, reestablish, or enhance approximately 12,000 acres of aquatic, nearshore, and riparian habitats in the Lower Fox River and Green Bay environment
Fishery Resource Enhancement	Help establish self-sustaining fish populations and a healthy fish community in the Lower Fox River and Green Bay
Natural Resource-based Public Use Enhancement	Support natural resource-based public use enhancement projects in the Lower Fox River and Green Bay environment with less than 10% of settlement funds

Peshtigo River, Green Bay West Shores Wildlife Area *(Photo by Wisconsin Department of Natural Resources)*

Stecker road pond within the Killsnake Wildlife Area *(Photo by Wisconsin Department of Natural Resources)*


Map Area
MI
WI
MN
MI
IA
IL
MICHIGAN
WISCONSIN
Peshtigo R.
Menominee Indian Reservation
Oconto River
Green Bay
Lake Michigan
Oneida Indian Reservation
Green Bay
Wolf River
Fox River
Appleton
Oshkosh
Lake Winnebago
Green Bay
Oneida Indian Reservation
Green Bay
Project Sites
Wetlands and Associated Uplands Habitat Preservation
Wetlands and Associated Uplands Habitat Restoration
Aquatic, Nearshore, and Riparian Habitat Quality Improvement
Fishery Resource Enhancement
Natural Resource-Based Public Use Enhancement
Rivers and Major Streams
County Boundary
State Boundary
Reservation Land
N
0 10 20 30
Miles

Summary of Progress Toward Restoration Plan Goals as of June 30, 2012

Restoration Category	Restoration Plan Initial Goal	Restoration Achieved with NRDA Settlement funds[a,b]	% of Initial Goal Met[a]	NRDA Settlement Funds Allocated (Millions)[a]	Additional Restoration with Leveraged Funds[a]	Leveraged Funds Obtained (Millions)[a]
Wetlands and Associated Uplands Habitat Preservation	9,900 acres	5,743 acres	58%	$20.2	1,481 acres	$7.4
Wetlands and Associated Uplands Habitat Restoration	3,300 acres	3,943 acres	Goal exceeded	$1.6	3,255 acres	$1.4
Aquatic, Nearshore, and Riparian Habitat Quality Improvement	12,000 acres	1,512 acres	13%	$6.0	1,775 acres	$19.0
Fishery Resource Enhancement	—[c]	$7.5 million allocated to projects	—[c]	$7.5	—	$13.3
Natural Resource-based Public Use Enhancement	Spend no more than 10% of settlement funds	7.6% spent	On track with goal	$2.9	—	$0.05

Table notes:

[a] Restoration is ongoing. Project acreages and funding are current as of June 30, 2012.

[b] Projects without a defined spatial component will be credited based on dollars.

[c] Recovered damages associated with recreational fishing losses directed toward fishery resource projects.

SECTION 1

Wetlands and Associated Uplands Habitat Preservation

The preservation of ecologically significant wetlands and associated uplands for the public trust was included as an initial goal in the 2003 Joint Restoration Plan/ Environmental Assessment (RP/EA) published by the Lower Fox River and Green Bay Trustees. As described in the RP/EA, wetlands and ecologically associated uplands provide "spawning and nursery habitats, nesting, and increased food for a wide variety of fish, birds, and other wildlife. This provides ecological functions similar to, but not necessarily the same as, those injured by PCBs." The 2000 Restoration and Compensation Determination Plan for the Lower Fox River/Green Bay Natural Resource Damage Assessment addressed this as well, as it included preserving wetlands (and adjacent uplands where necessary) as a key component of a restoration package to compensate the public for natural resource injuries and service losses.

Within this restoration category, the Trustees are accomplishing projects that preserve habitat through land acquisition, land donation, or conservation easements. They are partnering with state, Tribal, federal, and local governments; local land trusts; and conservation nongovernmental organizations to own, manage, or hold easements for protected parcels. Many of the projects completed to date have preserved land adjacent to existing protected habitat areas, thereby improving habitat connectivity.

The Trustees have targeted natural resource damage assessment (NRDA) settlement funds to multiple projects preserving land within the Green Bay West Shores Wildlife Area, which encompasses more than 9,000 protected acres of selected shorelands and adjacent wetlands between the cities of Green Bay and Marinette (see project summaries 1.1–1.4). According to the U.S. Environmental Protection Agency, the western shore of Green Bay contains 50% of all remaining wetlands in the Lake Michigan Drainage Basin.[1.1] Preservation of coastal wetlands and associated uplands in this area protects key habitat for spawning fish such as northern pike (*Esox lucius*), as well as important habitat for nesting and migrating birds, including many of the species that were noted in the injury assessment as having been injured as a result of exposure to polychlorinated

[1.1] U.S. EPA. 2008. Watershed Fact Sheets. Lake Michigan Lakewide Management Plan 2008. Available: http://www.epa.gov/greatlakes/lamp/lm_2008/watersheds_2008.pdf (accessed December 10, 2012).

biphenyls (PCBs), such as waterfowl, common tern (*Sterna hirundo*), Forster's tern (*Sterna forsteri*), and bald eagle (*Haliaeetus leucocephalus*).

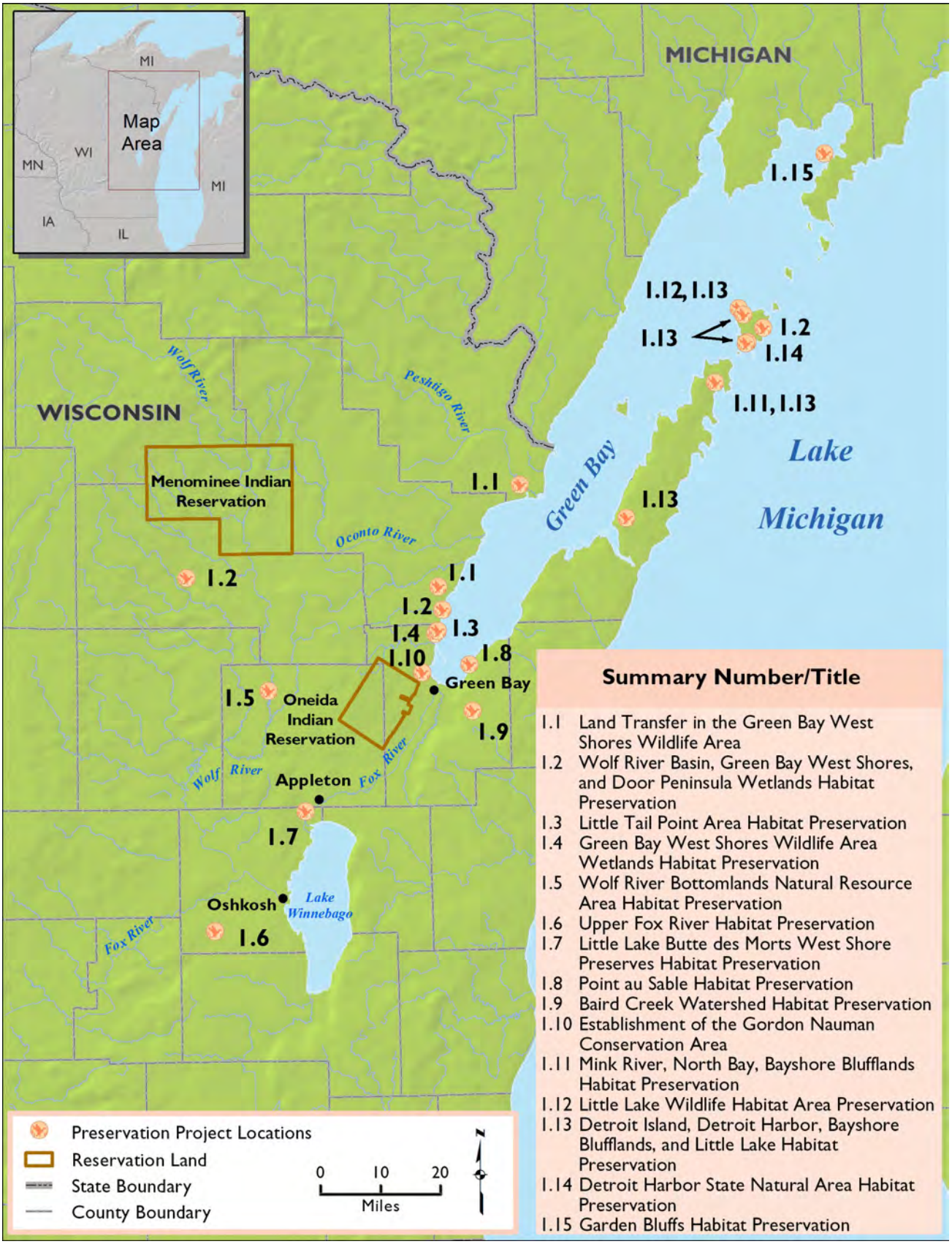
Multiple projects funded by the Trustees preserve wetlands and associated uplands on the Door Peninsula and on the Garden Peninsula to the northeast (see project summaries 1.2, 1.11–1.15). Projects to acquire land or obtain conservation easements protect coastal and inland wetlands that contain unique and threatened habitats for a variety of fisheries and wildlife resources, including many rare species. For example, the Trustees have preserved land within the Mink River Estuary and the Niagara Escarpment that serves as critical migration sites for waterfowl and other water birds, as well as shoreline habitat that provides important spawning sites for species such as smallmouth bass (*Micropterus dolomieu*).

In addition, the Trustees have completed multiple projects in other locations that address the objective (stated in the RP/EA) of focusing on preserving coastal wetlands, wetlands in areas of higher population growth, and wetlands of high natural quality. Some of the locations for which the Trustees have funded preservation projects for wetlands and associated uplands include the Wolf River Basin (see project summaries 1.2, 1.5), the Upper Fox River (1.6, 1.7), and locations in and around the City of Green Bay and its suburbs (1.8–1.10).

As of June 30, 2012, the Trustees had allocated $20,236,653 in NRDA settlement funds to specific restoration projects. Of this allocated funding, $19,457,764 has been spent for habitat preservation projects, resulting in the protection of 5,743 acres credited to NRDA settlement funds. An additional $778,889 in unspent funds is expected to result in additional acres when it is expended. The Trustees have achieved 58% of the initial goal established for this category in the RP/EA, which is the preservation of 9,900 acres. Project partners were able to leverage the NRDA funding into $7,415,199 in additional funding (including leveraged dollars and in-kind services) for their projects, resulting in the protection of an additional 1,481 acres. The NRDA-credited portion of these accomplishments is based on the percentage of total project funding provided by NRDA funds.

Goldeneye and scaup *(Photo by Joel Trick, U.S. Fish and Wildlife Service - retired)*

Overview Map of Wetlands and Associated Uplands Habitat Preservation Projects



Summary Number/Title

1.1 Land Transfer in the Green Bay West Shores Wildlife Area
1.2 Wolf River Basin, Green Bay West Shores, and Door Peninsula Wetlands Habitat Preservation
1.3 Little Tail Point Area Habitat Preservation
1.4 Green Bay West Shores Wildlife Area Wetlands Habitat Preservation
1.5 Wolf River Bottomlands Natural Resource Area Habitat Preservation
1.6 Upper Fox River Habitat Preservation
1.7 Little Lake Butte des Morts West Shore Preserves Habitat Preservation
1.8 Point au Sable Habitat Preservation
1.9 Baird Creek Watershed Habitat Preservation
1.10 Establishment of the Gordon Nauman Conservation Area
1.11 Mink River, North Bay, Bayshore Blufflands Habitat Preservation
1.12 Little Lake Wildlife Habitat Area Preservation
1.13 Detroit Island, Detroit Harbor, Bayshore Blufflands, and Little Lake Habitat Preservation
1.14 Detroit Harbor State Natural Area Habitat Preservation
1.15 Garden Bluffs Habitat Preservation

Wetlands and Associated Uplands Habitat Preservation Projects

Summary Number	Project Title	Restoration Achieved with NRDA Settlement Funds (acres)[a]	NRDA Settlement Funds Allocated[a]	Additional Restoration with Leveraged Funds (acres)[b]	Leveraged Funds[a]	Restoration Project Number(s)[c]
1.1	Land Transfer in the Green Bay West Shores Wildlife Area[d]	1,063.00	$2,512,708	—	—	85
1.2	Wolf River Basin, Green Bay West Shores, and Door Peninsula Wetlands Habitat Preservation	2,780.54	$7,352,084	660.19	$1,613,861	1, 21, 82, 83
1.3	Little Tail Point Area Habitat Preservation	21.53	$9,300	47.27	$20,424	174
1.4	Green Bay West Shores Wildlife Area Wetlands Habitat Preservation	4.96	$18,720	29.04	$109,680	178
1.5	Wolf River Bottomlands Natural Resource Area Habitat Preservation	973.53	$2,800,000	—	—	125
1.6	Upper Fox River Habitat Preservation	174.71	$500,000	27.29	$78,101	51
1.7	Little Lake Butte des Morts West Shore Preserves Habitat Preservation	67.35	$1,686,275	12.65	$316,600	75, 110, 117
1.8	Point au Sable Habitat Preservation	28.10	$155,000	33.68	$185,787	173
1.9	Baird Creek Watershed Habitat Preservation	26.04	$400,000	25.96	$175,450	42
1.10	Establishment of the Gordon Nauman Conservation Area[e]	28.87	$487,525	—	—	103
1.11	Mink River, North Bay, Bayshore Blufflands Habitat Preservation	292.81	$1,792,551	167.19	$1,023,507	14
1.12	Little Lake Wildlife Habitat Area Preservation	6.77	$361,190	20.23	$1,080,245	111, 119
1.13	Detroit Island, Detroit Harbor, Bayshore Blufflands, and Little Lake Habitat Preservation	44.54	$626,000	28.86	$405,629	80
1.14	Detroit Harbor State Natural Area Habitat Preservation	0.60	$35,300	4.60	$269,023	131
1.15	Garden Bluffs Habitat Preservation	230.00	$1,500,000	424.00	$2,136,892	45
	Total	5,743.35	$20,236,653	1,480.96	$7,415,199	

Table notes:

[a] Project acreages and funding are current as of June 30, 2012.

[b] Additional acres were funded with leveraged funding (matching dollars and in-kind services).

[c] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

[d] Land transfer from Fort James valued at this amount.

[e] $10,000 allocated to this project is included in the Public Use Enhancement category for park facility development (page 164).

Land Transfer in the Green Bay West Shores Wildlife Area

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Acquisition and protection of riparian habitat along the Peshtigo River and western shore of Green Bay

Benefits
Native aquatic and terrestrial species along the river, and recreational users

Funding
The donated land was valued at $2,512,708

Timing
Completed in 2003

Land ownership
Wisconsin Department of Natural Resources

Birdwatching from the Peshtigo River *(Photo by Wisconsin Department of Natural Resources)*

Goal

To protect native habitat along the Peshtigo River in Marinette County, Wisconsin, which abuts the Green Bay West Shores Wildlife Area.

Project Description

The Wisconsin Department of Natural Resources (DNR) received valuable upland, wetland, and riparian forest habitats along the Peshtigo River and along the western shore of Green Bay as part of a 2002 consent decree with the Fort James Operating Company (now Georgia Pacific). The largest parcel consists of 900 acres of land just north of the Peshtigo Harbor Wildlife Area and protects approximately 9 miles of frontage along the Peshtigo River, a major tributary to Green Bay, including valuable riparian shoreline habitat. The second parcel consists of 75 acres of land along the shore of Green Bay, also bordering the Peshtigo Harbor Wildlife Area, and includes critical coastal wetland habitat. The third parcel consists of 50 acres of land, about 0.6 miles inland from Green Bay, and includes hardwood forest and former agricultural land that is appropriate for wetland habitat restoration. The fourth parcel consists of 38 acres of land, about 0.6 miles west of Green Bay and just south of the Suamico River, and includes wetland and upland habitats that also help buffer an adjacent wetland parcel owned and managed by the Wisconsin DNR. These acquisitions cumulatively help to protect an extensive corridor of high-quality wildlife habitat along the Peshtigo River and important coastal habitat along Green Bay.

Benefits

This land transfer protects habitat along the Peshtigo River and western shore of Green Bay and benefits many species of birds and wildlife, including bald eagle (*Haliaeetus leucocephalus*), red-shouldered hawk (*Buteo lineatus*), osprey (*Pandion haliaetus*), mink (*Mustela vison*), beaver (*Castor canadensis*), and various species of waterfowl. The parcels also protect important spawning habitat for native fish species such as northern pike (*Esox lucius*), sucker (*Catostomus* spp.), and possibly lake sturgeon (*Acipenser vulvescens*). The protected riparian, wetland, and adjacent upland habitats will also provide enhanced erosion control, nutrient storage and cycling, and runoff control, and will ultimately improve downstream water quality and benefit injured surface water resources in Green Bay. Recreational use, including hunting, fishing, and trapping, will be allowed, and hiking, canoeing, snowshoeing, and skiing opportunities will be increased.

Spatial Extent of Project

Through this land donation by Fort James/Georgia Pacific, 1,063 acres were preserved and credited to natural resource damage assessment settlement funding.

Status and Funding

This project was completed in 2003 with the donated land valued at $2,512,708.

Project Accomplishments

This project successfully protects high-quality habitat parcels that provide important habitat for many wildlife species. These parcels help protect sensitive habitat against encroachment and development, and help to maintain the ecological integrity and connectivity of habitat along the Peshtigo River and western shore of Green Bay.

Canoeing on the Peshtigo River Trail *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Wolf River Basin, Green Bay West Shores, and Door Peninsula Wetlands Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

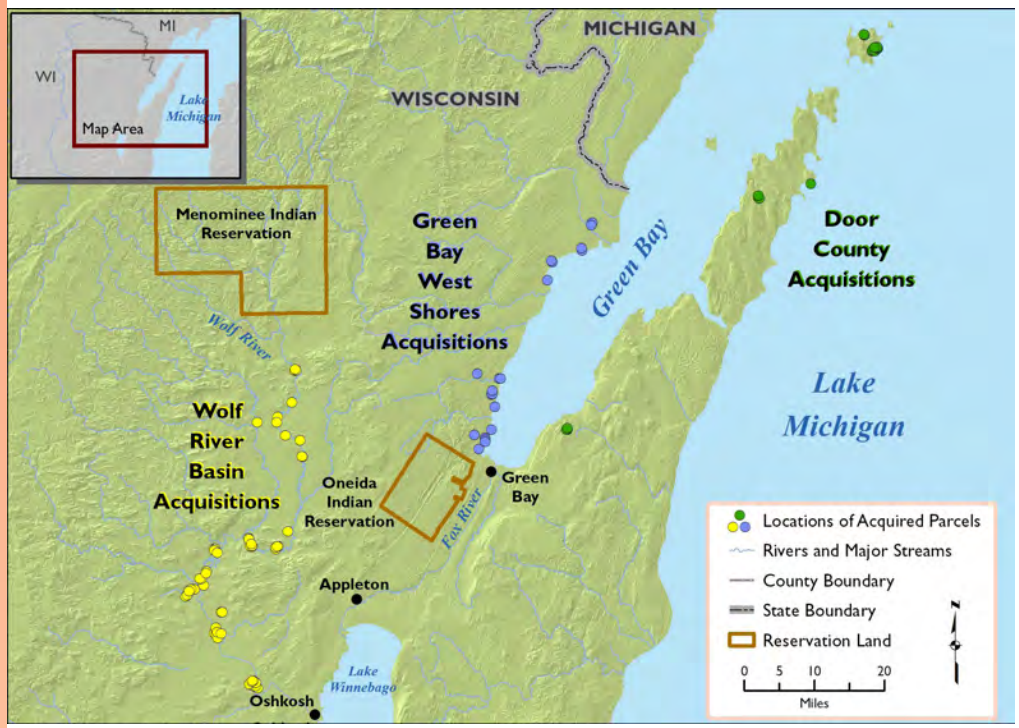
Actions
Land acquisition for preservation, and management of floodplain and wetland habitats

Benefits
Fisheries and wildlife habitat, injured species, downstream water quality, and active and passive human uses

Funding
$7,352,084 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $8,965,945

Timing
Parcels acquired from 2003 through June 30, 2012

Land ownership
Wisconsin Department of Natural Resources, private holders (managed by the Wisconsin Department of Natural Resources through easements)



Goal

To protect unique and threatened fisheries and wildlife habitat in the Lower Fox River and Green Bay watershed.

Project Description

The Wisconsin Department of Natural Resources (DNR) identified three key areas requiring habitat protection in the Lower Fox River and Green Bay watershed: the Green Bay West Shores Wildlife Area, the Lower Wolf River Bottomlands Natural Resource Area, and the Door Peninsula wetlands, with particular emphasis on the Washington Island wetlands. This project involved the acquisition of 21 habitat parcels in the Green Bay West Shores Wildlife Area, 63 parcels in the Lower Wolf River Bottomlands, and 18 parcels on the Door Peninsula, including 15 in the Washington Island wetlands area. The acquired parcels have significant ecological value for fish and waterfowl. These parcels were threatened by urbanization, land development, and habitat fragmentation. Additionally, the Wisconsin DNR will manage the parcels to ensure the protection of cultural artifacts and state and federally listed threatened and endangered species such as the eastern prairie white-fringed orchid (*Platanthera leucophaea*) and the Karner blue butterfly (*Lycaeides melissa samuelis*). The land management plans for the

different areas include support for hunting, trapping, fishing, and passive recreational use.

Benefits

Wetlands located on the western shore of Green Bay provide key spawning and rearing habitat for numerous fish species, protect water quality, and provide flow regulation for the area. Land acquisition in the Green Bay West Shores Wildlife Area protects wetlands that are at high risk of development. Habitat acquisition in the Lower Wolf River Bottomlands Natural Resource Area helps maintain contiguous tracts of bottomland hardwood forest and wetlands that provide watershed protection for the Wolf River, the Lower Fox River Valley, and expanding urban communities in the region. The Wolf River Basin supports habitat for many endangered, threatened, or special concern plant, animal, and fish species, including spawning habitat for lake sturgeon (*Acipenser vulvescens*) and walleye (*Sander vitreus*). Habitat acquisition on the Door Peninsula and in the Washington Island wetlands area protects wetlands that provide habitat for fish and waterfowl species that will benefit from restoration actions. Preservation of land in all three primary locations – Green Bay West Shores Wildlife Area, Door Peninsula, and Washington Island – protects habitat that supports rare, endangered, threatened, or special concern species. According to their 2001 natural heritage inventory report, the Wisconsin DNR ranks the Washington Island wetlands eighth in importance of all Lake Michigan coastal wetlands in the State of Wisconsin.

Spatial Extent of Project

Acquisitions and easements to date have ensured the preservation of 3,441 acres in the Green Bay West Shores Wildlife Area, the Door Peninsula wetlands, and the Wolf River Basin. Natural resource damage assessment (NRDA) settlement funds were credited with the preservation of 2,781 acres (approximately 81% of the total); other funds were credited with the preservation of 660 acres.

Status and Funding

Land acquisition began in 2003 and continued through June 30, 2012. The project received $7,352,084 in NRDA settlement funding and attracted matching funds and/or in-kind services for a total budget of $8,965,945.

Project Accomplishments

The project goal of protecting intact ecosystems and preserving wildlife diversity was successfully met. The protected lands include riparian, wetland, and fish spawning habitats. The diverse acquisitions benefit a variety of fish and wildlife species and support recreation.

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Little Tail Point Area Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Conservation easement on a 69-acre parcel adjacent to Little Tail Point was donated to the Northeast Wisconsin Land Trust

Benefits
Protection of fish, wildlife, and key habitat along the western shore of Green Bay

Funding
$9,300 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $29,724

Timing
Conservation easement donated in 2011

Land ownership
Privately owned; conservation easement donated to the Northeast Wisconsin Land Trust

A view of the West Shores Conservancy, looking toward the Little Tail Point area of the Green Bay West Shores Wildlife Area *(Photo by Northeast Wisconsin Land Trust)*

Goal

To protect land adjacent to Little Tail Point in the Green Bay West Shores Wildlife Area.

Project Description

The Green Bay West Shores Wildlife Area protects important fish spawning and nursery areas. This project provided funding for the Northeast Wisconsin Land Trust to obtain a permanent conservation easement on a 69-acre parcel of property adjacent to Little Tail Point in the Green Bay West Shores Wildlife Area. The conservation easement was donated to the Northeast Wisconsin Land Trust; project funds and matching funds were used to cover the costs of acquiring the easement and provide for long-term stewardship.

Benefits

Acquisition of this conservation easement protects important habitat on the western shore of Green Bay. The easement protects the property from future development and connects preserved parcels within the Green Bay West Shores Wildlife Area acquisition boundary. Some of the habitat features protected include an embayment along Little Tail Point, an intermittent stream, oak woods situated on a high-quality beach habitat, a floodplain forest, and a shrub-carr habitat. Fish and wildlife species that benefit from this project include yellow perch (*Perca flavescens*), walleye (*Sander vitreus*), northern pike (*Esox lucius*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), great egret (*Ardea alba*),

Caspian tern (*Hydroprogne caspia*), Forster's tern (*Sterna forsteri*), and other migratory birds.

Spatial Extent of Project

The conservation easement protects 69 acres of habitat adjacent to Little Tail Point, and includes 1,800 feet of shoreline on the western shore of Green Bay. Natural resource damage assessment (NRDA) funds were credited with protecting 22 acres of habitat; other funds were credited with protecting the remaining 47 acres.

Status and Funding

The conservation easement was donated to the Northeast Wisconsin Land Trust in 2011. The Northeast Wisconsin Land Trust will monitor the protected parcel at least annually to ensure that the conditions of the conservation easement are being met. The project received $9,300 in NRDA funding and attracted matching funds and/or in-kind services for a total budget of $29,724.

Project Accomplishments

Acquisition of this conservation easement permanently protects important, high-quality habitat in the West Shores Wildlife Area. It protects the land from future development and connects other preserved land within the West Shores Wildlife Area.

Lowland forest habitat on the newly protected land *(Photo by Northeast Wisconsin Land Trust)*

Contact Information

Northeast Wisconsin Land Trust (920) 738-7265 newlt@newlt.org http://www.newlt.org/

Green Bay West Shores Wildlife Area Wetlands Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Purchase and protection of 34 acres of wetland habitat

Benefits
Protection of spawning northern pike and associated stream habitat, native wetlands, a naturally reproducing white oak stand, and migratory bird habitat

Funding
$18,720 in natural resource damage assessment settlement funding and matching funds and/or in-kind services for a total budget of $128,400

Timing
Completed in 2012

Land ownership
Northeast Wisconsin Land Trust

Northern pike spawning habitat in the newly acquired parcel *(Photo by Northeast Wisconsin Land Trust)*

Goal

To protect northern pike (*Esox lucius*) spawning habitat in the Green Bay West Shores Wetlands Preserve.

Project Description

Wetlands associated with Lower Green Bay have been diminished due to human activities such as land development, filling of wetlands, hydrologic alterations, pollution, and the spread of invasive species. High-quality wetlands on the western shore of Green Bay continue to be threatened by development. The newly acquired land is adjacent to the Green Bay West Shores Wildlife Area and within a wetland that has been identified as an area with valuable habitat and a high priority for preservation. The parcel is near a newly protected 69-acre parcel (see project 1.3) and across the road from 18 acres of preserved Wisconsin DNR land. This acquired land is also near the 570-acre Sensiba State Wildlife Area and the 293-acre Little Tail Point Wildlife Area.

The new acquisition includes 1,450 feet along a tributary where previous restoration work was completed by the Brown County Land and Water Conservation Department to support northern pike spawning habitat.

Benefits

This land was purchased to benefit northern pike spawning habitat and protect the restoration already conducted to enhance this habitat. Other species, such as migratory birds and wetland wildlife species, also benefit from the preservation of this land. Habitat on the property supports a mix of mature swamp, native forested wetlands, native streams, naturally reproducing white oak (*Quercus bicolor*), and aspen trees (*Populous tremuloides*), all of which support native wildlife and migratory birds.

Spatial Extent of Project

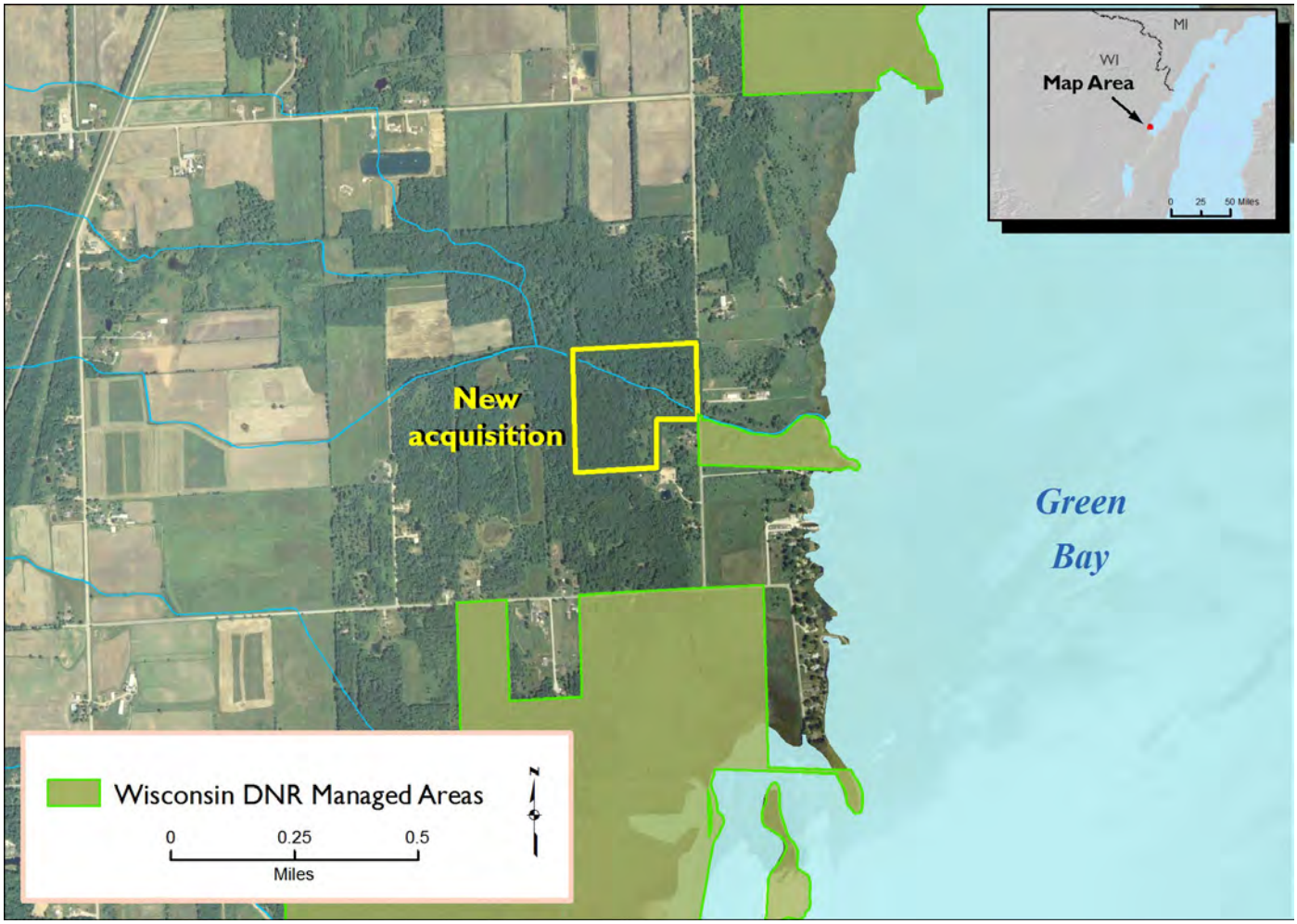
Thirty-four acres were preserved with this land acquisition. Natural resource damage assessment (NRDA) settlement funds were credited with 15% of the preserved acres (5 acres).

Status and Funding

The project was completed in 2012. It received $18,720 in NRDA settlement funding and attracted matching funds and/or in-kind services for a total budget of $128,400.

Project Accomplishments

This project successfully protects high-quality northern pike spawning habitat. The proximity of the newly acquired parcel to other protected land increases the continuity of habitat in the area and helps protect fish passage to and from spawning areas.



Contact Information

Northeast Wisconsin Land Trust (920) 738-7265 newlt@newlt.org http://www.newlt.org/

Wolf River Bottomlands Natural Resource Area Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

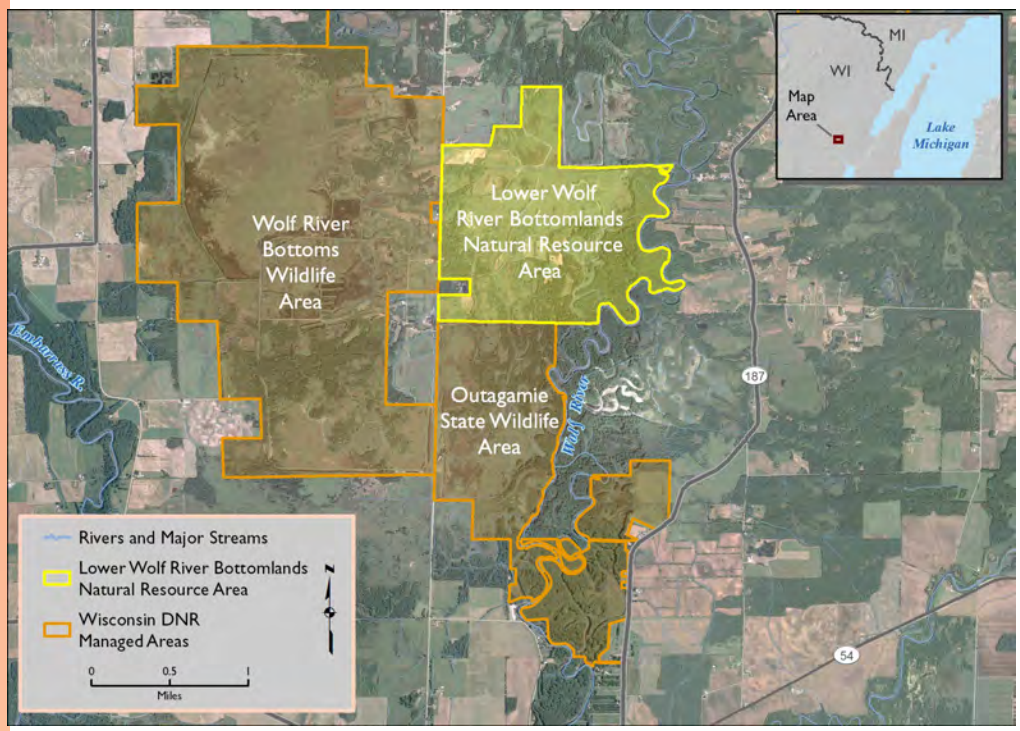
Actions
Acquisition and protection of wildlife habitat within the Lower Wolf River Bottomlands Natural Resource Area

Benefits
Wildlife habitat and native species, including waterfowl and spawning walleye

Funding
$2,800,000 in natural resource damage assessment settlement funding

Timing
Acquisition was completed on August 11, 2007

Land ownership
Wisconsin Department of Natural Resources



Goal

To acquire and protect land within the Wolf River Bottomlands Natural Resource Area.

Project Description

In August 2007, the Wisconsin Department of Natural Resources (DNR) acquired a tract of land in the Lower Wolf River Bottomlands Natural Resource Area (formerly called the Herb Behnke Unit). The land is contiguous with other protected lands owned by the Wisconsin DNR and provides important bottomland wetland habitat. As a former hunting club, the land was managed for waterfowl and deer and includes an extensive dike system. Additionally, the ditches and floodplains provide important walleye (*Sander vitreus*) spawning habitat.

Benefits

Wildlife and native habitat benefit from the continued preservation of this land as a natural area. Past management efforts have focused on providing habitat for waterfowl, deer, and walleye. In addition to these species, a variety of native species benefit from the protection of contiguous habitat in the Lower Wolf River Bottomlands Natural Resource Area.

Spatial Extent of Project

The acquired property is 974 acres and includes approximately 1.5 miles of Wolf River frontage. Natural resource damage assessment (NRDA) settlement funds were credited with 100% of the preserved acreage.

Status and Funding

NRDA settlement funding was awarded in 2006 and the land acquisition was completed in August 2007. The project received $2,800,000 in NRDA settlement funding, which accounts for the full project budget.

Project Accomplishments

This project successfully protects an important area for wildlife and other natural resources, including water recharge areas and walleye spawning habitat. Because the land has been managed for hunting, it already provides suitable wildlife habitat and will require little additional restoration. The project also successfully increases the total amount of protected contiguous habitat in the Lower Wolf River Bottomlands Natural Resource Area.

Lower Wolf River Bottomlands Natural Resource Area *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Upper Fox River Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
202 acres of land purchased as part of the Uihlein Waterfowl Production Area

Benefits
Waterfowl and associated species and habitats

Funding
$500,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $578,101

Timing
Land acquisitions completed in 2007

Land ownership
U.S. Fish and Wildlife Service (managed by the Leopold Wetland Management District)

Wetlands on the Uihlein Waterfowl Production Area *(Photo by U.S. Fish and Wildlife Service)*

Goal

To preserve and protect waterfowl and associated species and habitats within the Uihlein Waterfowl Production Area (WPA).

Project Description

The WPA provides important habitat for waterfowl breeding, nesting, and migration stopover, and for wetland and grassland birds, reptiles, amphibians, and mammals as part of the National Wildlife Refuge System. Uihlein WPA managers identified several parcels of land that would increase habitat for wildlife. This project involved the acquisition of two key parcels of land, including one parcel adjacent to Rush Lake, which discharges to Waukau Creek, a tributary to the Fox River.

Benefits

Waterfowl and other birds are the primary beneficiaries of this preservation project. Birds known to inhabit the Uihlein WPA include waterfowl such as mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), and wood duck (*Aix sponsa*); Forster's tern (*Sterna forsteri*), common tern (*Sterna hirundo*), and black tern (*Chlidonias niger*); and great egret (*Ardea alba*). The public also gains opportunities for hunting, fishing, wildlife observation, photography, environmental education, and interpretation activities.

Spatial Extent of Project

The first protected parcel was 90 acres and the second protected parcel was 112 acres. Both parcels were within the

designated boundaries of the Uihlein WPA. Natural resource damage assessment (NRDA) settlement funds were credited with the acquisition of 175 acres (86% of the total); other funds were credited with the acquisition of 27 acres.

Status and Funding

NRDA settlement funding was awarded in 2005 and the land acquisitions were completed in 2007. The project received $500,000 in NRDA settlement funding and attracted matching funds and/or in-kind services for a total budget of $578,101.

Project Accomplishments

This project increased the size and connectivity of an existing waterfowl protection area, benefiting the birds and other species that use this area as migratory and breeding habitat.

Wood ducks *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service, Leopold Wetland Management District, Portage, WI (608) 742-7100
http://midwest.fws.gov/leopold

Little Lake Butte des Morts West Shore Preserves Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Protection of habitat along Little Lake Butte des Morts

Benefits
Protection of some of the last remaining parcels of cattail marsh, forested wetlands, and submerged aquatic habitat along Little Lake Butte des Morts

Funding
$1,686,275 in natural resource damage assessment settlement funding, plus matching funds and/or in-kind services for a total budget of $2,002,875

Timing
Land acquisitions completed in 2003, 2006, and 2009

Land ownership
Town of Menasha, City of Neenah, and the Northeast Wisconsin Land Trust

Stroebe marsh *(Photo by U.S. Fish and Wildlife Service)*

Goal

To preserve and protect fish spawning and wildlife habitats from development pressure and habitat loss along the western shore of Little Lake Butte des Morts.

Project Description

Historically, Little Lake Butte des Morts supported extensive cattail (*Typha* spp.) marshes and floating marsh mats that served as important fish spawning and rearing habitat and provided habitat for birds and other wildlife. Today, much of that habitat has been destroyed by changes in the hydrologic conditions of the system (i.e., damming), boat traffic, and urban development. This project involved the acquisition of land along the western shore of Little Lake Butte des Morts, which lies at the outlet of Lake Winnebago and drains to the Lower Fox River, and land along the Fox River waterway. The acquired parcels protect a variety of habitats, including marshes, floodplains, forested wetlands, and submerged aquatic habitat, which benefit a variety of fish and wildlife species. The acquired land was transferred to the Town of Menasha, the City of Neenah, and the Northeast Wisconsin Land Trust with deed restrictions and conservation easements held by the Wisconsin Department of Natural Resources to ensure the permanent protection of natural resources.

Benefits

Land protection will preserve ecosystem health, biodiversity, and

habitat for wildlife in and along Little Lake Butte des Morts, which is part of the Lower Fox River. The lake contains important habitat for spawning northern pike (*Esox lucius*), black crappie (*Pomoxis nigromaculatus*), and other native fish species. The vegetation communities protected include cattail-open water wetlands, cattail marsh, forested land, and submerged aquatic vegetation. These communities produce food and provide cover for many aquatic birds, such as great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*), and wood duck (*Aix sponsa*); amphibians; and wetland mammals. As part of this project, invasive vegetation species such as buckthorn (*Rhamnus*) and purple loosestrife (*Lythrum salicaria*) have been removed along the shoreline. The newly protected areas are open to the public for recreation.

Spatial Extent of Project

Approximately 65 acres of native habitat along the western shore of Little Lake Butte des Morts was acquired in 2003. The acquired acreage includes 2,600 feet along the lake shoreline, near Stroebe Island and the surrounding marshes. An additional 3 acres of riparian habitat was acquired in 2006. In 2009, 12.5 acres of upland/riparian/woodland/marsh land was purchased, which protected a large part of Stroebe Marsh. The total preserved area encompasses 80 acres, including 60 contiguous acres in the northern part of the lake. Natural resource damage assessment (NRDA) settlement funds were credited with the preservation of 67 acres (84% of the total); other matching funds were credited with the preservation of 13 acres.

Status and Funding

Three land acquisitions were completed in 2003, 2006, and 2009. The project received $1,686,275 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $2,002,875.

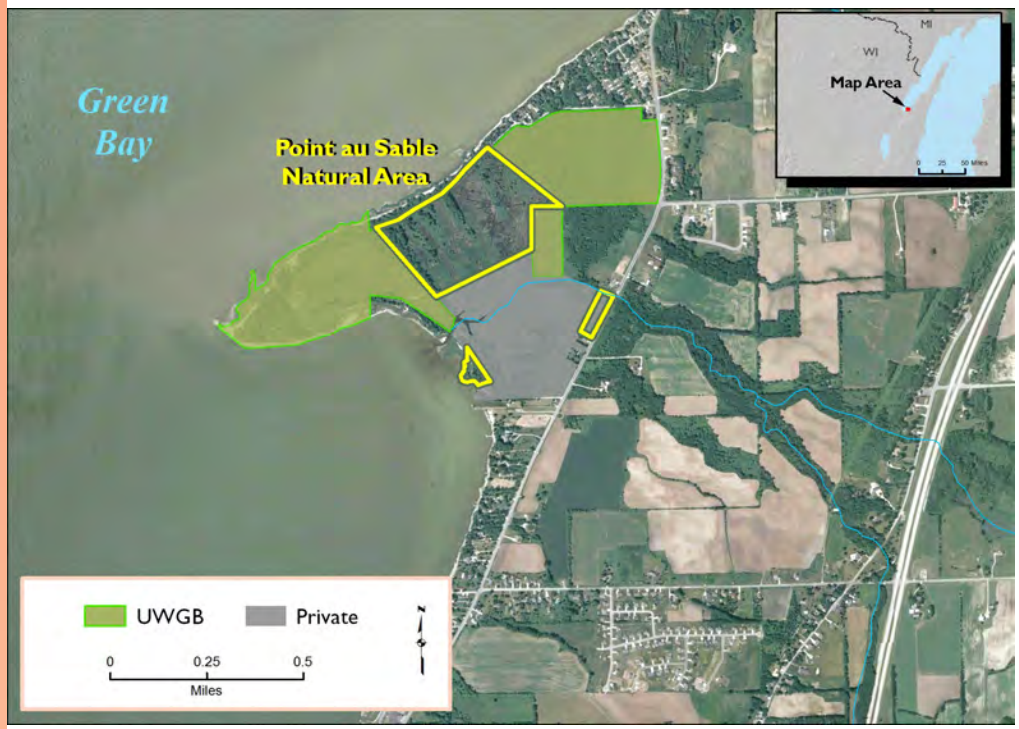
Project Accomplishments

Valuable habitat in Little Lake Butte des Morts was successfully protected, and habitat functions and services provided by these areas are now protected from the pressures of land development.

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100
Northeast Wisconsin Land Trust (920) 738-7265 newlt@newlt.org http://www.newlt.org/

Point au Sable Habitat Preservation



PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
62 acres of coastal wetlands and associated upland habitat purchased

Benefits
Native wetland habitat, resident nesting birds, migratory birds, native fish, and state threatened and endangered species

Funding
$155,000 in natural resource damage assessment settlement funding and matching funds and/or in-kind services for a total budget of $340,787

Timing
Land acquisition completed in 2011

Land ownership
University of Wisconsin-Green Bay

Goal

To acquire and preserve wetland habitat within the University of Wisconsin-Green Bay's (UWGB's) Point au Sable Natural Area.

Project Description

UWGB owns and operates the Point au Sable Natural Area, which contains one of the only large wetlands areas on the eastern shore of Green Bay. It has a unique complex of Great Lakes coastal wetlands, including rare estuarine wetlands that are influenced by water levels in Green Bay and Lake Michigan. The Natural Area provides habitat for a wide range of wildlife, including migrating waterfowl and nesting bald eagle, as well as breeding habitat for native fish. The university manages the Natural Area, and includes volunteer work and research at the reserve as part of their academic program within the Cofrin Center for Biodiversity. Prior to this project, the two primary land tracts owned by the university were separated by a privately owned parcel, which restricted land access and management opportunities. Through this project, the university acquired and incorporated one large tract and two smaller tracts of land into the nature reserve, increasing the number of protected acres and improving opportunities for restoration, land management, and research.

Phragmites (*Phragmites australis*), also known as giant reed grass, has invaded the Natural Area, and UWGB plans to remove the invasive species and implement a systematic monitoring program to track it. The university also plans to initiate restoration projects to improve existing habitat. UWGB has been in contact with neighboring landowners, who are supportive of

long-term management plans for the Natural Area. In addition, students conduct monitoring and research projects in the Natural Area as part of the UWGB Conservation Biology course.

Benefits

This land acquisition benefits unique wetland habitat and increases the amount of land protected as part of the Point au Sable Nature Preserve. The newly acquired land includes an open wetland meadow with patches of lowland shrubs and woodlands. Wequiock Creek runs through the reserve to Lake Michigan; a side channel from the creek runs onto the new property during wet periods. Native plant species found in the new parcels include speckled alder (*Alnus incana*), dogwood (*Cornus* sp.), box elder (*Acer negundo*), black ash (*Fraxinus nigra*), and cottonwood (*Populous deltoids*). The reserve provides habitat for more than 200 bird species, including species that breed on the reserve, such as the bald eagle (*Haliaeetus leucocephalus*), which appear to have nested successfully in 2012 for the first time in decades. Other species that benefit from habitat at the site include peregrine falcon (*Falco peregrinus*), Caspian tern (*Hydroprogne caspia*), Forster's tern (*Sterna forsteri*), black-crowned night heron (*Nycticorax nycticorax*), American white pelican (*Pelecanus erythrorrhynchos*), and red-headed woodpecker (*Melanerpes erythrocephalus*). Other bird species, such as waterfowl, gulls, terns, shorebirds, and passerines, also pass through the Point au Sable Natural Area. Wequiock Creek provides breeding habitat for native fish, such as northern pike (*Esox lucius*), bass (*Micropterus* sp.), and perch (*Perca flavescens*).

Acquisition of the property, which provides connections between existing properties owned by UWGB, has already provided opportunities for management and restoration, including a prescribed burn to control Phragmites. Additional student research projects are expected to improve habitat protection and management.

Spatial Extent of Project

The acquired property is 62 acres and includes coastal wetland, woodland, and shoreline habitats. Natural resource damage assessment (NRDA) settlement funds were credited with the acquisition of 45% of the preserved acres (28 acres); leveraged funds were credited with preserving the remaining 34 acres.

Status and Funding

The project was completed in 2011 and planning is underway for future restoration work at the site. It received $155,000 in NRDA settlement funding and attracted matching funds and/or in-kind services for a total budget of $340,787.

Project Accomplishments

This project successfully preserved important habitat within the boundaries of an existing natural area and increased opportunities for land management throughout it. Preservation of this habitat as part of the Point au Sable Reserve ensures that valuable habitat for a wide range of wildlife species will be protected and enhanced. This land purchase also provides increased opportunities for research, restoration, and land management through UWGB.

Aerial view of the Point au Sable Natural Area
(Photo by University of Wisconsin-Green Bay)

Contact Information

Cofrin Center for Biodiversity University of Wisconsin-Green Bay (920) 465-2272

Baird Creek Watershed Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Acquisition of 52 acres in the headwater wetlands of Baird Creek

Benefits
Protection of wetland habitat, water quantity, and water quality in Baird Creek

Funding
$400,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $575,450

Timing
Acquisitions were completed in 2007 and 2011

Land ownership
Baird Creek Preservation Foundation

Black-crowned night heron and mallard hen *(Photo by U.S. Fish and Wildlife Service)*

Goal

To preserve and protect riparian and wetland habitats and maintain the water quality and hydrologic stability of Baird Creek.

Project Description

Numerous fish and wildlife species depend on the streams and wetlands within the 16,000-acre Baird Creek watershed in the northeast corner of Brown County. Baird Creek is an eastern tributary to Green Bay through the East River and Fox River. Although the headwaters of Baird Creek are primarily agricultural, they contain a high proportion of the wetlands remaining in Brown County and are threatened by expanding residential development. Water quantity and quality in Baird Creek depend on the protection of the headwater wetlands. The Townships of Eaton and Humboldt have a comprehensive headwater protection plan with a goal of preserving 1,200 acres of wetlands, or about 10% of the total watershed, to protect water quality and quantity in Baird Creek and preserve native wetland habitat. As of June 30, 2012, this project involved the acquisition of 52 acres of critical headwater wetland habitat in two separate parcels. This project is ongoing and the Baird Creek Preservation Foundation plans to acquire additional parcels with valuable habitats in the headwater wetlands of Baird Creek as appropriate land and willing sellers are identified.

Benefits

Protection of headwater wetlands benefits sedge meadow (*Carex*

spp.) and cattail marsh (*Typha* spp.) habitats, along with a variety of birds and wildlife. More than 50 bird species have been noted in the area, including songbirds, migratory waterfowl, and shorebirds. Protecting key wetlands in the headwaters of Baird Creek, which store and release water slowly in the spring and summer, reduces threats to the long-term health of Baird Creek. Within the City of Green Bay, 330 acres along the lower Baird Creek stream corridor are protected parkland.

Spatial Extent of Project

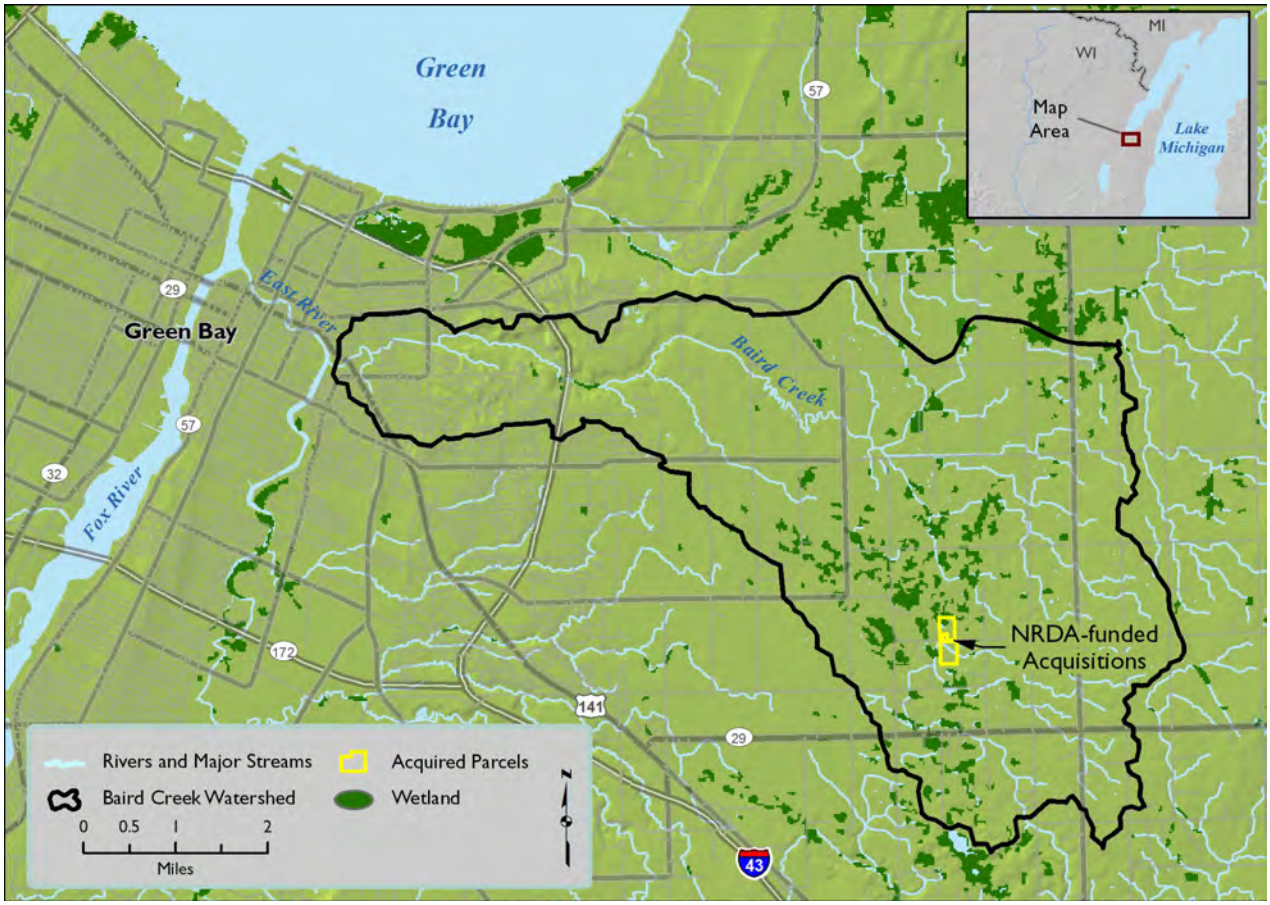
A total of 52 acres of habitat have been purchased. Additional land acquisitions are anticipated. Natural resource damage assessment (NRDA) settlement funds were credited with the acquisition of 26 acres (50%); other funds were credited with protecting the remaining 26 acres.

Status and Funding

The 24-acre parcel was purchased in spring 2007 and the 28-acre parcel was purchased in 2011. The project received $400,000 in NRDA settlement funds plus matching funds and/or in-kind services for a total budget of $575,450. As of June 30, 2012, $176,000 of NRDA settlement funding and $175,450 of matching funds were spent on the two acquisitions.

Project Accomplishments

Acquisition of wetlands protects key headwater habitat threatened by expanding residential development near the City of Green Bay. Efforts are ongoing to identify willing sellers of additional headwater wetlands that are at risk. These wetlands are critical for regulating spring runoff and mitigating destructive downstream effects on Baird Creek.



Contact Information

Baird Creek Preservation Foundation http://www.bairdcreek.org/

Establishment of the Gordon Nauman Conservation Area

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Acquisition of 29 acres of natural habitat

Benefits
Preservation of upland and wetland habitats in the Duck Creek estuary

Funding
$487,525 in natural resource damage assessment settlement funding for preservation

Timing
Land acquisition completed in 2006, further restoration work was completed in 2007

Land ownership
Village of Howard, Wisconsin

Wildlife habitat in Gordon Nauman Conservation Area *(Photo by M. Pigeon, Village of Howard)*

Goal

To restore and preserve natural bay frontage and enhance environmental quality along the bay.

Project Description

Two large parcels of land were acquired along Wietor Drive in the Village of Howard, near the existing fishing and boardwalk park known as Wietor Wharf. The newly acquired properties were dedicated as a nature park that is now called the Gordon Nauman Conservation Area. The park contains significant portions of woodland, prairie, shoreline, wetland, and upland habitats, as well as several hundred feet of riverfront access along Duck Creek. New park facilities were developed at the site (see project summary 5.8). The park was further enhanced by planting trees and restoring native prairie habitat.

Benefits

The preservation of natural habitat along Duck Creek and near Green Bay provides improved habitat integrity for wildlife, maintains habitat diversity and natural hydrology in the area, and helps to improve water quality in Duck Creek and Green Bay.

Spatial Extent of Project

The new nature park and preserve is 29 acres and includes a ¼-mile woodland trail with access to Duck Creek and an adjacent park at Wietor Wharf. Natural resource damage assessment (NRDA) settlement funds were credited with 100% of the preserved acreage.

Status and Funding

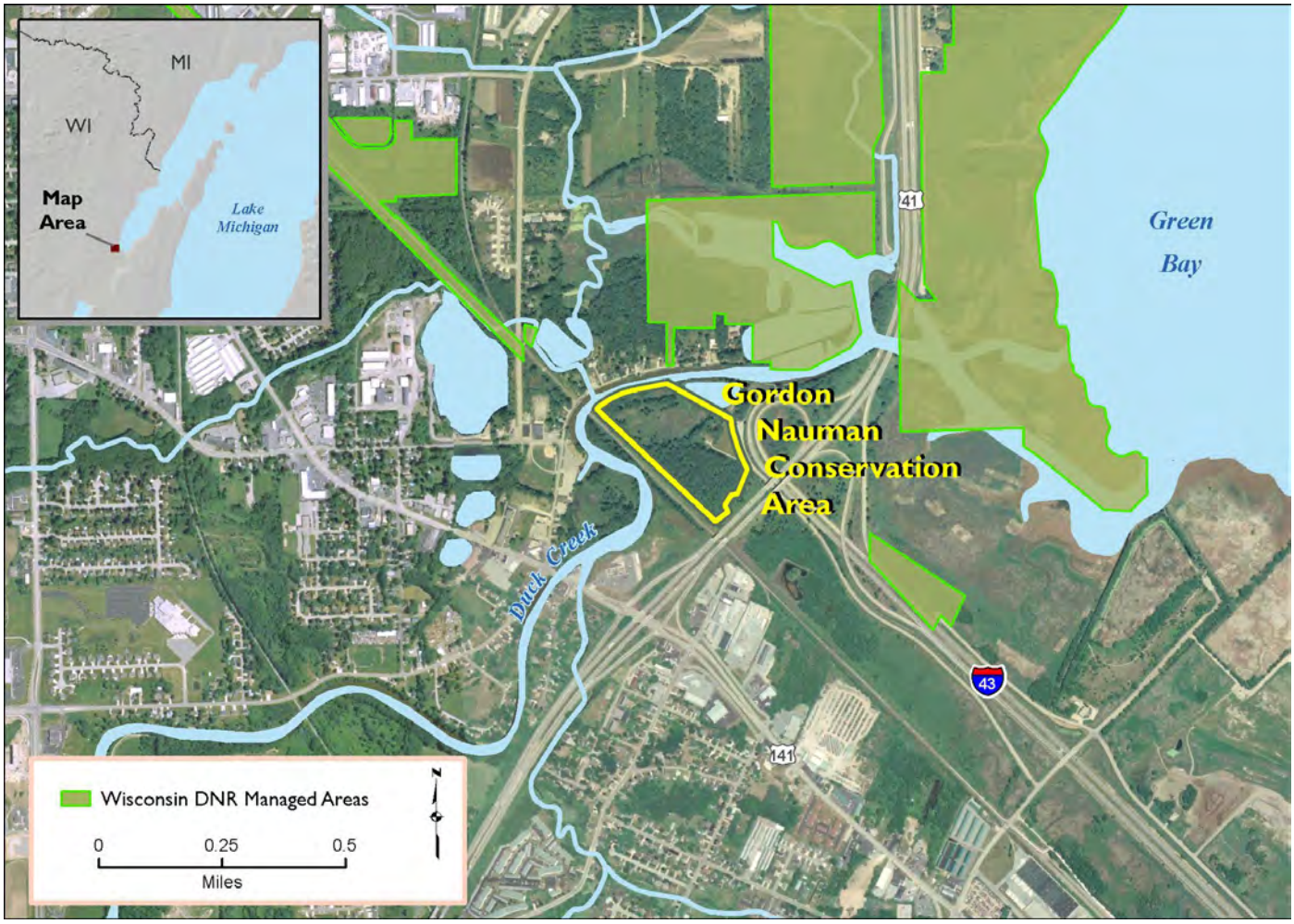
NRDA settlement funds were awarded in 2005. The land acquisition was completed in 2006 and additional

restoration work was completed in 2007. The project used $487,525 in NRDA settlement funding for land acquisition and restoration of natural habitat, which accounted for the full project budget for these activities. An additional $10,000 in NRDA settlement funding was used to develop the park facilities (see project summary 5.8).

Project Accomplishments

This project successfully acquired natural habitat adjacent to existing natural areas in the Village of Howard. The acquisition provides habitat for fish and wildlife species, as well as ecosystem protection and public access for outdoor recreational activities.

Gordon Nauman Conservation Area and park
(Photo by U.S. Fish and Wildlife Service)



Contact Information

Village of Howard Parks Department (920) 434-4640

Mink River, North Bay, Bayshore Blufflands Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Preservation of 460 acres of habitat, designated as a Wisconsin State Natural Area

Benefits
Protection of diverse natural habitats on the Door Peninsula

Funding
$1,792,551 in natural resource damage assessment settlement funding, plus matching funds and/or in-kind services for a total budget of $2,816,058

Timing
Acquisitions completed in 2006, restoration and management work is ongoing

Land ownership
The Nature Conservancy and Door County Land Trust

Oak Road property *(Photo by The Nature Conservancy)*

Goal

To preserve land important for maintaining the natural ecology and hydrology of Door County, Wisconsin through land acquisition, protection, and restoration.

Project Description

Intact habitat and open space areas in Door County are threatened by increasing development. The Nature Conservancy and the Door County Land Trust are two entities working together in the Door Peninsula to preserve habitat. For this project, the two groups identified key habitat areas in Door County that needed protection. This project involved the preservation of important wetland and associated upland habitats, including some agricultural land with the potential to be restored to native habitat.

For example, The Nature Conservancy acquired a 12-acre parcel and a 69-acre parcel as part of their Mink River Estuary preserve, which protects a critical migration site for waterfowl and other water birds. This preserve is open to the public for hiking, canoeing, birdwatching, and cross-country skiing. The Nature Conservancy also acquired a 40-acre parcel as part of their North Bay-Mud Lake Preserve, which protects high-quality wetlands and streams important for spawning fish such as native sucker and trout, as well as northern pike (*Esox lucius*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), and Chinook salmon (*Oncorhynchus tshawytscha*). Also as part of this project, the Door County Land Trust acquired a 76-acre parcel and a 155-acre parcel as part of their Bay

Shore Blufflands project area. These parcels help protect wetlands that provide outstanding waterfowl breeding areas as well as the quality of surface water runoff into Green Bay. Passive recreation is allowed on these parcels; access for hunting is governed by the policies of the hunting access program of the Door County Land Trust.

Benefits

Areas of natural habitat, including vernal pools, wetland basins, lowland forest, and upland mixed conifer hardwood forest, were preserved, along with the associated wildlife species, including waterfowl, amphibians, migratory birds, and mammals, and insects. Significant portions of the acquired lands are intact natural ecosystems with little disturbance, providing important habitat for fish and wildlife species. The acquired lands were dedicated as a Wisconsin State Natural Area (SNA) because they meet the SNA criteria of possessing "outstanding examples of Wisconsin's native landscape of natural communities." Acquired land previously used for agriculture will be added to the Wisconsin SNAs after they are restored to native habitat. As a nature preserve managed by The Nature Conservancy, recreational activities that are consistent with management goals are allowed.

Spatial Extent of Project

A total of 460 acres were preserved, including 177 acres of wetland habitat. Natural resource damage assessment (NRDA) settlement funds were credited with the preservation of 293 acres (64% of the total); other funds were credited with the preservation of the remaining 167 acres.

Status and Funding

The land acquisitions were completed in 2006; restoration and management activities are ongoing. The project received $1,792,551 in NRDA settlement funding and attracted matching funds and/or in-kind services for a total budget of $2,816,058.

Project Accomplishments

This project successfully acquired land important for maintaining habitat connectivity and sustaining healthy ecosystems in Door County. It addresses the need for protecting lands in Door County that are threatened by development.

Mink River *(Photo by Richard Carter, The Nature Conservancy)*

Contact Information

The Nature Conservancy Door Peninsula Office (920) 743-8695

http://www.nature.org/wherewework/northamerica/states/wisconsin/preserves/art5034.html

Door County Land Trust (920) 746-1359 info@doorcountylandtrust.org www.doorcountylandtrust.org/

Little Lake Wildlife Habitat Area Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Preservation of 27 acres of shoreline, wetlands, lowland cedar, and surrounding upland forest habitat, with plans for preservation of more land when available

Benefits
Improved habitat; increased populations of amphibians, waterfowl, fish, and native plants; and Native American cultural preservation

Funding
$361,190 in natural resource damage assessment settlement funds plus matching funds and/or in-kind services for a total budget of $1,441,435

Timing
Land purchases completed in December 2006 and March 2007

Land ownership
Door County Land Trust

Little Lake Wildlife Habitat Area *(Photo by Julie Schartner, Door County Land Trust)*

Goal

To protect pristine inland lake shoreline, wetlands, lowland cedar forest, and surrounding upland forest habitat on Washington Island in Door County from development.

Project Description

Residential development pressure is increasing in Door County, threatening the area's ecological diversity and populations of rare species. The Door County Land Trust purchased 27 acres along an inland lake (Little Lake), which included Green Bay shoreline on Washington Island in Door County, to protect important fish and wildlife habitats. Habitats on the acquired land include wetlands, lowland cedar forest, and adjacent upland forests. After the land acquisition was completed, the area was designated a Wisconsin State Natural Area (SNA) because it meets the SNA criteria of possessing "outstanding examples of Wisconsin's native landscape of natural communities."

Benefits

Little Lake and Green Bay shore frontage, spring-fed fen wetland, and lowland cedar forest habitats are a major breeding site for amphibians and waterfowl. The federally endangered Hine's emerald dragonfly (*Somatochlora hineana*) and the federally threatened dwarf lake iris (*Iris lacustris*), as well as numerous state rare ferns, wetland, and aquatic plant species, are found in the project area. Water quality and the aquatic habitat of Little Lake that supports perch (*Perca flavescens*), rock bass (*Ambloplites rupestries*), and smallmouth bass (*Micropterus dolomieu*) will also be protected. The Natural Area is open to the public

for passive recreational use and enjoyment. The land acquisition also helps to preserve a Native American cultural site. A museum on Little Lake with Native American artifacts and natural history information is open to the public.

Spatial Extent of Project

The purchase protects 27 acres of pristine wetland habitat. This area includes 4,900 feet of undeveloped Little Lake and Green Bay shoreline, groundwater springs that feed Little Lake, a 6-acre spring-fed fen wetland, and a 21-acre lowland cedar forest. Natural resource damage assessment (NRDA) settlement funds were credited with the acquisition of 7 acres (25% of the total); other funds were credited with the acquisition of 20 acres.

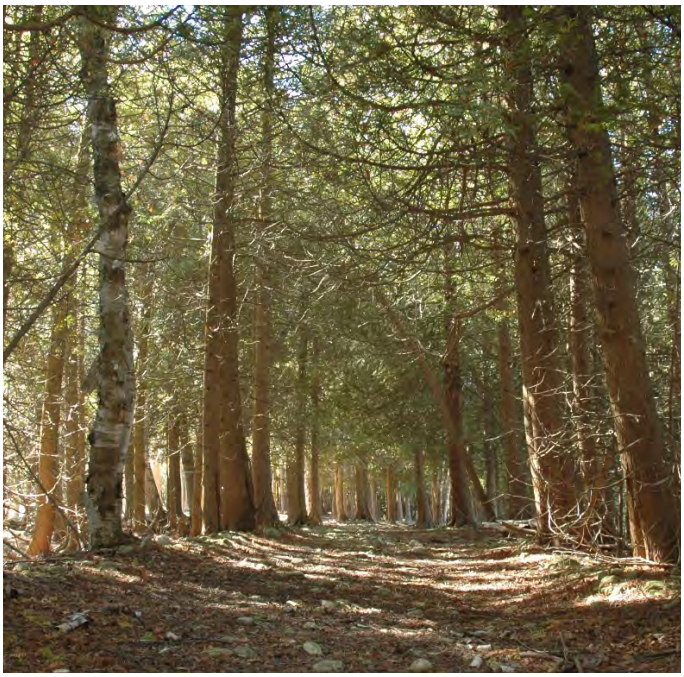
Status and Funding

NRDA settlement funding was awarded in 2005 and the land purchases were completed in March 2007. The project received $361,190 in NRDA settlement funds and attracted additional matching funds and/or in-kind services for a total budget of $1,441,435.

Project Accomplishments

This project successfully protected important native habitat for endangered plant and insect species and native wildlife from development in an ecologically important area. An adjacent 37-acre parcel of upland forest habitat was recently protected through a conservation easement, expanding the extent of contiguous protected pristine habitat to 64 acres.

Dwarf lake iris *(Photo by Joel Trick, U.S. Fish and Wildlife Service - retired)*



Forest near Little Lake (on Eichelberger tract)
(Photo by Julie Schartner, Door County Land Trust)

Contact Information

Door County Land Trust (920) 746-1359 info@doorcountylandtrust.org www.doorcountylandtrust.org/

Detroit Island, Detroit Harbor, Bayshore Blufflands, and Little Lake Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Preservation of habitat within existing State Natural Areas in Door County, Wisconsin

Benefits
Protection of native habitat adjacent to other protected areas to enhance fisheries and wildlife habitat, and protect water quality entering Green Bay

Funding
$626,000 in natural resource damage assessment funding allocated for acquisitions plus matching funds and/or in-kind services for a total budget of $1,031,629

Timing
Acquisitions completed in 2008, 2009, 2010, and 2011; no additional acquisitions are planned

Land ownership
Door County Land Trust

Shores of Green Bay at Little Lake Preserve *(Photo by Julie Schartner, Door County Land Trust)*

Goal

To acquire and protect important habitat in Door County.

Project Description

Door County contains important natural habitat areas that are threatened by increasing development pressure. For this project, the Door County Land Trust (DCLT) focused on acquiring and preserving habitats that lie within existing State Natural Areas (SNAs) in Door County and are adjacent to or nearby other protected areas. Acquisition of these parcels helps to protect the integrity of native habitat within the SNAs as well as the quality of water entering Green Bay.

As of June 30, 2012, the DCLT has protected a 5-acre parcel in the Detroit Harbor SNA with nearly 500 feet of Green Bay/Detroit Harbor shoreline and a 1.4-acre parcel situated on Little Lake on Washington Island with over 100 feet of shoreline. At Bay Shore Blufflands SNA, the DCLT protected three parcels. One parcel is 1.4 acres and wooded, and protects a creek that discharges to Green Bay and is naturally fed by springs and wetlands from a protected bluff area (the Niagara Escarpment). The second parcel is 4.6 acres and is part of a wetlands complex at the base of the Niagara Escarpment. The third parcel is 2 acres and is contiguous with other protected land within the Lautenbach Woods Preserve. A 49-acre parcel in the Bay Shore Blufflands SNA protects woodlands, wetlands, and springs that ultimately drain into Green Bay. Two parcels

that total 10 acres were protected on Washington Island; they protect a total of 600 feet of Green Bay and Detroit Harbor shoreline.

Benefits

This project benefits native habitat, fisheries, wildlife, and the quality of water entering Green Bay. The acquisitions are contiguous (or nearly contiguous) with other protected lands and help to maintain the habitat quality of designated SNAs. The protected areas specifically protect coastal wetlands, the Green Bay shoreline, and contiguous forest cover, which are important for maintaining water quality. The Detroit Harbor SNA, which benefited from the land protected in this project, includes a variety of different wetland types and is one of the most productive spawning sites for smallmouth bass (*Micropterus dolomieu*) in northern Green Bay. It also serves as an important migratory site and breeding habitat for birds, including Caspian tern (*Hydroprogne caspia*), redhead duck (*Aythya americana*), American white pelican (*Pelecanus erythrorrhynchos*), bald eagle (*Haliaeetus leucocephalus*), and red-breasted merganser (*Mergus serrator*). The Bayshore Blufflands SNA, including the Lautenbach Woods Preserve, also benefited from the protection of this land. This SNA protects an ecologically complex site with different habitats above and below steep cliffs that form the Niagara Escarpment. Wetlands in the SNA provide important waterfowl breeding areas and help protect the quality of surface water that enters Green Bay. Passive recreation is allowed on these SNAs; access for hunting is governed by the policies of the Door County Land Trust's hunting access program.

Spatial Extent of Project

Acquisition of the parcels protects 73.4 acres of land within existing SNAs on the Door Peninsula. Natural resource damage assessment (NRDA) funds were credited with the preservation of 45.5 acres (61%); other funds were credited with the acquisition of 28.9 acres.

Status and Funding

DCLT completed these acquisitions in 2008, 2009, 2010, and 2011. The project received $626,000 in NRDA funding and has attracted additional matching funds and/or in-kind services for a total budget of $1,031,629.

Project Accomplishments

This project successfully protects ecologically important lands from future development in an area with strong development pressure. The acquired parcels increase the amount of contiguous land protected and preserved for habitat, wildlife, hydrology, and ecology in the region. The DCLT plans to complete restoration at some locations, such as removing invasive species.

Aerial view of Detroit Island *(Photo courtesy of The Nature Conservancy)*

Contact Information

Door County Land Trust (920) 746-1359 info@doorcountylandtrust.org www.doorcountylandtrust.org/

Detroit Harbor State Natural Area Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

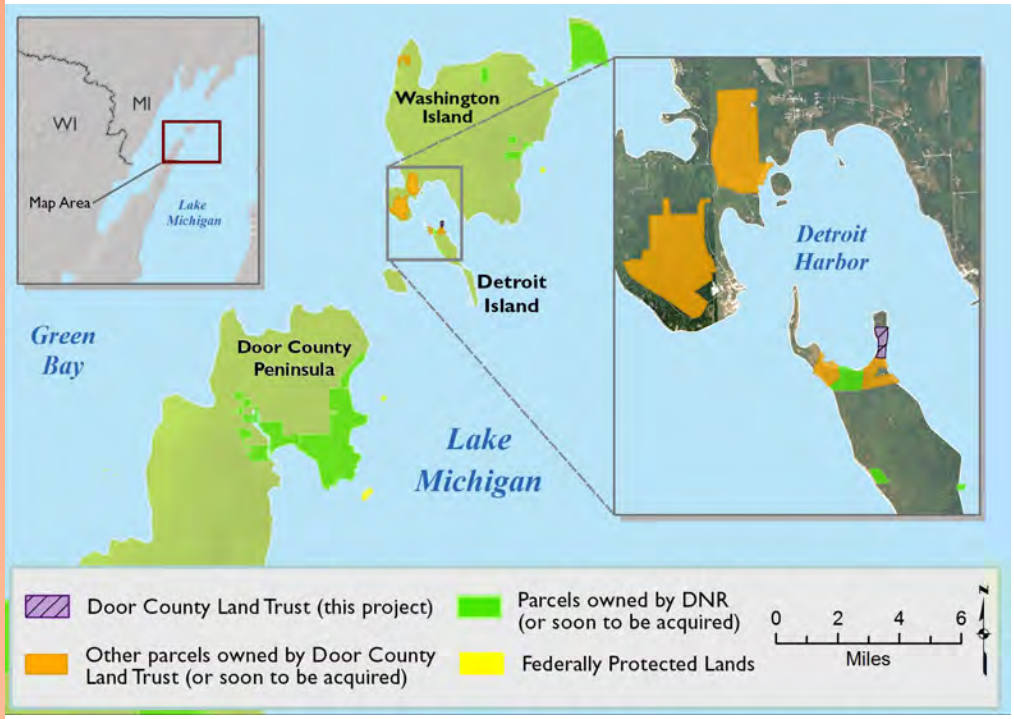
Actions
Two land parcels, totaling 5.2 acres, were acquired and protected by the Door County Land Trust

Benefits
Habitat connectivity and ecological integrity of the region, and protection of groundwater springs that support smallmouth bass nursery and spawning areas

Funding
$35,300 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $304,323

Timing
Land acquisitions completed in 2006 and 2008

Land ownership
Door County Land Trust; Wisconsin Department of Natural Resources



Goal

To acquire and protect ecologically significant land containing groundwater springs in the southern portion of the Detroit Harbor State Natural Area (SNA).

Project Description

Detroit Island is part of a long island chain, stretching from the tip of the Door Peninsula of Wisconsin to the tip of the Garden Peninsula in Michigan. The island chain includes diverse habitats such as ridges, swales, calcareous fens, and forested coastal wetlands. One of the most productive spawning and nursery sites for smallmouth bass (*Micropterus dolomieu*) is found around Detroit Island, especially within Richter Bayou, which is fed by groundwater. Additionally, many threatened, endangered, and special concern species live on the island and in the region. For this project, the Door County Land Trust acquired two valuable land parcels adjacent to the existing 117-acre Detroit Harbor SNA. Management by the Land Trust will include monitoring and eradicating invasive species and ensuring the continued protection for the wildlife and habitat in the SNA.

Benefits

These acquisitions help protect the ecological integrity of the island habitat. Development pressure for vacation homes is high on Detroit Island and protecting these lands

from development will maintain habitat connectivity. This project assists in protecting the most productive smallmouth bass nursery and fish habitat on northern Green Bay. This is a rare freshwater estuary fed by shallow groundwater springs and includes important plant and wildlife habitats. The area is in a relatively undisturbed and ecologically healthy state, and provides habitats for a diverse array of migratory birds and associated wildlife and plant species.

Spatial Extent of Project

A total of 5.2 acres of habitat on Detroit Island were acquired and protected. Natural resource damage assessment (NRDA) funds were credited with the preservation of 0.6 acres (12%); other funds were credited with the acquisition of 4.6 acres.

Status and Funding

The initial acquisition of 2.6 acres was completed in 2006 and a second 2.6-acre acquisition was completed in 2008. The project received $35,300 in NRDA funding and attracted additional matching funds and/or in-kind services for a total budget of $304,323. The second parcel was transferred to Wisconsin Department of Natural Resources in early 2009 for long-term management. The acquired lands will be managed as part of the Detroit Harbor SNA.

Project Accomplishments

This project successfully adds land to an important protected area, increasing the ecological connectivity and integrity of the Detroit Harbor SNA, where state and federal partners had already protected 117 acres. The acquisitions also ensure ongoing protection of important, high-quality habitat for a variety of species and habitats. The project is intended to protect the groundwater springs that support the smallmouth bass nursery and spawning areas of the Detroit Harbor.

Detroit Island *(Photo by Julie Schartner, Door County Land Trust)*

Contact Information

Door County Land Trust (920) 746-1359 info@doorcountylandtrust.org www.doorcountylandtrust.org/

Garden Bluffs Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Preservation

Actions
Acquisition and protection of wildlife habitat and fish spawning habitat on the west side of the Garden Peninsula

Benefits
Preserved coastal habitat and associated species, including bald eagle, osprey, important fisheries habitat, white cedar forest, and the federally threatened dwarf lake iris

Funding
$1,500,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind donations for a total budget of $3,636,892

Timing
Land acquisitions completed in 2005; management for the protection, preservation, and development of trails to facilitate visitor access is ongoing

Land ownership
The Nature Conservancy

Wetlands protected as part of the Garden Bluffs Conservation Area *(Photo by Jeff Knoop, The Nature Conservancy)*

Goal

To protect fish and wildlife habitat and biodiversity on Garden Peninsula, Big Bay de Noc.

Project Description

The area in and around Garden Bluffs in Big Bay de Noc of the Garden Peninsula is an important habitat for gravel-spawning fish such as walleye (*Sander vitreus*) and smallmouth bass (*Micropterus dolomieu*). Natural topography in the area limits spawning and nursery habitat and the pressure to develop the Garden Peninsula is strong. Using natural resource damage assessment (NRDA) settlement funds, The Nature Conservancy acquired 3 miles of shoreline and 230 acres of land along the west side of the Garden Peninsula on Big Bay de Noc in northern Green Bay. This acquisition also includes wetlands, an adjacent mature white cedar (*Chamaecyparis thyoides*) forest, an alkaline cliff community, and a buffering deciduous forest. The Nature Conservancy also acquired an adjacent 424 acres of land and an additional 3 miles of coastline using matching funds. The Garden Bluffs Conservation Area now includes 6 miles of Lake Michigan frontage and associated coastline habitat, and a significant part of the valuable and limited shoreline gravel habitat of the Garden Peninsula.

Benefits

The Garden Bluffs Conservation Area will protect fish and wildlife habitat on the Garden Peninsula. The coastal

areas of the Garden Peninsula have been identified as an outstanding habitat for cool and cold water fisheries by the Michigan Department of Natural Resources. The protected shoreline habitat provides important nursery and foraging habitat for a variety of native fish species such as walleye, smallmouth bass, and lake whitefish (*Coregonus clupeaformis*). The land acquisition also protects habitat for nesting and migratory shorebirds and songbirds [including a nesting pair of bald eagles (*Haliaeetus leucocephalus*) and nesting sites for osprey (*Pandion haliaetus*), Caspian tern (*Hydroprogne caspia*), common tern (*Sterna hirundo*), and black-crowned night heron (*Nycticorax nycticorax*)]. Plant communities and species protected include white cedar forest, coastal wetlands, alkaline cliffs with rare ferns, the federally threatened dwarf lake iris (*Iris lacustris*), and other state-listed species. The preservation of undeveloped land will protect biodiversity and habitat connectivity for a variety of important and endangered species. The preserve is open to passive recreation such as hiking, fishing, and cross-county skiing.

Spatial Extent of Project

The NRDA-funded land acquisition included 230 acres and 3 miles of coastline; the adjacent 424 acres and an additional 3 miles of coastline were purchased with matching funds. A total of 654 acres were preserved through these acquisitions.

Status and Funding

The land acquisitions were completed in 2005. Additional land management, including the implementation of protective measures and trail development activities, is ongoing. The project received $1,500,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind donations resulting in total funding of $3,636,892.

Project Accomplishments

The project successfully preserved significant coastal, wetland, and upland habitats and helped to create larger blocks of contiguous habitat through associated matching funds and/or in-kind donations. The land acquisition maintains habitat integrity for a number of threatened and rare species.

View from protected cedar forest at the Garden Bluffs Conservation Area *(Photo by Jeff Knoop, The Nature Conservancy)*

Contact Information

The Nature Conservancy Upper Peninsula Office (906) 785-7055 upmichigan@tnc.org

SECTION 2

Wetlands and Associated Uplands Habitat Restoration

The rehabilitation of wetlands and associated upland habitat was noted as a goal in the 2003 Joint Restoration Plan/Environmental Assessment (RP/EA) published by the Lower Fox River and Green Bay Trustees. The projects involved with this goal have the same objective as do the projects described in Section 1, i.e., providing benefits to fish, birds, and other wildlife that depend on wetland habitat and their associated uplands. This goal, however, focuses primarily on improving the ecological functioning of degraded habitats instead of protecting habitats from development.

In this report, techniques to rehabilitate, reestablish, or enhance wetlands and associated uplands are generally referred to as wetlands or uplands restoration. The 2000 Restoration and Compensation Determination Plan for the Lower Fox River/Green Bay Natural Resource Damage Assessment included the restoration of wetlands (and adjacent uplands where necessary) as a key component of a restoration package to compensate the public for natural resource injuries and service losses.

Within this restoration category, the Trustees focused their efforts on areas in which hydrological alterations or other habitat modifications destroyed or impaired former wetlands or their associated uplands. Restoration of uplands is included within this category because the restoration of uplands adjacent to wetlands can increase the habitat value of the wetlands by providing the habitat diversity needed by wildlife. Waterfowl, for example, typically need both wetland and upland habitats to provide adequate food, cover, and breeding areas. The Trustees also focused on three geographic locations: Green Bay coastal areas, which have been heavily impacted by development and habitat modification; floodplains, where wetland restoration can reduce flooding and improve water quality; and areas adjacent to existing valuable natural areas, where restoration can increase habitat connectivity and improve the overall ecological functioning.

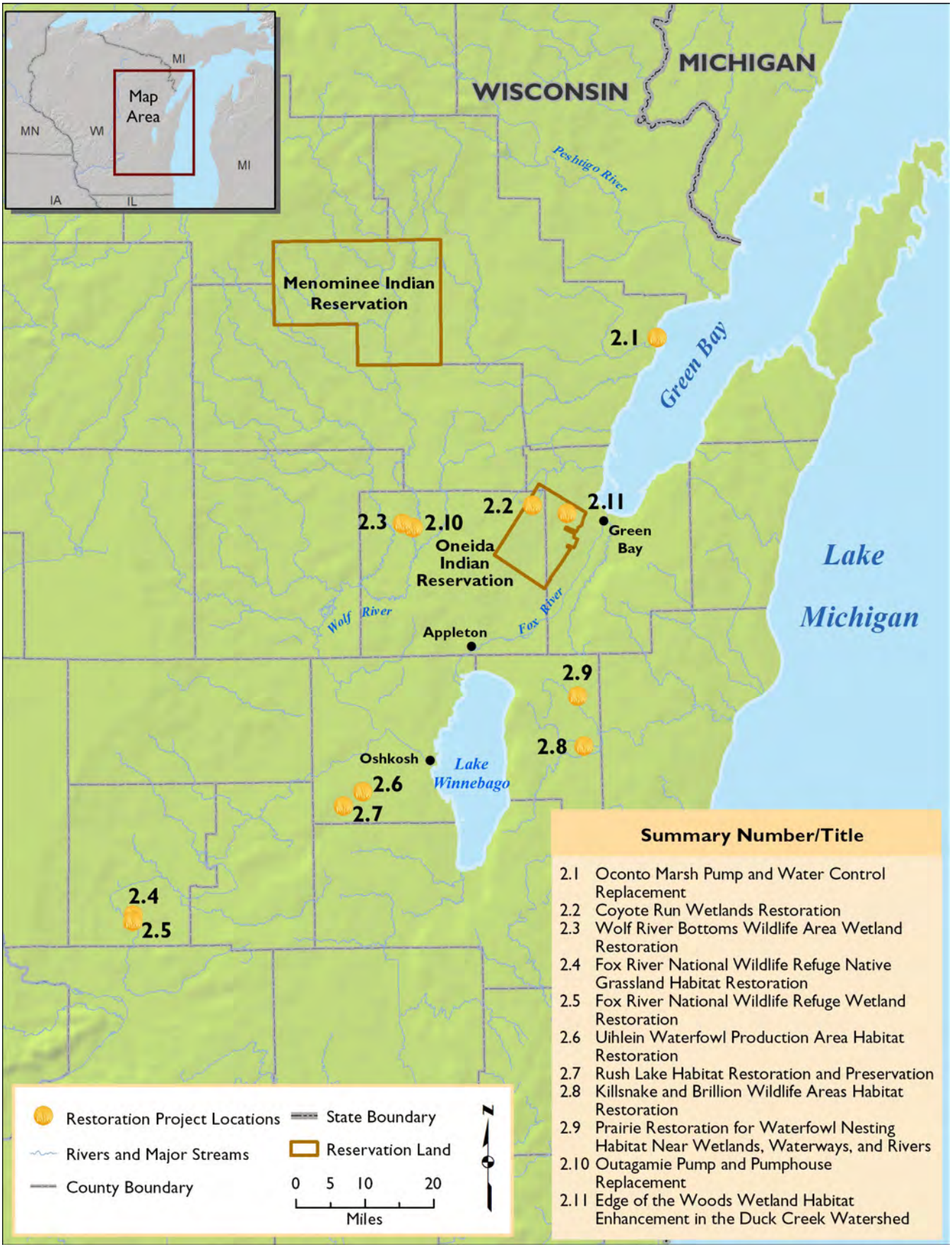
The Trustees have targeted natural resource damage assessment (NRDA) settlement funds toward multiple projects that restore the hydrologic conditions necessary to reestablish or enhance wetlands that had been lost or altered (see project summaries 2.1–2.3, 2.5–2.8, and 2.10). These projects used a variety of techniques, such as disrupting ditches or drainage tiles to allow water levels to rise, constructing dikes or levees to control water levels in newly restored wetland habitat, and repairing or rehabilitating water control structures or pumping equipment to manage water levels.

The Trustees have also funded multiple projects to improve habitat quality and diversity in wetlands and ecologically associated uplands using techniques such as removing invasive plants and revegetating with native species to increase habitat values (see project summaries 2.4, 2.9, and 2.11).

As of June 30, 2012, the Trustees had allocated $1,639,930 in NRDA settlement funding to specific wetlands and upland habitat restoration projects (see page 44, "Overview Map of Wetlands and Associated Uplands Habitat Restoration Projects"). Of this allocated funding, $1,608,786 has been spent for habitat restoration projects, resulting in the restoration of 3,943 acres credited to NRDA settlement funds. An additional $1,311 in unspent funds is expected to result in additional restoration when it is expended; the remaining $29,833 in unspent funds will be used to complete restoration and monitoring on acres that have already been credited. The Trustees have exceeded the initial goal of restoring 3,300 acres set forth by the Trustees in the RP/EA. Project partners were able to leverage $1,446,301 in additional funding (including leveraged dollars and in-kind services) for selected projects, resulting in the restoration of an additional 3,255 acres. The NRDA-credited portion of these accomplishments is based on the percentage of total project funding provided by NRDA funds.

Flourishing prairie at Killsnake Wildlife Area *(Photo by Betsy Galbraith, U.S. Fish and Wildlife Service)*

Overview Map of Wetlands and Associated Uplands Habitat Restoration Projects



Summary of Wetlands and Associated Uplands Habitat Restoration Projects

Summary Number	Project Title	Restoration Achieved with NRDA Settlement Funds (acres)[a]	NRDA Settlement Funds Allocated[a]	Additional Restoration with Leveraged Funds (acres)[b]	Leveraged Funds[a]	Restoration Project Number(s)[c]
2.1	Oconto Marsh Pump and Water Control Replacement	85.27	$25,000	134.73	$39,500	62
2.2	Coyote Run Wetlands Restoration	152.26	$240,000	7.74	$12,208	116
2.3	Wolf River Bottoms Wildlife Area Wetland Restoration	1,479.03	$200,000	520.97	$70,447	61
2.4	Fox River National Wildlife Refuge Native Grassland Habitat Restoration	150.00	$150,000	50.00	$50,000	3
2.5	Fox River National Wildlife Refuge Wetland Restoration	108.15	$151,291	91.85	$128,500	104
2.6	Uihlein Waterfowl Production Area Habitat Restoration	241.13	$264,139	441.87	$484,038	50, 167
2.7	Rush Lake Habitat Restoration and Preservation	1,329.59	$420,000	1,743.41	$550,722	49
2.8	Killsnake and Brillion Wildlife Areas Habitat Restoration	13.53	$14,500	11.71	$12,542	67
2.9	Prairie Restoration for Waterfowl Nesting Habitat Near Wetlands, Waterways, and Rivers	164.57	$100,000	112.64	$67,552	69
2.10	Outagamie Pump and Pumphouse Replacement	191.19	$40,000	138.81	$29,042	54, 55
2.11	Edge of the Woods Wetland Habitat Enhancement in the Duck Creek Watershed	28.57	$35,000	1.43	$1,750	115
	Total	**3,943.29**	**$1,639,930**	**3,255.16**	**$1,446,301**	

Table notes:

[a] Project acreages and funding are current as of June 30, 2012.

[b] Additional acres were funded with leveraged funding (matching dollars and in-kind services).

[c] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

Oconto Marsh Pump and Water Control Replacement

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
A new pump and pumphouse were built, the control structure was replaced, and the dike was repaired

Benefits
Migratory and nesting waterfowl

Funding
$25,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $64,500

Timing
Completed in 2005

Land ownership
Wisconsin Department of Natural Resources

The new and improved Oconto Marsh pump output *(Photo by Tim Mella, Wisconsin Department of Natural Resources)*

Goal

To improve wildlife habitat at the Oconto Marsh waterfowl impoundment by replacing the existing pump and water control structure.

Project Description

Oconto Marsh, an important waterfowl refuge in the Green Bay West Shore Wildlife Area, is a productive waterfowl area and an important migratory bird stopover location. This marsh habitat was expanded in the late 1960s by the installation of a pump and water control structure to provide additional freshwater from Green Bay. This system deteriorated over time, however, ultimately failing in the 1990s. The marsh has thus become dependent primarily on rainfall. As a result, the area has been underused and large portions of the marsh remain dry in the summer. To manage the wetlands effectively, a new cement pump house was built, a pump was installed, the control structure was replaced, and the dike was repaired and improved to allow easier access to the pump.

Benefits

This freshwater marsh is one of the most productive waterfowl areas on the west shore. Some of the species that will benefit from the restoration include bullfrog (*Rana catesbeiana*), Forster's tern (*Sterna forsteri*), yellow rail (*Coturnicops noveboracensis*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and black-crowned night heron (*Nycticorax nycticorax*). The restoration also benefits the recreational use of the marsh, which is a popular destination for birdwatchers.

Spatial Extent of Project

In all, 220 acres of the marshland were enhanced. Natural resource damage assessment (NRDA) settlement funds were credited with the enhancement of 85 acres (39% of the total); other funds were credited with the enhancement of the remaining 135 acres.

Status and Funding

The construction of the new cement pump house, pump installation, control structure replacement, and dike repair were completed in 2005. The project received $25,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $64,500.

Project Accomplishments

This waterfowl area had been underused because it lacked adequate water control equipment. The improvements to the pump and dike complex now allow managers to maintain stable water levels in the marsh. The repairs also increase the habitat's value to nesting and migratory birds, encourage waterfowl production, and provide habitat suitable for other wetland and marshland species.

Installation of the new high-capacity pump and pump house *(Photo by Tim Mella, Wisconsin Department of Natural Resources)*

Oconto Marsh after pump maintenance *(Photo by John Huff, Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Coyote Run Wetlands Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Restoration of wetlands degraded by agriculture, ditching, and invasive species

Benefits
Waterfowl, improved hydrology and water quality, native plant restoration, Oneida cultural uses

Funding
$240,000 in natural resource damage assessment settlement funding and attracted matching funding and/or in-kind services for a total budget of $252,208

Timing
Construction and plantings were completed by summer 2008, management and maintenance are ongoing

Land ownership
Oneida Tribe of Indians of Wisconsin

Planting native wetland species in the Coyote Wetlands *(Photo by Oneida Tribe of Indians of Wisconsin)*

Goal

To restore the degraded headwater wetlands of the South Branch of the Suamico River by improving hydrology and restoring native vegetation.

Project Description

The wetlands at the headwaters of the South Branch of the Suamico River, which are on the Oneida Reservation, were restored after having been degraded from agriculture, ditching, and invasive plants. Restoration activities included filling ditches, building berms, excavating soil, and installing a water elevation control structure. On a larger scale, ponds suitable for breeding waterfowl pairs ("pairing ponds") and nesting islands, open water habitat, and adjacent grasslands were constructed or restored to provide improved habitat for migrating and nesting waterfowl in the region. The types of habitats restored include wet prairie, sedge meadow, shallow marsh, grasslands, lowland hardwood swamp, and cedar-tamarack swamp.

Benefits

The restored wetlands provide increased native habitat for waterfowl and improve water quality in the river. Species that benefit from this project include Forster's tern (*Sterna forsteri*), rails, bitterns, egrets, and other water and marsh birds. Wild rice was observed growing in the area in 2010, and it expanded in 2011. In October 2011, 2.5 acres were seeded with wild rice. The area is open to tribal members for hunting, fishing, wildlife observation, hiking, environmental education, and cultural uses.

Spatial Extent of Project

Approximately 160 acres have been restored as of June 30, 2012. Natural resource damage assessment (NRDA) settlement funds were credited with restoration of 152 acres (95% of the total); other funds were credited with 8 acres of the restored habitat.

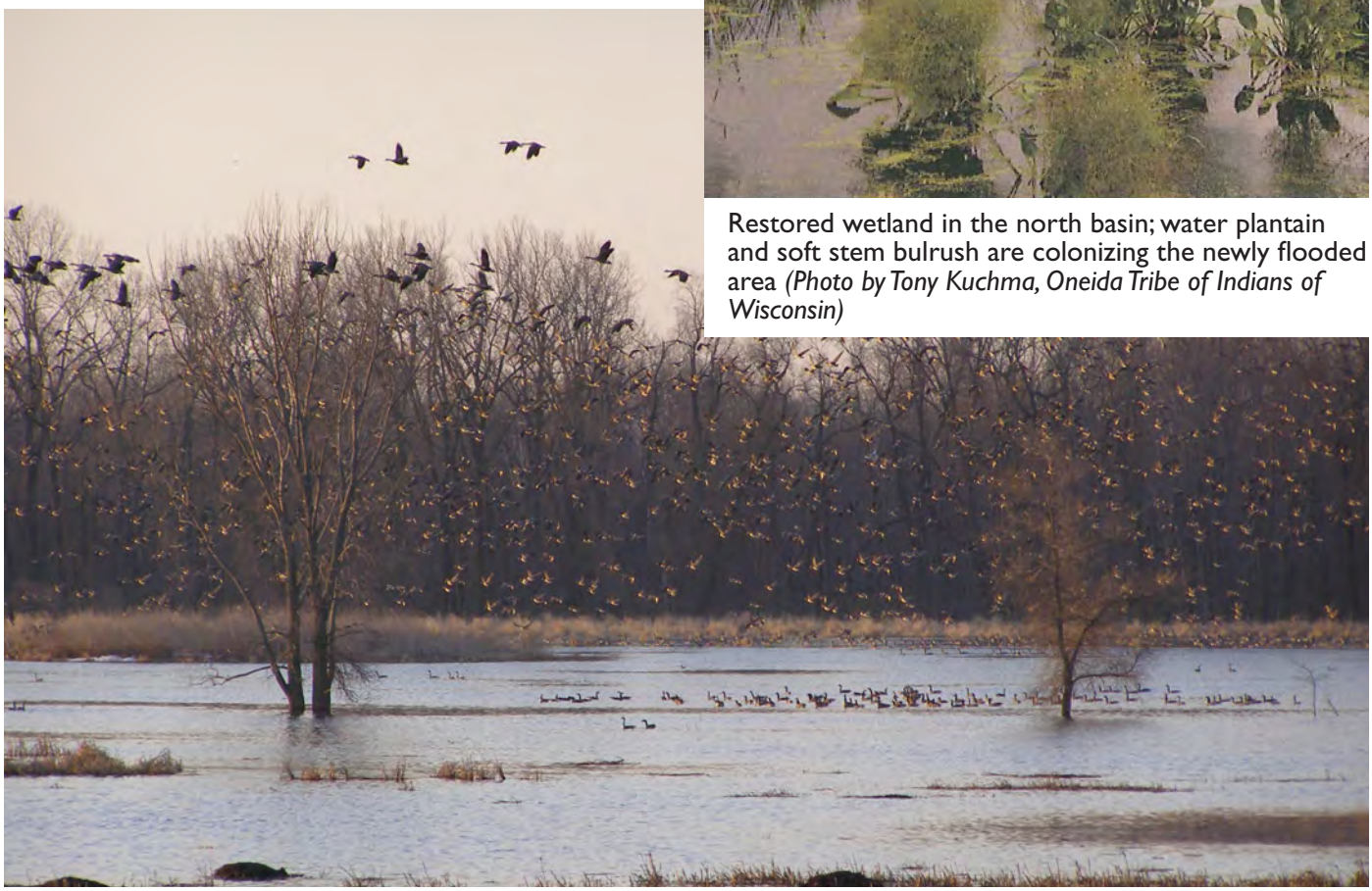
Status and Funding

Construction for the wetland restoration project began in the fall of 2006 and was completed in the summer of 2007. Seeding and planting activities were completed in the summer of 2008. Monitoring of water quality and wildlife status is ongoing. The project received $240,000 in NRDA funding and attracted matching funds and/or in-kind services for a total budget of $252,208.

Project Accomplishments

Restoration of headwater wetlands in the South Branch of the Suamico River watershed has far-reaching benefits. Improvements to habitat quality and water quality benefit native plant and wildlife species, as well as people dependent on the water supplied by this ecosystem. Water quality will be monitored downstream from the restoration site by Oneida environmental staff.

Restored wetland in the north basin; water plantain and soft stem bulrush are colonizing the newly flooded area *(Photo by Tony Kuchma, Oneida Tribe of Indians of Wisconsin)*



Wetland marsh *(Photo by Oneida environmental staff)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Wolf River Bottoms Wildlife Area Wetland Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
2,000 acres of wetlands were restored through dike improvements and vegetation management

Benefits
Nesting and migrating waterfowl, including osprey, great egrets, and tundra swans

Funding
$200,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $270,447

Timing
Upgrades were completed in October 2006 with minor adjustments carried out in 2007, water management and wetland habitat restoration are ongoing

Land ownership
Wisconsin Department of Natural Resources

Dike after removal of encroaching vegetation and renovation *(Photo by Kyle Anderson, Wisconsin Department of Natural Resources)*

Goal

To restore habitat for migratory waterfowl and threatened species by repairing dikes and water control structures in order to manage water levels in the Wolf River Bottoms Wildlife Area.

Project Description

The Wolf River Bottoms Wildlife Area includes more than 2,000 acres of wetlands that provide nesting and migratory stopover habitats for waterfowl. Decaying dikes and water control structures were compromising the ability of the Wisconsin Department of Natural Resources to manage the wetlands for wildlife. This project included removing encroaching woody vegetation to allow access to water control structures, then repairing water control structures, renovating existing dikes, and building new dikes for improved water management. The maintenance work allows managers to adjust water levels to maximize nesting success, eliminate undesirable invasive vegetation, and provide resting areas during migration.

Benefits

This restored habitat benefits many migratory species and the upgrades will improve the quality and dependability of the wetlands available to waterbirds for nesting and stopover habitats. Waterfowl such as Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), wood ducks (*Aix sponsa*), and blue-winged teal (*Anas discors*) will be encouraged to nest in the area. In addition, the ability to manipulate water levels in this wildlife area can help to control invasive species. The improved habitat

conditions and increased wildlife populations are also improving hunting opportunities for the public.

Spatial Extent of Project

Two thousand acres of wetlands were restored. Natural resource damage assessment (NRDA) settlement funds were credited with the enhancement of 1,479 acres (74% of the total); other funds were credited with the enhancement of the remaining 521 acres.

Status and Funding

Dike maintenance and construction were completed in 2006, with minor adjustments finalized in 2007. Water management and wetland habitat management activities are ongoing. This project received $200,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $270,447.

Project Accomplishments

The wetland habitat was successfully restored and will be maintained by active water management. The maintenance work on the dikes allows easier access to water control structures. The renovated flowages are working well and will continue to provide valuable habitat for migratory waterfowl. Wisconsin Department of Natural Resources staff will continue to monitor waterfowl populations.

Aerial view of the Wolf River Bottoms Wildlife Area *(Photo by Kyle Anderson, Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Fox River National Wildlife Refuge Native Grassland Habitat Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Restore 200 acres of native grassland and upland savanna habitat

Benefits
Grassland migratory birds, waterfowl, and sandhill cranes

Funding
$150,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind donations for a total budget of $200,000

Timing
Completed between 2003 and 2005

Land ownership
U.S. Fish and Wildlife Service

Prescribed burn on native prairie planting on Fox River National Wildlife Refuge *(Photo by U.S. Fish and Wildlife Service)*

Goal

To increase the availability of important Upper Fox River bird habitat on the Fox River National Wildlife Refuge (NWR) to benefit waterfowl, migratory birds, and sandhill crane (*Grus canadensis*).

Project Description

The 1,054-acre Fox River NWR comprises wetlands and associated uplands along the riparian floodplain of the Upper Fox River. The project area consists of 200 acres of grassland habitat that had been severely degraded by agriculture, fire suppression, and eradication of large, native grazing mammals [such as bison (*Bison bison*) and elk (*Cervus canadensis*)]. Restoration of native prairie and oak savanna habitats were accomplished by removing a 4.5-acre pine plantation; removing trees invading old agricultural fields; restoring native prairie habitat on old agriculture fields with a combination of prescribed burns, herbicide treatments, and seeding with native species; and restoring oak savanna habitat through thinning and prescribed burns.

Benefits

The creation of high-quality prairie and oak savanna habitats adjacent to the existing wetlands and open water areas on the site provides critical bird and wildlife habitats. Specifically, the restoration work increased nesting and migratory habitats for waterfowl, migratory birds, and sandhill cranes. As an added benefit, upland habitat restoration protects water quality in the wetlands and open water areas by filtering water through native grasses as it passes through the soil.

Spatial Extent of Project

Restoration of 110 acres of native prairie and 90 acres of oak savanna habitat. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 150 acres (75% of the total); other funds were credited with the restoration of the remaining 50 acres.

Status and Funding

Restoration activities including tree removal, prescribed burns, herbicide treatments, and seeding native species were completed in 2005. The project received $150,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind donations for a total budget of $200,000.

Project Accomplishments

This project restored degraded grassland and oak savanna to native (i.e., pre-European settlement) conditions through vegetation manipulation – tree removal, burning, pesticide application to remove nonnative grasses, and native seed planting. Native savanna/prairie habitats were restored to a region of Wisconsin where less than 1% of these habitats remain, compared to pre-settlement conditions. The area will be actively managed by Fox River NWR staff to prevent future degradation.

Seeding with native species *(Photo by U.S. Fish and Wildlife Service)*

Removal of the pine plantation *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service Fox River National Wildlife Refuge (920) 387-2658
foxriver@fws.gov http://www.fws.gov/midwest/horicon/

Fox River National Wildlife Refuge Wetland Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Ditches were filled and woody species were managed to restore natural wetland function

Benefits
Native habitat restored; fish and wildlife species increased; water quality improved

Funding
$151,291 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $279,791

Timing
Project initiated in 2005; hydrologic work has been completed; invasive plant control, planting of native species, and monitoring of hydrologic conditions are ongoing

Land ownership
U.S. Fish and Wildlife Service

Aerial view of the refuge showing the meandering Fox River and surrounding undeveloped habitat *(Photo by U.S. Fish and Wildlife Service)*

Goal

To return a former wetland area disturbed by illegal ditch digging to its natural hydrologic function.

Project Description

Nearly half of the 1,054-acre Fox River National Wildlife Refuge has been heavily impacted by ditches illegally constructed to drain the area for agriculture. The soil was never tilled, but the ditches drained productive wet prairie, sedge meadow, and shallow marsh wetland habitats, upsetting the natural flood regime and degrading important wildlife habitats. Native plant species such as sedges still dominate the area, but undesirable woody plants have invaded it as well. The restoration work focused on preventing water from draining out of the marsh. Specific activities included installing sheet piling structures in the ditches and backfilling with material from shallow scrapes excavated on the refuge. In total, 10,000 feet of ditches were eliminated. Ongoing work includes control of invasive species and reseeding disturbed areas.

Benefits

Project restoration created habitat for wetland species, including birds such as whooping crane (*Grus americana*), sedge wren (*Cistothorus platensis*), American bittern (*Botaurus lentiginosus*), northern harrier (*Circus cyaneus*), yellow rail (*Coturnicops noveboracensis*), and greater sandhill crane (*Grus canadensis*); spawning fish; amphibians; aquatic invertebrates; and native plant species. The hydrologic functions of the area were restored and the quality of water discharging to the Fox River has been improved by reducing the runoff of sediment, pesticides, and fertilizer. Water

previously directed through the ditches can now spread across the wetland as sheet flow and create a new meandering course to the river.

Spatial Extent of Project

A total of 200 acres of native wetland and grassland habitats were restored. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 108 acres (54% of the total); other funds were credited with the restoration of the remaining 92 acres.

Status and Funding

Restoration activities began in 2005. Hydrologic restoration in the project area has been completed, with additional ongoing work that includes controlling invasive species, planting native species, and monitoring hydrologic conditions. The project received $151,291 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $279,791.

Project Accomplishments

The habitat value of the refuge has been improved. Hydrologic goals were met and water flows out into the wetland rather than through the illegal ditches. Ongoing monitoring will be carried out to (1) ensure successful restoration from both a hydrological and a wildlife perspective, (2) locate and eliminate invasive species, and (3) monitor fish and wildlife populations to help refuge managers evaluate the significance of the restored hydrology.

Ditch being filled *(Photo by U.S. Fish and Wildlife Service)*

Filled ditch with emergent wetland vegetation *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service Fox River National Wildlife Refuge (920) 387-2658
foxriver@fws.gov http://www.fws.gov/midwest/horicon/

Uihlein Waterfowl Production Area Habitat Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Constructed a 44-acre impoundment and restored 639 acres of existing pools

Benefits
Restored semi-permanent marsh and wet meadow habitats for native wildlife and plant species, increased public recreation opportunities

Funding
$264,139 in natural resource damage assessment settlement funding, plus matching funds for a total budget of $748,177

Timing
New 44-acre impoundment and restoration of 318 acres completed in spring 2007, restoration of additional 321 acres completed in 2011

Land ownership
U.S. Fish and Wildlife Service

U.S. Fish and Wildlife staff installing the new water control structure *(Photo by U.S. Fish and Wildlife Service)*

Goal

To reestablish semi-permanent marsh and a wet meadow in the Uihlein Waterfowl Production Area (WPA).

Project Description

The Uihlein WPA provides habitat suitable for waterfowl breeding, nesting, and migration-related activities on approximately 2,000 acres. Semi-permanent marsh and wet meadow habitats were in poor condition, however, because of inadequate maintenance of dikes and water control systems. In some areas in the Uihlein WPA, pools had become overrun with cattail (*Typha* spp.) and other invasive species because of low water levels resulting from failing infrastructure. Restoration activities included building new impoundments, installing new water control structures in various pools on the site, and refurbishing existing dikes. These improvements allow water levels to be manipulated to maximize the quality of habitat available for wildlife in the area.

Benefits

The Uihlein WPA is one of the premier migratory bird areas of the Lake Michigan watershed and managed as part of the National Wildlife Refuge System. It offers exceptional waterfowl breeding, nesting, and migration habitat and is open to the public for a variety of outdoor recreational activities. U.S. Fish and Wildlife Service staff have documented its use by a host of waterfowl species, including mallard (*Anas platyrhynchos)*, blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), American wigeon (*Anas americana*), redhead (*Aythya*

americana), scaup (*Aythya marila*), northern shoveler (*Anas clypeata*), northern pintail (*Anas acuta*), wood duck (*Aix sponsa*), Canada goose (*Branta canadensis*), and American black duck (*Anas rubripes*). This project improves wetland habitat quality, which benefits local and migratory waterbirds, and enhances recreational opportunities, including birdwatching and hunting.

Spatial Extent of Project

A total of 683 acres have been restored to date: a new impoundment covering 44 acres was created and pools covering 639 acres were restored. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 241 acres (35% of the total); other funds were credited with the restoration of the remaining 442 acres.

Status and Funding

Construction of the new impoundment and restoration of 318 acres of pool habitat were completed in spring 2007, and restoration of 321 acres in two additional pools was completed in 2011. Monitoring at the site includes wildlife population surveys, waterfowl production surveys, and identification of species that use the restored habitat. The project received $264,139 in NRDA settlement funding and attracted additional matching funding and in-kind services for a total budget of $748,177. Ducks Unlimited was an important partner on this project.

Project Accomplishments

This project successfully restored semi-permanent marsh and wet meadow habitats in the Uihlein WPA, which included the restoration of impoundments important for breeding and migrating waterfowl, shore and wading birds, and other wetland-dependent wildlife. Public interest, support, and attention have been positive because of the proximity of the restored area to Rush Lake, a popular recreational site (see project 2.7). The project has also improved wildlife viewing and waterfowl hunting opportunities in the Uihlein WPA.

New berm created to enhance wetland management practices *(Photo by U.S. Fish and Wildlife Service)*

Waukau Creek with buffer vegetation and a water control structure *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service, Leopold Wetland Management District, Portage, WI, (608) 742-7100
http://midwest.fws.gov/leopold

Rush Lake Habitat Restoration and Preservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Rush Lake was restored with regrading, dredging, and dam repair, followed by a two-year drawdown, elimination of nonnative carp, and establishment of native vegetation and wildlife species

Benefits
Native wildlife, plant life, and aquatic habitat

Funding
$420,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $970,722 for restoration and land acquisition

Timing
Native vegetation restored at the end of 2007, more intensive studies of lake vegetation and wildlife are ongoing

Land ownership
Wisconsin Department of Natural Resources, U.S. Fish and Wildlife Service, The Nature Conservancy, Private Landowners

Rush Lake outlet – aerial view *(Photo by Timothy Lizotte, Wisconsin Department of Natural Resources)*

Goal

To restore water quality and aquatic habitat in Rush Lake.

Project Description

Rush Lake is the largest prairie pothole east of the Mississippi River. It was degraded over the last century largely because of a dam that prevented the natural fluctuations in water level that are necessary to maintain a healthy marsh community. The lack of a drought cycle led to degradation of the aquatic plant community and the subsequent degradation of the native wildlife and associated plant communities. Hardstem bulrush (*Schoenoplectus acutus*), the characteristic plant of Rush Lake, was particularly impacted. The artificial maintenance of a constant water level also led to the successful invasion of nonnative carp. To restore the lake, the outlet channel was dredged and regraded and the existing dam was replaced; it now has a lower sill and a more efficient structure. Following construction activities, a two-year water level drawdown simulating a drought was imposed in 2006–2007. The drawdown stimulated regeneration of native aquatic plant species, eliminated nonnative carp (through a combination of winter-kill and chemical application), and encouraged reestablishment of the native wildlife and plant communities. In the summer and fall of 2007, after the drawdown was complete, the water was restored to its natural level. Water levels will continue to be managed to maintain the natural balance in this restored ecosystem. In addition to the marsh restoration, the Wisconsin Department of Natural Resources acquired 73 acres of upland and wetland habitats in the Rush Lake watershed.

Benefits

Many native and some state endangered species benefit from this restoration, including a variety of amphibians (frogs, toads, and salamanders), birds (shorebirds, other water birds, and waterfowl), fur-bearing mammals, reptiles, submergent and emergent aquatic plants, and terrestrial prairie and savanna vegetation. Some species of note include snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), Blanding's turtle (*Emydoidea blandingii*), mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), least sandpiper (*Calidris minutilla*), and American widgeon (*Anas americana*). Two public boat access points on Rush Lake allow for recreational activities. Rush Lake is also an important and popular area for waterfowl hunting.

Spatial Extent of Project

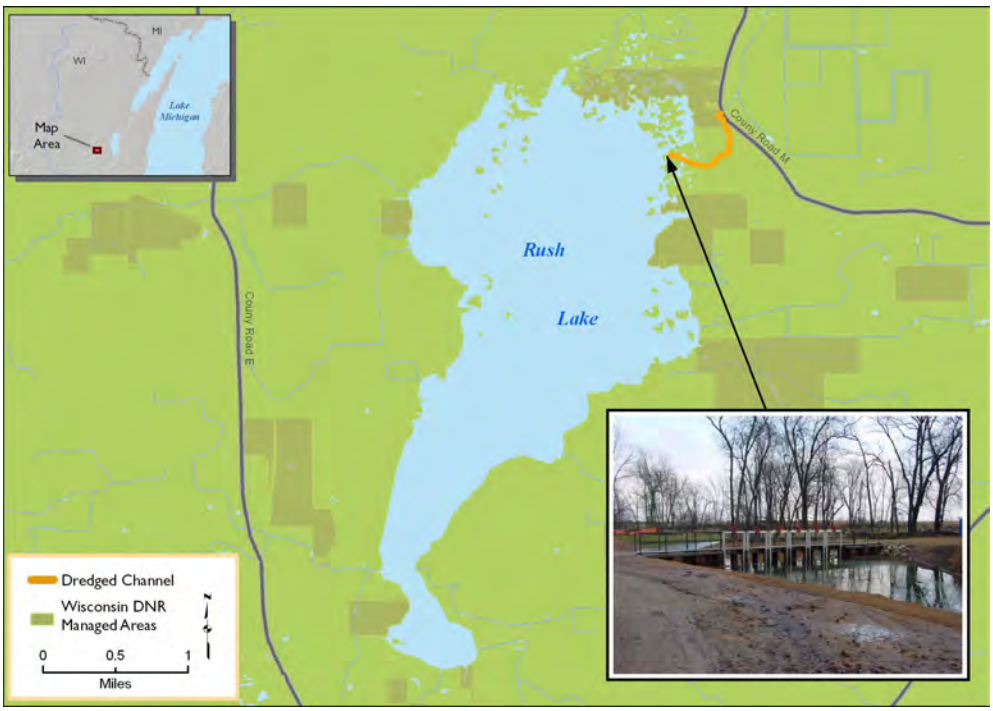
The restoration project improved habitat conditions in a 3,000-acre deep-water marsh. The project also included acquisition of 50 acres of upland habitat, 23 acres of emergent wetland habitat, and 1,400 feet of two-bank frontage on Spring Brook. Of the completed restoration and acquisition project, natural resource damage assessment (NRDA) settlement funds were credited with 1,330 acres (43% of the total); other funds were credited with the remaining 1,743 acres.

Status and Funding

Restoration activities that benefit deep-water habitat and native aquatic vegetation were completed in 2007. Additional studies and native vegetation monitoring were conducted in 2008. The project received $230,000 in NRDA settlement funding for restoration and $190,000 for land acquisition, for a total of $420,000 of settlement funding. The restoration work also attracted additional matching funds and/or in-kind services for a total restoration budget of $970,722.

Project Accomplishments

This project successfully eliminated nonnative species, restored native aquatic vegetation over half of the lake, and restored the natural ecological balance of Rush Lake. Water quality in Rush Lake, Waukau Creek, and the Fox River is expected to improve. Recreational activities, including waterfowl hunting and fishing, also benefit from these improvements. This is a long-term, ongoing endeavor; the initial phases were successful and continuing work is promising. Long-term monitoring will demonstrate the full extent of the success of the project. More information on this project can be found at http://dnr.wi.gov/topic/lands/other/rushlake.html.



Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Killsnake and Brillion Wildlife Areas Habitat Restoration

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Restored and enhanced wetlands on former agricultural land and seeded native prairie species on the surrounding uplands

Benefits
Improved habitat for nesting and migrating waterfowl

Funding
$14,500 in natural resource damage assessment settlement funding and matching funds and/or in-kind services for a total budget of $27,042

Timing
Restoration is complete

Land ownership
Wisconsin Department of Natural Resources

Restored wetlands within the Killsnake Wildlife Area *(Photo by Wisconsin Department of Natural Resources)*

Goal

To restore wetland and native prairie habitats on former agricultural land that will provide suitable cover for nesting waterfowl.

Project Description

The Killsnake and Brillion Wildlife Areas, located east of Lake Winnebago and owned by the Wisconsin Department of Natural Resources, include former agricultural lands that provide limited habitat for wildlife. Wetland restorations in the Killsnake Wildlife Area involved breaking drainage tile and plugging drainage ditches. Several wetland areas were restored to form shallow wetland basins totaling 24.7 acres. The habitat surrounding the wetland basins holds prairie grasslands that provide cover and nesting habitat for ducks. Wetland enhancement work conducted on the Brillion Wildlife Area involved developing shallow scrapes to provide more open water in the grassy wet areas. This provides important habitat for ducks to develop a pair bond and raise their young. Total surface area for the scrapes created across the landscape is 0.54 acres. The soil removed from the wet areas to create the scrapes was used to repair dikes on other restored wetlands within the Brillion Wildlife Area.

Benefits

Restoration of shallow water wetland habitat provides improved ecological conditions in marsh, upland grassland, and sedge habitats for waterfowl, other wetland species such as shorebirds, and pheasant. Restored wildlife areas offer recreational opportunities such as birdwatching, wildflower viewing, and hunting.

Spatial Extent of Project

Approximately 25 acres of wetlands and the surrounding native prairie were restored. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 13.5 acres (54% of the total); other funds were credited with the restoration of the remaining approximately 11.7 acres.

Status and Funding

Restoration activities were completed in 2008. The project received $14,500 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $27,042.

Project Accomplishments

This project resulted in the substantial restoration and enhancements to both the Killsnake and Brillion Wildlife Areas. The habitat restoration provides breeding habitat for waterfowl species along with a stopover site for migratory birds. Restoration has also improved water infiltration and associated aquifer recharge while providing erosion control in upland sites.

Native prairie plantings within the Brillion Wildlife Area *(Photo by Wisconsin Department of Natural Resources)*

Restored pond with native prairie seeding in 2006 in the Killsnake Wildlife Area *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Prairie Restoration for Waterfowl Nesting Habitat Near Wetlands, Waterways, and Rivers

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Restoration of native prairie habitat on agricultural land

Benefits
Native plant and wildlife species; native grassland habitat

Funding
$100,000 in natural resource damage assessment settlement funding and matching funds and/or in kind services for a total budget of $167,552

Timing
Restoration activities began in 2005, restoration actions are ongoing

Land ownership
Wisconsin Department of Natural Resources

Prairie restored in the Killsnake Wildlife Area in 2005. Restored area surrounds a previous wetland restoration. *(Photo by Wisconsin Department of Natural Resources)*

Goal

To restore nesting habitat for waterfowl.

Project Description

Native prairie habitat is important to breeding success for a number of waterfowl species in the Lower Fox River and Green Bay area, including blue-winged teal (*Anas discors*), which have been declining in Wisconsin and are now considered a "species of greatest conservation need" in Wisconsin, and mallard (*Anas platyrhynchos*), an important hunted species. These upland-nesting waterfowl typically nest in grassland habitat that is located within one mile of wetlands, waterways, or the river. Their nests are highly vulnerable to predators. Restoration of agricultural fields to grassland habitat can increase nesting success for these waterfowl species.

This project involved restoring prairie grasslands on state-owned farmland in the Brillion and Killsnake Wildlife Areas. The Wisconsin Department of Natural Resources worked with local farmers to remove nonnative species, prepare seedbeds, and replace agricultural crops (such as corn, alfalfa, and brome) with native prairie species. Farmers assisted with mowing the newly seeded vegetation to ensure proper establishment. Future activities may include plantings and fire management of the newly established prairies. The prairie restorations

surround restored wetlands, natural wetlands, and waterways, providing attractive nesting habitat for waterfowl. The restored areas also help to buffer erosion and protect water quality in the wetlands and waterways.

Benefits

Upland-nesting waterfowl benefit from restoration of grassland habitat near wetlands and waterways. Creating a landscape with connected wetland and upland habitats improves the overall quality of habitat available for birds and wildlife in this area.

Spatial Extent of Project

Approximately 277 acres were restored as of June 30, 2012. Natural resource damage assessment (NRDA) settlement funds were credited with 164.6 acres (59% of the total); other funds were credited with the remaining 112.6 acres.

Status and Funding

Restoration activities began in 2005 and were ongoing as of June 30, 2012; approximately $1,000 of NRDA funding remains to be spent on continued restoration actions. The project received $100,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $167,552.

Project Accomplishments

Restoring native prairie habitat in an area previously used for agriculture reestablishes an important ecosystem, provides habitat for breeding waterfowl and other wildlife species, and improves the ecological functioning of the restored area. This project supplemented previous restorations by creating native prairie habitat close to previous wetland restorations, thereby increasing the overall habitat value of the landscape.

Planted prairie next to wetlands in 2010 *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Outagamie Pump and Pumphouse Replacement

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
New pumphouse constructed and new pump installed to allow for continued wetland management

Benefits
Native waterfowl and wetland species and associated habitat

Funding
$40,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $69,042

Timing
Construction was completed in October 2006

Land ownership
Wisconsin Department of Natural Resources

Wolf River habitat *(Photo by Wisconsin Department of Natural Resources)*

Goal

To replace the existing Outagamie pump and pumphouse to maintain habitat for resident and migratory waterfowl and ensure continued, effective wetland management.

Project Description

The Outagamie Wildlife Area provides important nesting habitat and food sources for resident and migratory waterfowl. A pump diverts water from the nearby Wolf River and allows managers to manipulate water levels in the wildlife area, ensuring suitable waterfowl habitat even during drought years. The pump is also used to raise or lower water levels to control aggressive vegetation (e.g., cattails, canary grass, and willow) or improve growth of wild rice (*Zizania aquatica*), sedges, and other wetland vegetation. The old metal pumphouse was replaced with a cement structure with a removable roof that provides better ventilation and pump-cooling during the summer. The new pumphouse also improves the security of the pump and access to it for maintenance. A new water pump was also purchased and installed.

Benefits

Improved wetland management increases production and provides brood rearing sites for wildlife such as mallard (*Anas platyrhynchos*), black duck (*Anas rubripes*), blue-winged teal (*Anas discors*), hooded merganser (*Lophodytes cucullatus*), wood duck (*Aix sponsa*), osprey (*Pandion haliaetus*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), sandhill crane (*Grus canadensis*), black tern (*Chlidonias niger*), songbirds, shorebirds, fur-bearing mammals,

and Blanding's turtle (*Emydoidea blandingii*). The new pump and pumphouse provide an important management tool to stabilize water levels, improve vegetation, and protect wetland habitat. The public benefits from increased birdwatching opportunities and local tourism.

Spatial Extent of Project

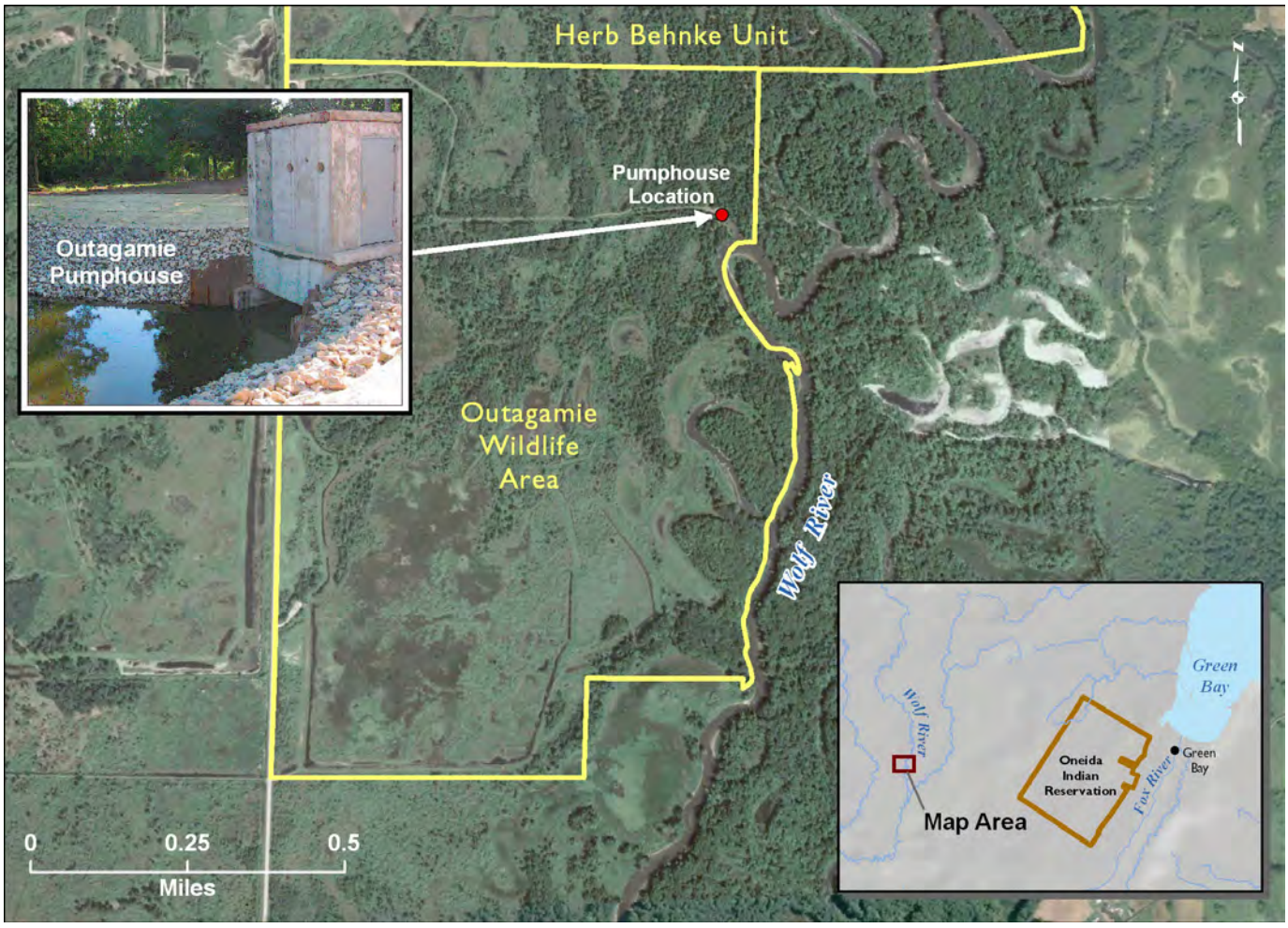
A total of 330 acres of habitat were credited as benefiting from the new pump and pumphouse. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 191 acres (58% of the total); other funds were credited with the restoration of the remaining 139 acres.

Status and Funding

Replacement of the old metal pumphouse and installation of a new pump was completed in October 2006. The project received $40,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $69,042.

Project Accomplishments

Completion of this project ensures that quality wetland management will continue, providing long-term habitat stability in an important area for migratory waterfowl and other native species. Managers had been concerned that waterfowl habitat in the Outagamie Wildlife Area would have been lost without the new pump and pumphouse.



Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Edge of the Woods Wetland Habitat Enhancement in the Duck Creek Watershed

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Chemical spraying to eradicate the invasive giant reed grass *(Phragmites australis)*, strategic reforestation of native hardwood species

Benefits
Native habitat and species, Oneida cultural use of the wetlands

Funding
$35,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $36,750

Timing
Project is ongoing, including reforestation, invasive species eradication, and monitoring

Land ownership
Oneida Tribe of Indians of Wisconsin

Phragmites australis invading wetlands on the Oneida Reservation *(Photo by Oneida environmental staff)*

Goal

To remove the aggressive, invasive giant reed grass (*Phragmites australis)* and restore native wetland habitat for waterfowl.

Project Description

In 1998, a series of shallow water areas ("scrapes") and several dikes were constructed on the Oneida Reservation to provide habitat for waterfowl. Since then, Phragmites has invaded the area, degraded the wetlands, and overgrown the recreational trails. The undesirable plant is being eradicated using aerial application of herbicides over several growing seasons, as other methods are ineffective for controlling this aggressive plant. The site is reassessed on an annual basis to determine steps for ongoing treatment. Spot spraying with a backpack sprayer is done to treat small, leftover patches. A strategic reforestation plan is being implemented to reestablish a native hardwood forest and discourage regrowth of Phragmites by creating conditions unfavorable for its growth. Reforestation and Phragmites eradication efforts are ongoing.

Benefits

Wildlife habitat for nesting and migrating waterfowl is being greatly improved. Sandhill crane (*Grus canadensis*), blue-wing teal (*Anas discors*), bitterns, and egrets are once again using the site. Restoration is also benefiting recreational users including hunters and hikers.

Spatial Extent of Project

Thirty acres of wetlands have been treated. Natural resource damage assessment (NRDA) settlement funds were credited with the treatment of 29 acres (95% of the total); other funds were credited with the treatment of the remaining acre.

Status and Funding

Habitat enhancement activities, including reforestation, monitoring, and herbicide application, are ongoing. The project received $35,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $36,750.

Project Accomplishments

This project is ongoing. If successful, it will remove an aggressive, invasive species and replace it with native habitat and plant species, which will effectively restore 30 acres of wetland habitat.

Helicopter spraying herbicide on Phragmites stands *(Photo by Oneida environmental staff)*

Oneida Environmental staff in front of Phragmites stand *(Photo by Oneida environmental staff)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

SECTION 3

Aquatic, Nearshore, and Riparian Habitat Quality Improvement

The Lower Fox River and Green Bay Trustees set a goal in their 2003 Joint Restoration Plan/Environmental Assessment (RP/EA) to protect, reestablish, or enhance aquatic, nearshore, and riparian habitats in the Lower Fox River and Green Bay environment. As described in the RP/EA, specific aquatic habitat quality improvement projects will include protecting, reestablishing, or enhancing (1) vital spawning and nursery habitat of critical native species, (2) wildlife barrier islands, (3) oak savanna habitat on river islands, and (4) stream bank corridors, through planting native species and stabilizing stream banks to improve water quality.

In the 2000 Restoration and Compensation Determination Plan, the Trustees identified actions to reduce runoff (with the objective of improving water quality and aquatic habitat) as a key component of a restoration package to compensate the public for natural resource injuries and service losses. In the 2003 RP/EA, however, the Trustees noted that instead of using natural resource damage assessment (NRDA) restoration funds to supplement existing funded runoff control and water quality programs, they would seek "well-designed water quality improvement projects that are not otherwise sufficiently funded." This modification in the RP/EA, however, did not alter the ultimate objective to improve water quality for the benefit of aquatic, nearshore, and riparian resources harmed by the impacted water resources. Accordingly, the Trustees established the "Aquatic, Nearshore, and Riparian Habitat Quality Improvement" category of restoration in the RP/EA to enhance water quality and to directly benefit the aquatic, nearshore, and riparian resources that are harmed when water quality is impaired.

Within this category, the Trustees have funded multiple projects to protect, reestablish, and enhance vital spawning and nursery habitat for northern pike (*Esox lucius*), which is a top predator in Green Bay that helps to keep populations of forage fish in balance (see project summaries 3.1–3.5). To spawn successfully, northern pike need to migrate from Green Bay to shallow channels that contain submerged terrestrial vegetation. Development and agriculture along the western shore of Green Bay, however, destroyed or degraded many of the historical spawning channels, contributing to the decline in northern pike populations. The projects targeted by the Trustees have not only created spawning and nursery habitat for northern pike, but have improved water quality in the spawning channels by reducing sediment and nutrient loads through techniques such as riparian buffer

creation along the spawning channels, lowland forest restoration, and stream restoration.

The Trustees have also funded multiple projects to enhance vital spawning and nursery habitat for other native fish species, including cold water brook trout (*Salvelinus fontinalis*) and walleye (*Sander vitreus*) (see project summaries 3.6–3.7, 3.11). Brook trout, the only stream trout native to the Green Bay area, have been impacted by habitat loss, pollution, overfishing, and predation by sea lamprey. Walleye are important top predators in the Great Lakes, as well as popular sport fish, especially in Green Bay. Their populations have been threatened by factors such as habitat loss and overfishing.

The Trustees are accomplishing numerous projects to protect and enhance nearshore and riparian habitats using techniques such as removing invasive plant species to benefit native vegetation (see project summaries 3.12–3.13), protecting wetlands or upland habitat from development that would harm spawning habitat or degrade water quality (3.8, 3.9, 3.15, 3.16), revegetating riparian and upland habitats to reduce erosion and improve water quality (3.10, 3.15), and protecting and restoring shallow aquatic habitat with emergent vegetation (3.14, 3.20). Many of these projects benefit water quality by reducing erosion and trapping sediment and nutrients; they also directly benefit the aquatic, nearshore, and riparian resources that are harmed when water quality is impaired.

Also within this restoration category, the Trustees have funded projects for the primary benefit of birds, wildlife, and other natural resources that depend on healthy aquatic and nearshore habitats (see project summaries 3.17, 3.21, 3.22, 3.24, 3.25). Restoration projects have enhanced or created nesting habitat for Forster's tern (*Sterna forsteri*), common tern (*Sterna hirundo*), and bald eagle (*Haliaeetus leucocephalus*), three bird species that have suffered documented adverse health effects from exposure to polychlorinated biphenyls (PCBs). The Trustees also provided targeted support for management plans, feasibility studies, and analyses that were not otherwise funded, and which are necessary to develop restoration actions that benefit migratory birds, wildlife, and their habitats.

The Trustees received NRDA settlement funding specifically designated for two projects in this category: the Cat Island Chain Restoration Project Feasibility Study (project summary 3.18) and the Oneida Lake Habitat Creation (3.19), as part of a consent decree with the Fort James Operating Company (now Georgia Pacific).[3.1] NRDA settlement funding has supported project design and planning for both projects, as well as the initial construction for the Cat Island Chain, and has facilitated the project sponsors to leverage additional funding needed to complete construction. When completed, the Cat Island project is expected to provide high-quality shallow-water habitat for waterbirds and for migratory and resident waterfowl, as well as create high-quality spawning, nursery, and rearing habitat for fish in Green Bay. Construction of a lake on the Oneida Reservation will support a sustainable fishery and help Oneida Tribal members regain cultural uses surrounding fishing that were impacted by the release of PCBs into the Fox River and Green Bay.

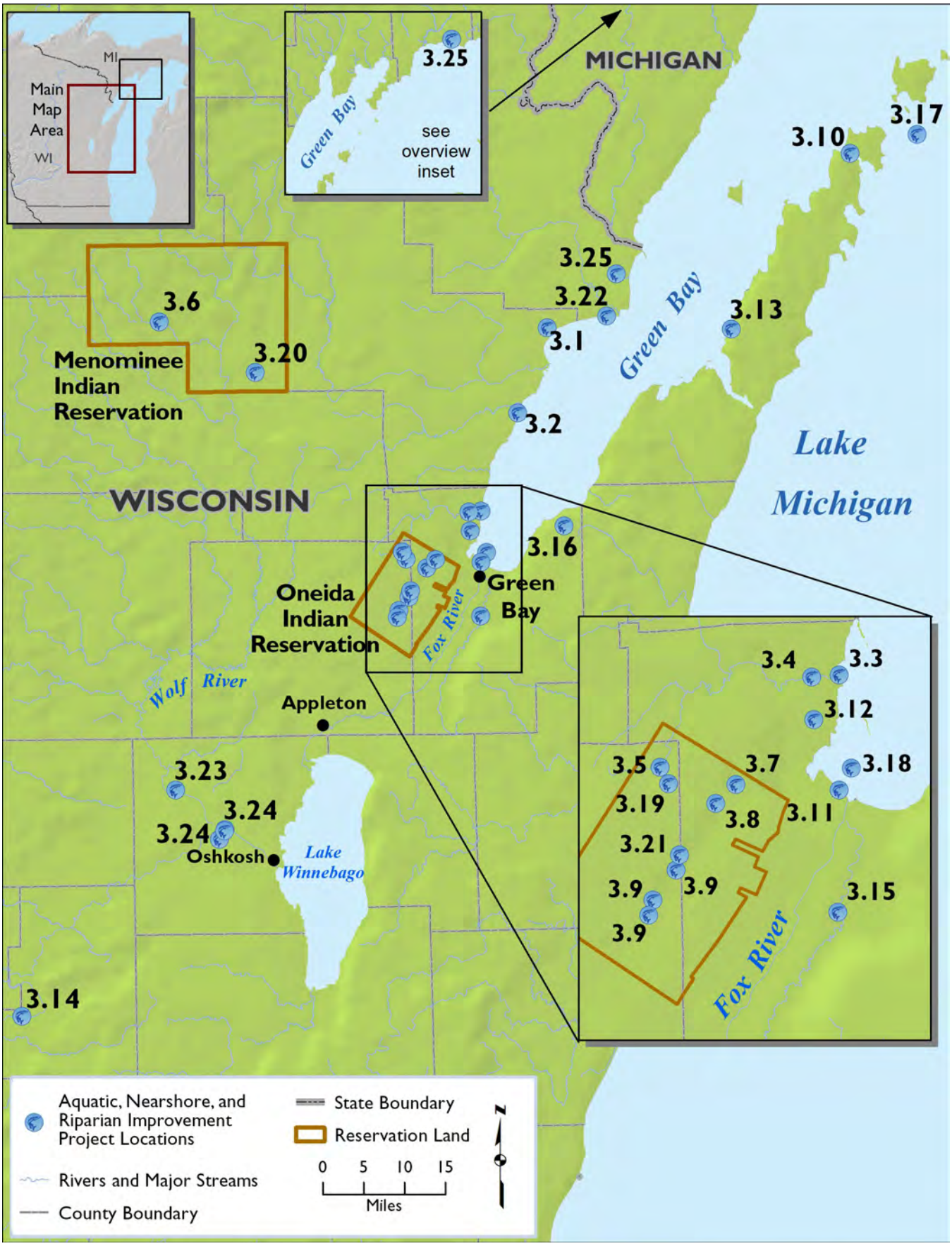
[3.1] Consent Decree, United States v. Fort James Operating Co., No. 02-C-0602 (E.D. Wis., 2002), available at http://www.doi.gov/restoration/library/casedocs/upload/WI_Fox_River-Fort_James_CD_02.pdf (accessed December 28, 2012).

As of June 30, 2012, the Trustees have directed $6,017,850 in NRDA settlement funding for aquatic, nearshore, and riparian habitat quality improvement projects (see page 71 for the overview map). Of this allocation, $427,925 has supported projects that benefit wildlife and cultural resources; however, quantitative spatial crediting of these projects is not possible at this time. Overall, the projects have restored 1,420 acres using NRDA settlement funding with an additional 92 acres credited to this category for the in-progress Cat Island and Oneida Lake projects. The total restored acreage of 1,512 acres in this category is 13% of the goal as stated in the RP/EA to protect, reestablish, or enhance approximately 12,000 acres of habitat. The Trustees noted that available settlement funds, restoration opportunities, and restoration costs could cause the modification of this goal over time. Project partners were able to leverage approximately $18,986,333 in additional funding (including leveraged dollars and in-kind services) for projects, resulting in the restoration of an additional 1,774 acres. The NRDA-credited portion of these accomplishments is based on the percentage of total project funding provided by NRDA funds.

Lowland hardwood swamp *(Photo by Laura England, Wisconsin Wetlands Association)*

Summary Number/Title	
3.1	Lowland Hardwood Forest Protection in Little River, Oconto County
3.2	Pensaukee Marsh Northern Pike Habitat Restoration
3.3	Sensiba Wildlife Area Northern Pike Spawning Area and Waterfowl Enhancement Project
3.4	Northern Pike Habitat Restoration on the Western Shore of Green Bay
3.5	South Branch of the Suamico River Stream Restoration
3.6	West Branch of the Wolf River Habitat Restoration
3.7	Lancaster Brook Habitat Enhancement
3.8	Trout Creek Habitat Preservation
3.9	Duck Creek Watershed Habitat Preservation
3.10	Door County Habitat Reforestation
3.11	South Bay Marina Habitat Enhancement
3.12	Invasive Species Control in Green Bay Coastal Wetlands
3.13	Habitat Restoration in the Bay Shore Blufflands and Shivering Sands Preserves
3.14	Lake Puckaway Aquatic Habitat Enhancement
3.15	Allouez Habitat Protection and Restoration
3.16	Gilson Creek Glades Reserve Habitat Protection
3.17	Green Bay and Gravel Island National Wildlife Refuge Habitat Management
3.18	Cat Island Chain Restoration Project Feasibility Study
3.19	Oneida Lake Habitat Creation
3.20	Wild Rice Reintroduction on the Menominee Indian Reservation
3.21	Bald Eagle Nesting Habitat Restoration on the Oneida Reservation
3.22	Forster's Tern Nesting Platform Installation in the Green Bay West Shores Wildlife Area
3.23	Forster's Tern Nesting Enhancement Pilot Project on Lake Poygan
3.24	Common Tern Nesting Habitat Enhancement and Nest Island Construction on Lake Butte des Morts
3.25	Piping Plover Population Enhancement

Overview Map of Aquatic, Nearshore, and Riparian Habitat Quality Improvement Projects



Summary of Aquatic, Nearshore, and Riparian Habitat Quality Improvement Projects

	Summary Number and Project Title	Restoration Achieved with NRDA Settlement Funds (acres)	NRDA Settlement Funds Allocated	Additional Restoration with Leveraged Funds (acres)[a]	Leveraged Funds	NRDA Project Number(s)[b]
3.1	Lowland Hardwood Forest Protection in Little River, Oconto County	74.96	$189,000	65.04	$164,000	162
3.2	Pensaukee Marsh Northern Pike Habitat Enhancement	103.35	$30,000	86.65	$25,154	123
3.3	Sensiba Wildlife Area Northern Pike Spawning Area and Waterfowl Enhancement Project[c]	—	$35,000	—	$0	35
3.4	Northern Pike Habitat Restoration on the Western Shore of Green Bay	73.24	$622,000	54.82	$378,056	106
3.5	South Branch of the Suamico River Stream Restoration[d]	—	$425,000	—	$0	153
3.6	West Branch of the Wolf River Habitat Restoration	10.24	$93,688	0.16	$1,500	33
3.7	Lancaster Brook Habitat Enhancement	3.01	$30,000	4.59	$45,807	114
3.8	Trout Creek Habitat Preservation	5.00	$75,000	5.00	$75,000	113
3.9	Duck Creek Watershed Habitat Preservation (Part 1)	96.00	$960,000	96.00	$960,000	168, 176
3.9	Duck Creek Watershed Habitat Preservation (Part 2)	—	$100,000	—	$0	7
3.10	Door County Habitat Reforestation	178.24	$131,530	0.76	$560	15, 17
3.11	South Bay Marina Habitat Enhancement	4.90	$98,000	1.10	$22,000	18
3.12	Invasive Species Control in Green Bay Coastal Wetlands	774.00	$100,000	0.00	$0	8
3.13	Habitat Restoration in the Bay Shore Blufflands and Shivering Sands Preserves	35.00	$20,000	0.00	$0	16
3.14	Lake Puckaway Aquatic Habitat Enhancement	—	$16,400	—	$0	155
3.15	Allouez Habitat Protection and Restoration[e]	22.00	$500,000	0.00	$0	93
3.16	Gilson Creek Glades Reserve Habitat Protection	15.41	$118,307	15.41	$118,307	74
3.17	Green Bay and Gravel Island National Wildlife Refuge Habitat Management (Part 1)	—	$358,000	—	$0	4
3.17	Green Bay and Gravel Island National Wildlife Refuge Habitat Management (Part 2)	25.00	$188,000	0.00	$0	4B

Summary of Aquatic, Nearshore, and Riparian Habitat Quality Improvement Projects (continued)

3.18	Cat Island Chain Restoration Project Feasibility Study	90.98	$1,100,000	1,406.02	$17,000,000	9, 87
3.19	Oneida Lake Habitat Creation[f]	1.01	$400,000	38.99	$0	6, 91
3.20	Wild Rice Reintroduction on the Menominee Indian Reservation	—	$58,827	—	$0	5, 79
3.21	Bald Eagle Nesting Habitat Restoration on the Oneida Reservation	—	$18,000	—	$7,269	136
3.22	Forster's Tern Nesting Platform Installation in the Green Bay West Shores Wildlife Area	—	$2,400	—	$3,680	151
3.23	Forster's Tern Nesting Enhancement Pilot Project on Lake Poygan	—	$200,792	—	$0	29
3.24	Common Tern Nesting Habitat Enhancement and Nest Island Construction on Lake Butte des Morts	—	$126,208	—	$0	52, 59, 60
3.25	Piping Plover Population Enhancement	—	$21,698	—	$185,000	27
	Total	**1,512.34**	**$6,017,850**	**1,774.54**	**$18,986,333**	

Table notes:

[a] Additional acres were funded with leveraged funding (matching dollars and in-kind services).

[b] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

[c] Acreage credit will be provided once the project is completed. Partnership contributions in the form of leveraged funds and in-kind services are anticipated.

[d] This project is expected to receive 32 acres of NRDA credit once the project is completed.

[e] This project is also included in the Public Use Enhancement category in Summary 5.5, "Allouez Park Development and East River Trail Extension."

[f] NRDA and leveraged-credited acres calculated based on total expected project costs of $15,772,900.

Lowland Hardwood Forest Protection in Little River, Oconto County

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Acquisition and protection of 140 acres of forests, including riparian forests

Benefits
Preservation of spawning habitat for northern pike

Funding
$189,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $353,000

Timing
Project is complete

Land ownership
Wisconsin Department of Natural Resources

Swamp hardwood habitat is the most common cover type on the property *(Photo by Wisconsin Department of Natural Resources)*

Goal

To protect the integrity of riparian wetlands that provide spawning habitat for northern pike (*Esox lucius*) and other fish species.

Project Description

Spawning habitat for fish, including northern pike, has declined as agricultural and urban development has degraded rivers, streams, and riparian habitat. This project involved the acquisition by the Wisconsin Department of Natural Resources (DNR) of 140 acres of hardwood forests that protect a tributary in which northern pike currently spawn.

The property is near other areas protected by the Wisconsin DNR, and the project builds on the department's recent conservation efforts in the area. In addition to protecting spawning habitat for fish, acquisition of this parcel protects upland habitat for local birds and mammals, and provides improved public access for recreation, including hunting.

Benefits

Preservation of this land protects upland, riparian, and in-stream wildlife habitats, including spawning habitat for northern pike.

Spatial Extent of Project

The acquired property is 140 acres and includes upland habitat, riparian forest, and spawning habitat. Natural resource damage assessment settlement funds were credited with the acquisition of 75 acres (54% of the total); leveraged funds were credited with preserving the remaining 65 acres.

Status and Funding

Acquisition of this property has been completed. The trustees directed $189,000 in natural resource damage assessment settlement funding to this project; the balance of $164,000 was provided by the State of Wisconsin, including $3,000 of in-kind services to cover closing costs.

Project Accomplishments

An important parcel of land has been acquired and preserved. This acquisition protects important spawning habitat within a riparian hardwood forest.

Intermittent stream corridor during a dry period (*Photo by Wisconsin Department of Natural Resources*)

Swamp conifer *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Pensaukee Marsh Northern Pike Habitat Enhancement

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Rehabilitate habitat for Green Bay spawning fish species in two locations by restoring water flow through a wetland and stream side channel

Benefits
Spawning and nursery habitat for native fish species restored, water quality improved

Funding
$30,000 in natural resource damage assessment settlement funding plus matching funding and/or in-kind services for a total budget of $55,154

Timing
Project work began in summer 2007 and was completed in August 2008

Land ownership
Wisconsin Department of Natural Resources

Drainage ditch before restoration *(Photo by M. Mangan, Wisconsin Department of Natural Resources)*

Goal

To restore spawning and nursery habitat for northern pike (*Esox lucius*) and other native fish along the western shore of Green Bay.

Project Description

The majority of wetlands associated with Green Bay are on the western shore of the bay and are threatened by encroaching development from the City of Green Bay. The bay itself does not provide suitable spawning and rearing habitat for northern pike and yellow perch (*Perca flavescens*), but the wetlands associated with the western shores provide optimal spawning habitat. This project included two components that both had the goal of rehabilitating spawning and nursery fish habitat where it had been degraded.

The first component involved restoring habitat at the site of a drainage ditch that was dug during the late 1930s. Berms adjacent to the ditch were removed in select locations to allow water to spread into the Pensaukee Coastal Marsh and enhance its habitat value. An additional fish spawning area adjacent to the ditch bottom was created as well. Excess berm material was used to repair dikes at the nearby Oconto Marsh (project 2.1). Other berms were left undisturbed to provide nesting habitat for migratory waterfowl.

The second component involved removing old concrete structures and dredge spoils to restore instream flow through a side channel to the main branch of the Suamico River.

Additionally, a small parking lot and walking path were constructed adjacent to the restored bank, improving public access and preventing vehicle traffic beyond the parking area.

Benefits

This project improved the hydrologic integrity of the two project site areas by restoring water flow through a wetland and a stream side channel, thereby improving water quality and habitat value for northern pike and other native spawning fish species. Wetland improvements also help filter sediments and nutrients from runoff before it enters Green Bay. The wetland and side channel habitats provide a safe environment for spawning with few predators. Habitat improvements also benefit waterfowl, marsh birds, and other wildlife.

Spatial Extent of Project

Restoration activities improved 190 acres of spawning fish habitat. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 103 acres (54% of the total); other funds were credited with restoration of the remaining 87 acres.

Status and Funding

Activities related to ditch restoration began in 2007 and were completed in August 2008. The trustees directed $30,000 in NRDA settlement funds for the ditch restoration project and attracted additional matching funds and/or in-kind donations for a total budget of $55,154.

Project Accomplishments

Restoration of important spawning and nursery habitat for northern pike and other spawning fish contributes to the recovery of their populations in Green Bay as well as improving water quality. By improving habitat and encouraging population growth of native predators, Wisconsin Department of Natural Resources scientists are beginning to see positive shifts in the populations of the targeted species, as well as desirable shifts in the fish communities toward their historical native balance.

Drainage ditch after restoration *(Photo by Tammie Paoli, Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Sensiba Wildlife Area Northern Pike Spawning Area and Waterfowl Enhancement Project

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

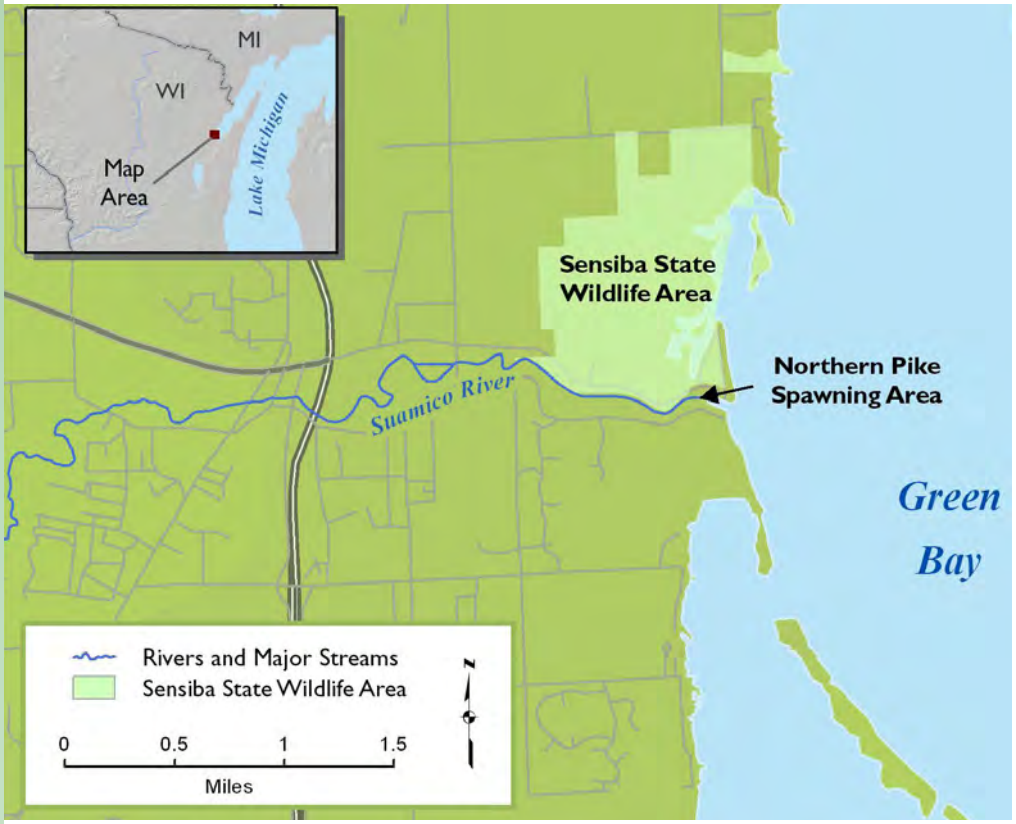
Actions
Restoration of northern pike spawning area, including dike repair and waterfowl habitat protection

Benefits
Spawning northern pike, migratory waterfowl, and other birds

Funding
$35,000 in natural resource damage assessment settlement funding has been allocated but not yet spent

Timing
In progress

Land ownership
Wisconsin Department of Natural Resources



Goal

Improve habitat for spawning northern pike (*Esox lucius*) and migrating waterfowl at the Sensiba State Wildlife Area.

Project Description

The Sensiba Wildlife Area is part of a critical historical migration route for waterfowl, shorebirds, and raptors and contains an important resting area closed to hunting. Dike erosion in the wildlife area had greatly reduced the effectiveness of a 35-acre sub-impoundment built to provide waterfowl habitat. In addition, two streams within the wildlife area that had previously provided northern pike spawning habitat had been altered so that they were no longer connected to Green Bay, thus preventing northern pike from accessing the area. The plans for this project involve excavating the historical spawning channels, which will reconnect former northern pike spawning areas to Green Bay and to a wetland mitigation site. The excavated material will then be used to repair the dike surrounding the waterfowl habitat impoundment, thus restoring habitat for migrating waterfowl.

Benefits

Restoration of functional habitat conditions will benefit spawning northern pike and migratory waterfowl, and increase the ecological diversity of the wildlife area. This area is a critical historical migration route for waterfowl, shorebirds, and raptors and contains the only resting areas in Brown County closed to hunting. The impoundment collects warm runoff water in the spring, providing one of the first areas accessible in the spring to migrating waterfowl.

Spatial Extent of Project

This project may benefit up to 300 acres of wetland habitat, although the exact project footprint has not yet been determined. The acres credited to natural resource damage assessment settlement funding will be calculated after the project is completed.

Status and Funding

The project has attracted attention and interest from several agencies and conservation organizations, which has increased the scope of the planned restoration. To accommodate the changes, a new land survey was completed by Ducks Unlimited and a new restoration plan for the site is being developed. Current plans are for the restoration to be completed by fall 2013. As of June 30, 2012, the trustees had directed $35,000 in natural resource damage assessment settlement funding to this project, but the funding had not yet been spent. Matching funds have been identified and will help support this restoration.

Project Accomplishments

The improvements made in the Sensiba Wildlife Area will create and maintain spawning habitat for northern pike. Additionally, repairs made to the dike will improve habitat during waterfowl migration.

Proposed structure location and dike to be repaired east of the pumphouse *(Photos by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Northern Pike Habitat Restoration on the Western Shore of Green Bay

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Create vegetated buffer zones to improve wetland functioning and increase spawning habitat for northern pike; restoration work has been completed in riparian, wetland, and stream bank areas

Benefits
Water quality, native ecosystems, and native spawning fish of Green Bay

Funding
$622,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $1,000,056

Timing
Project is in progress

Land ownership
Private landowners with cost-sharing and deed restrictions for plowing and planting; restored areas are actively managed by the Brown County Land Conservation Committee, which includes a 15-year operation and maintenance agreement with each landowner

Restored Malchow spawning area after one year *(Photo by Wisconsin Department of Natural Resources)*

Goal

To establish riparian buffers and restore wetland areas along intermittent streams in the Suamico watershed in areas primarily used for agriculture but with high potential for providing northern pike (*Esox lucius*) spawning and rearing habitat.

Project Description

Wetland and spawning and rearing habitats in the Suamico and Little Suamico watersheds have been degraded due to farming and development, which has led to reduced hydrological functioning and degraded spawning habitat for top predator fish species such as northern pike. To restore the ecological function and increase populations of northern pike and other spawning fish species, the project partners have and will continue to create vegetated buffers along roads and streams by working with willing private landowners. Similar restoration projects in the area, completed with other funding, have been very successful in supporting spawning pike populations. The buffers provide habitat for spawning fish, improve fish survival rates by moderating streamflow, and help reduce sediment and nutrient loads reaching the stream systems and Green Bay. Biologists from the Brown County Land and Water Conservation Department have assessed the available land in Brown and Oconto counties on the western shore of Green Bay to identify habitat improvement projects, and have identified target areas and optimum habitat improvement locations. Covenant language recorded

with the deeds restricts development of the restored area and specifies a 15-year operation and maintenance agreement to maintain the riparian buffers. As part of this project, Brown County will monitor the restored areas for juvenile pike for four seasons. In addition to these projects, a spawning marsh is being constructed using water control structures at the Barkhausen Waterfowl Preserve.

Benefits

This project will increase the spawning habitat for northern pike and improve the water quality and hydrologic functioning of wetlands, increasing plankton production and improving habitat for additional native plant and wildlife species. As the production of northern pike and other native predator species increases, the ecosystem of Green Bay will be rebalanced.

Spatial Extent of Project

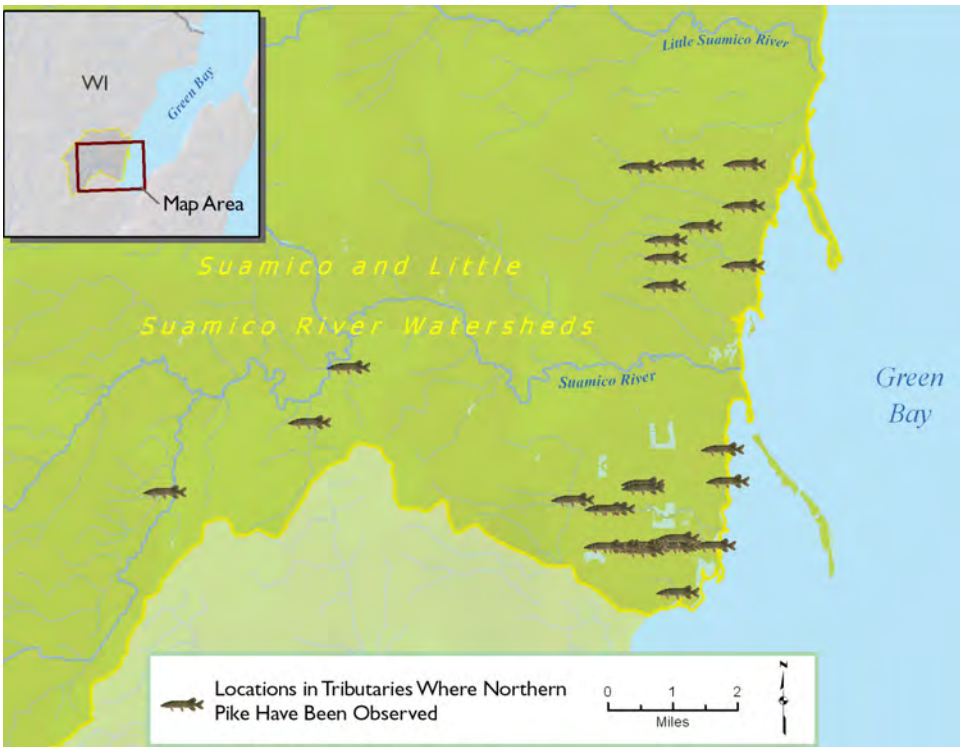
As of June 30, 2012, 128 acres of aquatic and stream corridor habitat, wetland/spawning marshes, riparian buffers, and buffer plantings have been restored. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 73 acres (57% of the total); other funds were credited with the restoration of 55 acres. Work to identify and create buffer strips is ongoing, and the spawning marsh at the Barkhausen Waterfowl Preserve will be expanded in a cooperative project with Ducks Unlimited.

Status and Funding

Restoration activities are ongoing and include wetland/marsh restoration and the creation of buffer strips. The trustees directed $622,000 in NRDA settlement funding to this project and attracted additional matching funds and/or in-kind services for a total budget of $1,000,056. There is $116,962 remaining in the project budget that is expected to be used to restore more acres.

Project Accomplishments

This project has successfully restored stream corridor, wetland, and riparian habitats. Restriction agreements made with willing landowners have allowed the creation of buffer strips that reduce sediment, nutrient, and pesticide loading into waterways. Similar restoration activities in the past have improved northern pike reproduction and water quality. Work will continue with the remaining NRDA funds and additional work will be completed with project partners, such as Ducks Unlimited.



Contact Information
Brown County Land & Water Conservation Department (920) 391-4620

South Branch of the Suamico River Stream Restoration

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Restore natural stream bends and enhance in-stream and upland habitats

Benefits
Improved hydrological and ecological processes and improved northern pike spawning habitat

Funding
$425,000 in natural resource damage assessment settlement funding

Timing
Project was approved in August 2009; project implementation is expected to begin in 2013

Land ownership
Oneida Tribe of Indians of Wisconsin, private landowners

A portion of the stream in spring 2009 *(Photo by James Snitgen, Oneida Tribe of Indians of Wisconsin)*

Goal

To restore hydrological and ecological processes in a degraded section of the Suamico River, with an overall goal of improving northern pike (*Esox lucius*) spawning habitat.

Project Description

Agricultural runoff, river channelization, and residential development have degraded the habitats within and surrounding the South Branch of the Suamico River by altering hydrologic and morphological conditions of the river and surrounding habitats. This project aims to improve in-stream habitat and the adjacent floodplains for spawning northern pike. It will restore the natural stream channel by converting the ditched and straightened stream channel to a more natural, meandering morphology; invasive plant species will be removed; and native vegetation will be reestablished along the stream corridor. The restored stretches of river will improve the ability of northern pike to travel within the river and access upstream spawning habitat.

Benefits

The project will restore critical hydrologic and ecological processes in a degraded stretch of the South Branch of the Suamico River and improve the accessibility of spawning habitat for fish, including northern pike. The restoration actions are aimed at reducing peak flows, increasing base flows, and reestablishing the ecological and hydrological connections between the in-stream

and riparian habitats. In 2008, the Oneida Tribe completed the restoration of 160 acres of headwater wetlands of this river (project 2.2). This project will continue restoration within this watershed using the "top down approach" by starting at the headwaters and working downstream.

Spatial Extent of Project

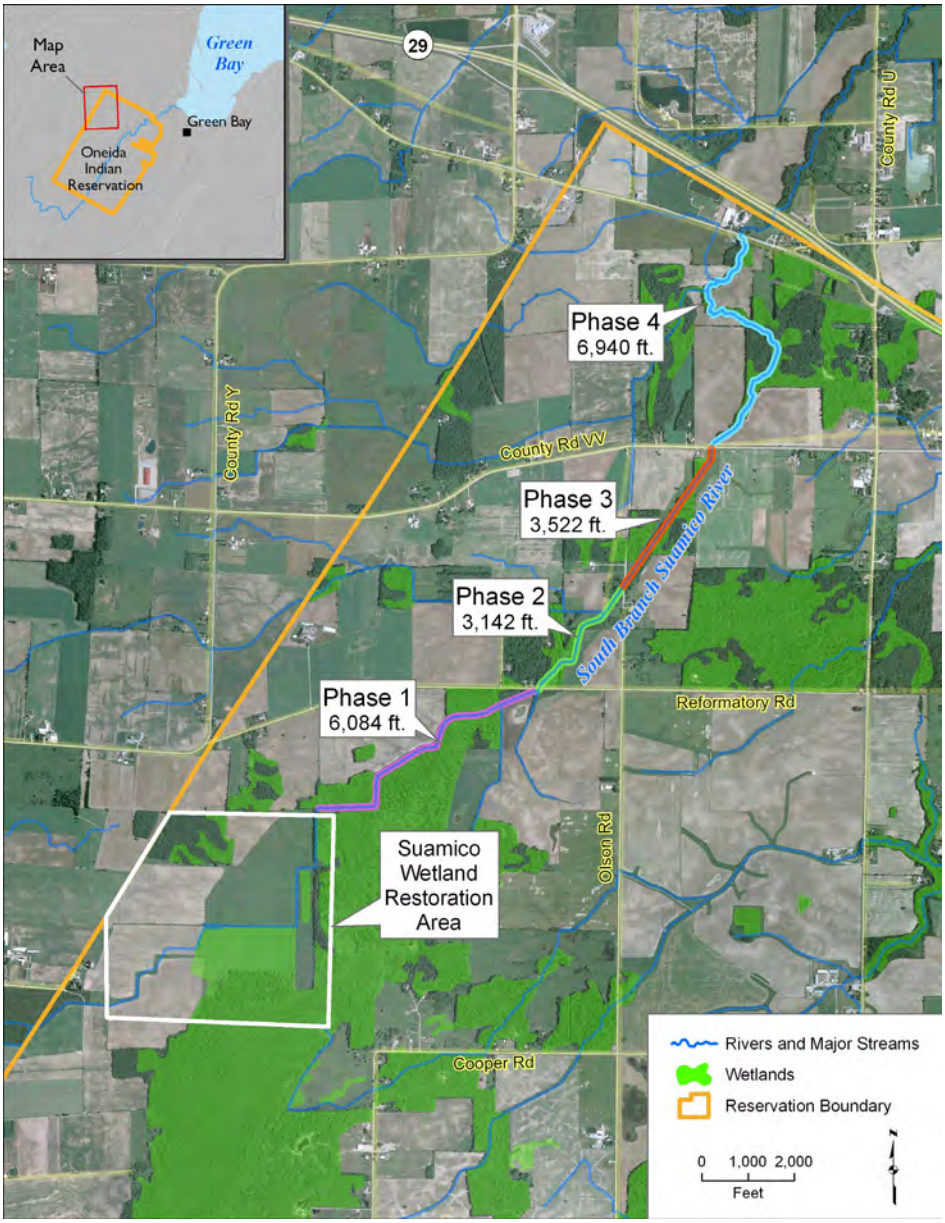
This project is expected to benefit approximately 32 acres of habitat, although the exact project footprint has not yet been determined. The acres credited to natural resource damage assessment settlement funding will be calculated after the project is completed.

Status and Funding

The Trustees directed $425,000 of natural resource damage assessment funding to the project in August 2009. As of June 30, 2012, the planning and permitting phase of the project was being completed. Remaining funding will be used to complete planned restoration actions.

Project Accomplishments

Project designs were created and are currently being reviewed. Permit applications are also being prepared for submission to the U.S. Army Corps of Engineers and construction is likely to begin in 2013. Baseline monitoring has occurred at the site, including northern pike young-of-year trapping, water quality monitoring, benthic macroinvertebrate surveys, and routine fisheries surveys.



Restoration site locations along the South Branch of the Suamico River.

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

West Branch of the Wolf River Habitat Restoration

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Logjam was removed from a stream to promote restoration of native cold-water brook trout habitat

Benefits
Stream habitat restored for brook trout and other cold-water species

Funding
$93,688 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $95,188

Timing
This project was completed in 2011

Land ownership
Menominee Indian Tribe of Wisconsin

Reduced flow in the Wolf River due to a logjam *(Photo by Jonathan Pyatskowit, Menominee Indian Tribe of Wisconsin)*

Goal

To clear and restore the main channel of the West Branch of the Wolf River.

Project Description

The West Branch of the Wolf River is a cold-water river, supporting diverse aquatic life and a healthy, reproducing brook trout (*Salvelinus fontinalis*) population. A logjam has blocked the main stream channel of the West Branch of the Wolf River since the early 1900s, creating a braided stream, reducing flow and depth, and increasing water temperature. The logjam was caused by flooding that carried logs downstream from the Neopit Saw Mill and into the channel of the river. To restore historical habitat features, the logjam was removed from the central channel. Any remaining logs were anchored to prevent them from reblocking the water flow. Minor stream channel restoration was completed to enhance the stream restoration. In addition, wild rice was planted in the backwater areas of the project.

Benefits

Restoration of the river channel to its natural condition has improved flow and water quality in this stretch of the river. It is also promoting recovery of the native brook trout population. Although natural woody debris is an important feature of riverine habitat, the excessive debris associated with the logjam was blocking fish movement and negatively affecting water quality and fish habitat.

Spatial Extent of Project

Removal of the logjam allowed fish access to 6.4 additional acres of riverine habitat, including the

area directly improved by removal of the logjam and stream channel restoration. Restoration also enhanced 4 acres of wild rice beds. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 10.2 acres (98% of the total); other funds were credited with restoration of the remaining 0.2 acres.

Status and Funding

Restoration actions have been completed. The trustees directed $93,688 in NRDA settlement funding to this project and attracted additional matching funds and/or in-kind services for a total budget of $95,188.

Project Accomplishments

This work restored the natural flow in a degraded section of the West Branch of the Wolf River, improving fish access to aquatic habitat that had been blocked by the logjam. The project also enhanced wild rice beds and improved water quality.

Placing a boulder during in-stream restoration *(Photo by Menominee Indian Tribe of Wisconsin)*

Restored stream channel, looking upstream from the half-way point *(Photo by Menominee Tribe of Wisconsin)*

Contact Information

Menominee Indian Tribe of Wisconsin Environmental Services Department (715) 799-6152

Lancaster Brook Habitat Enhancement

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Placement of large woody debris in a degraded stream to improve habitat for brook trout, and planting of trees to stabilize stream banks

Benefits
Brook trout, mink, and other aquatic and semi-aquatic species

Funding
$30,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $75,807

Timing
In-stream restoration work completed in 2007; tree seedlings planted in summer 2008; culvert replaced in 2012

Land ownership
Land adjacent to stream is privately owned

Large woody debris placed in Lancaster Brook to improve brook trout habitat
(Photo by Oneida Tribe of Indians of Wisconsin)

Goal

To improve habitat for brook trout (*Salvelinus fontinalis*) and other aquatic species, restore natural hydrologic conditions, and improve water quality in Lancaster Brook.

Project Description

Instream habitat, hydrologic function, and water quality in Lancaster Brook, a small stream in the northern portion of the Oneida Reservation, are degraded due to development and agricultural uses in the watershed. Lancaster Brook is classified by the State of Wisconsin as a "Class 2" trout stream, which means that the stream supports some natural reproduction, but not enough to make use of available food and space. The stream lacked the natural woody debris that provides important fish habitat and supports a diverse aquatic community. Fish passage in Lancaster Brook had also been obstructed by damaged and poorly situated culverts.

To restore instream habitat, large woody debris (i.e., logs and root wads) was placed in an 1,800-foot reach of Lancaster Brook. Debris was placed at strategic locations to increase habitat complexity and reduce water velocity without blocking flow or fish passage. The logs were secured in place with cables, and then desired tree species were planted to stabilize the stream banks. The project area was then seeded with a native wetland seed mix and trees were planted to stabilize stream banks and reduce erosion. The Oneida Tribe worked with a contractor to evaluate the site, design the log placement, recommend tree planting locations, and assist with construction. The damaged culverts were replaced with a large, bottomless arch culvert, which is designed to allow for unrestricted fish movement.

Benefits

Placement of large woody debris will improve habitat for brook trout and provide food and cover for other aquatic species. Over time, rain and snowmelt will create scouring and pools around the debris, further improving habitat conditions. The restoration project will also stabilize streambanks, provide access to habitat previously inaccessible because of the damaged culverts, and improve water quality by reducing debris and sediment loads.

Spatial Extent of Project

An estimated 7.6 acres of stream habitat in Lancaster Brook was improved as a result of the project. Natural resource damage assessment (NRDA) settlement funds were credited with the restoration of 3.0 acres (40% of the total); other funds were credited with restoration of the remaining 4.6 acres.

Status and Funding

In-stream habitat restoration, including placement of logs and root wads, was completed in the summer of 2007. Tree seedlings were planting to stabilize the banks of Lancaster Book was done in the summer of 2008, and the culvert replacement was completed in 2012. The trustees directed $30,000 in NRDA settlement funding to this project and attracted matching funds and/or in-kind services for a total budget of $75,807.

Project Accomplishments

Restoring the natural function of Lancaster Brook provides habitat for aquatic species and promotes the recovery of the brook trout population. The Oneida Tribe worked with fisheries staff at the Wisconsin Department of Natural Resources to conduct pre-restoration monitoring of fish populations and habitat quality. Post-restoration monitoring activities began in 2010 and will be conducted annually. Monitoring actions completed include aquatic macroinvertebrate surveys, fishery surveys, and a fluvial geomorphic survey to examine stream function.

Damaged and perched culverts before they were replaced *(Photo by Oneida Tribe of Indians of Wisconsin)*

New bottomless arch culvert after installation *(Photo by Oneida Tribe of Indians of Wisconsin)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Trout Creek Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Acquired and protected land along Trout Creek

Benefits
Native wildlife and habitat, and water quality

Funding
$75,000 in natural resource damage assessment settlement funding plus matching tribal funds and in-kind services for a total budget of $150,000

Timing
Land acquisition completed in 2006

Land ownership
Oneida Tribe of Indians of Wisconsin

Trout Creek *(Photo by Oneida environmental staff)*

Goal

To protect water quality and the habitat integrity of Trout Creek.

Project Description

The Trout Creek watershed, located at the northern end of the Oneida Reservation, is becoming impaired due to residential housing development. Continued development in the Trout Creek watershed has the potential to significantly degrade aquatic and terrestrial habitats. To help protect water quality and aquatic habitat, the Oneida Tribe acquired 10 acres of land adjacent to the creek, encompassing an important part of the watershed and floodplain.

This project is part of a larger effort by the Oneida Tribe to improve water quality and habitat conditions in the Trout Creek and Duck Creek watersheds, with the ultimate goal of supporting self-sustaining populations of native fish such as brook trout (*Salvelinus fontinalis*). For example, the Oneida Tribe has an additional restoration project on Trout Creek (Project 4.4) 2.25 miles from this acquisition site, they are restocking brook trout within this stream reach. Future restoration plans for this property, which will be completed with other funding sources, include removing invasive species such as *Phragmites australis*. Future plans with other funding sources include (1) restoring the natural meandering nature of the stream through the acquired property; (2) creating habitat for redside dace (*Clinostomus elongatus*), a state listed species of special concern observed on the reservation; and (3) reintroducing brook trout.

Benefits

The acquisition will prevent further degradation to aquatic and riparian habitats and buffer the creek from encroaching development. Preservation of healthy riparian and floodplain habitats helps filter out pollutants, which would otherwise have a greater impact on water quality. The acquisition also allows for future restoration work, which will enhance and restore native populations of fish. Oneida Tribal members use this site for hunting, fishing, recreation, and other cultural activities.

Spatial Extent of Project

Ten acres of habitat surrounding Trout Creek, including the seasonal floodplain, are protected through this acquisition. Natural resource damage assessment (NRDA) settlement funds were credited with the acquisition of 5 acres (50% of the total); other funds were credited with the acquisition of the remaining 5 acres.

Status and Funding

The land acquisition was completed in 2006. The trustees directed $75,000 in NRDA settlement funding to this project and attracted additional Tribal matching funds and/or in-kind services for a total budget of $150,000.

Project Accomplishments

This project successfully protects riparian and floodplain land adjacent to Trout Creek, helping to maintain habitat and water quality. The acquisition has a hydrologic and ecological connection to the Trout Creek stream restoration project 2.25 stream miles downstream (project 4.4). This project is an important component of the larger Tribal effort to restore the habitat conditions necessary to support brook trout and other native fish. Preventing further degradation of the area also protects cultural resources and provides for future generations.

Stream frontage and adjacent wetlands acquired along Trout Creek *(Photo by Oneida environmental staff)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Duck Creek Watershed Habitat Preservation

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Restoration priorities analysis, land acquisition

Benefits
Native fish and waterfowl, cultural resources, Duck and Oneida Creek habitat, including aquatic and forested stream habitats

Funding
$1,060,000 in NRDA settlement funding plus matching funds and/or in-kind services for a total budget of $2,020,000

Timing
Priorities analysis was completed in 2008; land acquisition was completed in 2011

Land ownership
Oneida Tribe of Indians of Wisconsin

Pool habitat protected in Oneida Creek by land acquisition *(Photo by Oneida environmental staff)*

Goal

To identify priority areas for restoration and acquire land to preserve water quality and aquatic habitat for the benefit of fish, wildlife, and cultural resources associated with Duck Creek on the Oneida Reservation.

Project Description

Duck Creek is a tributary to Green Bay and is an important natural and cultural resource for the Oneida Tribe and surrounding communities. Fish found in Duck Creek, such as northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), and white sucker (*Catostomus commersoni*), support a traditional diet for Oneida Tribal members. This project has two components, both of which benefit water quality, fish, wildlife, and habitat in or near Duck Creek. The first component is a restoration priorities analysis; the second component is land acquisition, aimed at preserving and improving water quality and protecting aquatic and forested stream habitats associated with Duck Creek and Oneida Creek. Other natural resource damage assessment (NRDA) settlement-funded efforts (see Projects 2.11 and 4.5) are enhancing habitat and improving fish passage in the Duck Creek watershed.

To complete the restoration priorities analysis, a hydrologic model of the Duck Creek watershed was developed and then used by members of the Oneida Tribe's Environmental Department to evaluate current

hydrologic conditions in the Duck Creek ecosystem and assess the potential for restoration.

The Oneida Tribe also used NRDA funding to acquire and protect 192 acres of unique, forested stream habitat that was at risk from development. The protected land includes 4,200 linear feet of Oneida Creek upstream of its confluence with Duck Creek, and 6,200 linear feet of Duck Creek. The Oneida Tribe plans to manage the protected land to improve biological integrity and water quality, including implementing the Oneida Tribe's conservation practices for control of non-point source pollution in the upland areas on the property. Woody habitat may be improved for several smaller stream segments on the property, but in general, the stream corridors are in good condition and will not require restoration work. Planned monitoring activities include fish and benthic invertebrate community surveys, to be completed by Oneida Environmental, Health & Safety Division staff.

Spatial Extent of Project

192 acres of habitat associated with Duck Creek and Oneida Creek were preserved. NRDA funds are credited with preservation of 96 acres (50% of the total); other funds were credited with restoration of the remaining 96 acres.

Status and Funding

The restoration priorities analysis and the land acquisitions have been completed. This project received $1,060,000 in NRDA settlement funds and attracted matching funds and/or in-kind services for a total budget of $2,020,000.

Project Accomplishments

This project identified and successfully protected 192 acres of priority aquatic and forested stream habitats associated with Duck Creek and Oneida Creek within the Oneida Indian Reservation.

Benefits

This project protects high quality habitat adjacent to Duck Creek, and prevents degradation of water quality in this important tributary to Green Bay. Preservation of this habitat ensures that excellent fish and wildlife habitat is preserved. Wildlife that benefit from this project include waterfowl such as mallard (*Anas platyrhynchos*), wood duck (*Aix spons*), blue-winged teal (*Anas discors*), and great blue heron (*Ardea herodias*).Oneida Tribe cultural resources benefit from these projects: fishing, hunting and other cultural activities will be preserved and enhanced through these restoration actions.

Duck Creek *(Photo by Oneida environmental staff)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Door County Habitat Reforestation

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Restore forest habitat near the headwaters of the Mink River

Benefits
Improved water quality and forest habitat for wildlife

Funding
$131,530 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $132,090

Timing
179 acres have been reforested; evaluation and replanting in areas affected by drought ongoing

Land ownership
The Nature Conservancy

Former site of the abandoned cabin after removal, regrading, and tree planting. Additional acres surrounding the cabin area were also reforested. *(Photo by The Nature Conservancy)*

Goal

To improve water quality, hydrologic conditions, and forest habitat within the Mink River watershed.

Project Description

The Nature Conservancy acquired land in several areas in Door County near the headwaters of the Mink River where historical agricultural and other human uses had degraded habitat conditions. The Mink River flows into the Mink River Estuary, one of the most pristine freshwater estuaries in the country. The estuary supports a broad diversity of wildlife and is a State Natural Area, owned by The Nature Conservancy. This project included removing an abandoned cabin and regrading land to approximate presettlement land contours to restore the natural spring hydrologic conditions, followed by control of nonnative woody species and planting of native forest seedlings. Former agricultural areas near Kangaroo Lake and Mud Lake were also reforested.

Reforestation was done by hand and by machine with a target density of 600 seedlings per acre. The species composition was determined based on local site soil type and the community composition in abutting forested areas. Herbicide was applied to grasses and forbs to reduce competition with the tree seedlings. In 2005, a dry growing season led to relatively high mortality, and additional seedlings were planted in the following season to replace those lost. In total, over 100,000 trees and shrubs were planted, including white pine (*Pinus strobus*), red pine (*Pinus resinosa*), white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), white cedar (*Chamaecyparis thyoides*), red oak (*Quercus rubra*), swamp white oak (*Quercus bicolor*), yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), green ash (*Fraxinus*

pennsylvanica), gray dogwood (*Cornus racemosa*), red dogwood (*Cornus sericea*), and nannyberry (*Viburnum lentago*).

Benefits

The lower portion of the Mink River is considered one of the most productive estuaries in the western Great Lakes region. Mink River water quality benefits from reforestation through decreased sediment runoff and increased filtering of nutrients. The connectivity of the local forest will be enhanced, improving and increasing habitat for native species, including spawning fish such as northern pike (*Esox lucius*), yellow perch (*Perca flavescens*), and white sucker (*Catostomus commersoni*); waterfowl and other birds important to the area, such as bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), great blue heron (*Ardea herodias*), green-backed heron (*Butorides striata*), black-crowned night heron (*Nycticorax nycticorax*), Caspian tern (*Hydroprogne caspia*), and kingfisher (*Alcedo atthis*); and the federally endangered Hine's emerald dragonfly (*Somatochlora hineana*). Deer hunting is allowed on the preserve (with permission from The Nature Conservancy before hunting season).

Machine seedling planter pulled by a tractor *(Photo by The Nature Conservancy)*

Spatial Extent of Project

A total of 179 acres have been reforested to date with over 100,000 individual seedlings planted. Natural resource damage assessment (NRDA) settlement funds are credited with reforestation and restoration of 178 acres (99.6% of the total); other funds are credited with restoration of the remaining 1 acre.

Status and Funding

The project received $131,530 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $132,090.

Project Accomplishments

An ecologically important area at the headwaters of the Mink River was successfully restored. Reforestation took place, in part, on habitat preserved with other NRDA funds (project 1.11). This restoration project benefits important habitat and hydrological resources in the region, supporting native species and improving water quality and hydrologic functioning.

Volunteers hand-planting trees *(Photo by The Nature Conservancy)*

Contact Information

The Nature Conservancy Door Peninsula Office (920) 743-8695

South Bay Marina Habitat Enhancement

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Restoration of a degraded urban nearshore habitat, including construction of fish spawning habitat

Benefits
Nearshore habitat, walleye and smallmouth bass spawning fishery, and associated species

Funding
$98,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $120,000

Timing
Project began in 2002 and was completed in 2003

Land ownership
The habitat is located in Wisconsin State waters

South Bay Marina habitat enhancement project, showing east headland groin *(Photo by George Boronow, Wisconsin Department of Natural Resources)*

Goal

To improve degraded nearshore aquatic habitat at the mouth of the Lower Fox River in an urban, waterfront location in Green Bay, Wisconsin.

Project Description

The Wisconsin Department of Natural Resources, in cooperation with Walleyes for Tomorrow, directed the installation of habitat structures as part of the construction of the South Bay Marina in Green Bay. Before restoration, the area was an environmentally degraded urban waterfront with shallow, fine sand substrate that lacked the habitat conditions needed by spawning fish and other wildlife.

Nearshore shallow water habitat was developed by installing two 300-foot headlands that extend into the bay to provide wave protection and allow fine substrate materials to accumulate. Wave protection was increased by scattering 60 large boulders, weighing 2-5 tons each, between the headlands. Gravel was spread along the shore between the headlands to improve nearshore and beach habitat. In addition, a 3-acre walleye spawning reef was created on the west side of the headland by spreading a 12-inch layer of crushed rock in an area exposed to unprotected waves. Waves will wash the rock clean and maintain spawning habitat for walleye.

Benefits

The project created diverse nearshore habitat to benefit fish, shorebirds, and other wildlife in an environmentally degraded location at the mouth of the Lower Fox River. Important predator fish species in Green Bay, such as walleye (*Sander vitreus*) and smallmouth bass (*Micropterus dolomieu*), have benefited from this

habitat reconstruction that provides spawning habitat. The created headlands provide protection for nearshore habitat that can serve as fishery nursery areas.

Spatial Extent of Project

Six acres of nearshore habitat were restored. Natural resource damage assessment (NRDA) settlement funds account for the restoration of 5 acres (82% of the total); other funds account for the restoration of 1 acre.

Status and Funding

Installation of both headlands was completed in 2003. The project received $98,000 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total project budget of $120,000.

Project Accomplishments

This project improved nearshore habitat along a degraded urban waterfront and provided spawning habitat for Green Bay species. Post-restoration monitoring in 2005 indicated that the catch rate for walleye on the constructed reef was five times higher than in an adjacent reference area. There was also evidence of fish spawning on the reef at the time of the survey.

Gravel being placed between the headland groins *(Photo by George Boronow, Wisconsin Department of Natural Resources)*

Construction completed, showing the west headland groin *(Photo by George Boronow, Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Invasive Species Control in Green Bay Coastal Wetlands

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Invasive Phragmites was treated with herbicides and controlled burns, and purple loosestrife was treated by release of loosestrife beetles

Benefits
Enhanced waterfowl and wetland habitats in western and southern Green Bay coastal wetlands

Funding
$100,000 in natural resource damage assessment settlement funding

Timing
Control activities began in 2003 and were completed in 2006

Land ownership
Wisconsin Department of Natural Resources, City of Green Bay, Brown County, private landowners

Treated stands of Phragmites burned to remove biomass (*Photo by U.S. Fish and Wildlife Service*)

Goal

To improve coastal wetland habitat quality in Green Bay by treating the invasive plant species Phragmites (*Phragmites australis*), also known as giant reed grass, and purple loosestrife (*Lythrum salicaria*).

Project Description

Wetlands along the western and southern shores of Lower Green Bay have been degraded by a variety of stressors, including invasion of Phragmites, purple loosestrife, and other exotic plant species. Over time, invasive species exclude beneficial native wetland species from the habitat, reducing species diversity and degrading wildlife habitat. Dense Phragmites stands can alter the hydrologic regime of invaded wetlands by increasing evaporation and trapping sediment, resulting in a drying of wetland soils.

A group of public and private organizations worked cooperatively to treat invasive species in coastal wetlands. Activities included herbicide treatment of 611 acres of Phragmites in southern Green Bay, followed by controlled burns of 200 treated acres to remove dead biomass. An additional 163 acres of Phragmites were treated on the western shore of Green Bay. In addition, a biological control agent, the loosestrife beetle (*Galerucella* spp.), was released in wetlands on the southwest shore of Green Bay and near the mouth of the Lower Fox River to help control purple loosestrife.

Benefits

Controlling invasive plant species in Green Bay's coastal wetlands benefits native wetland species and can help prevent alterations to the hydrologic regime of wetlands along the shore

of Green Bay. Restored wetlands in the targeted area will provide improved habitat for waterfowl nesting, rearing, and migration. Other wildlife that benefit from control of invasive species include Forster's tern (*Sterna fosteri*), American bittern (*Botaurus lentiginosus*), egrets, rails, numerous other water bird and marsh bird species, and fish.

Spatial Extent of Project

A total of 774 acres of Phragmites were treated. The area benefitted by the release of loosestrife beetles was not quantified. Natural resource damage assessment (NRDA) settlement funds account for 100% of the treated acreage.

Adult loosestrife beetle feeding on purple loosestrife foliage *(Photo by U.S. Fish and Wildlife Service)*

Status and Funding

This project was completed in 2006. The project received $100,000 in NRDA settlement funding.

Project Accomplishments

Control of Phragmites and other invasive species, such as purple loosestrife, is an important conservation need for Green Bay and other Great Lakes locations. Successful treatment of Phragmites avoids the hydrologic modifications and drying of wetland soils that occurs in dense stands. Post-treatment monitoring indicated that the treatments were successful at controlling Phragmites for a few years, but areas that had not been treated again were being re-invaded. Resource managers have found that in Wisconsin and throughout the Great Lakes region, effective eradication of Phragmites and purple loosestrife takes approximately 10 years of repeated treatment. The Wisconsin Department of Natural Resources is committed to ongoing treatment of invasive species in Green Bay and actively pursues funding sources to enable this work.

Before (left) and after (right) herbicide treatment of Phragmites *(Photos by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service Green Bay Ecological Services Office (920) 866-1717
GreenBay@fws.gov http://www.fws.gov/midwest/greenbay/

Habitat Restoration in the Bay Shore Blufflands and Shivering Sands Preserves

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Reforest an old agricultural field, eradicate invasive species in a riparian area, remove an old cabin and restore upland habitat at the former building site

Benefits
Native forest habitat restored for wildlife, and water quality

Funding
$20,000 in natural resource damage assessment settlement funding

Timing
Restoration on the old field was completed in 2004, control of invasive species was completed in 2007, removal of an old cabin and associated restoration is ongoing, the Door County Land Trust will continue invasive species management as necessary

Land ownership
The Door County Land Trust, The Nature Conservancy, private landholders with conservation easements

Control of honeysuckle (*Lonicera* spp.) by cutting and applying herbicide to the stump *(Photo by The Nature Conservancy)*

Goal

To improve habitat value and water quality in the Bay Shore Blufflands and Shivering Sands Preserves in Door County.

Project Description

The restoration project within the Bay Shore Blufflands Preserve included reforestation of an old field and invasive species control in a wetland and riparian area. On-going restoration within the Shivering Sands Preserve includes removal of an old cabin structure and reforestation. On one parcel within the Bay Shore Blufflands Preserve, a former agricultural field was restored to native forest to improve habitat and benefit water quality. Reforestation was achieved by planting approximately 2,700 trees and treating invasive species throughout the project area. Tree species planted include white pine (*Pinus strobus*), red oak (*Quercus rubra*), green ash (*Fraxinus pennsylvanica*), white cedar (*Thuja occidentalis*), red-osier dogwood (*Cornus sericea*), and white spruce (*Picea glauca*). On the second parcel, invasive species including reed canary grass (*Phalaris arundinacea*), buckthorn (*Rhamnus frangula*), honeysuckle (*Lonicera* spp.), and giant reed grass or "Phragmites" (*Phragmites australis*) choked a former wetland, preventing fish and other native wildlife from using the habitat. Control of these species was

achieved with a combination of mechanical and chemical methods, followed by reseeding. Within the Shivering Sands Preserve, an old cabin, outbuildings, and associated debris are being removed from land owned by The Nature Conservancy. Habitat will be restored at the site by removing non-native vegetation and replanting with native species including white pine, hemlock (*Tsuga* spp.), and white cedar trees.

Benefits

Restoration of these two preserves benefits water quality by restoring upland habitat and riparian buffer habitat along riparian corridors in Door County. Native forest ecosystems and associated plants and wildlife benefit from reforestation and removal of aggressive, nonnative species. Native wildlife, such as mink, raccoon, bats, and bald eagle benefit from reforestation of the old field and restoration of the old building site. Fish spawning habitat benefits from the restoration of areas that had been degraded by reed canary grass invasion, which chokes out native vegetation and diminishes the habitat value for spawning fish and other wildlife.

Spatial Extent of Project

Thirty acres of the Bayshore Blufflands Preserve were restored and five acres of the Shivering Sands Preserve were restored. Natural resource damage assessment (NRDA) settlement funds account for 100% of the restored acreage.

Status and Funding

Reforestation on the old field was completed in 2004. Removal of invasive species through mechanical and chemical methods was completed in 2007. Monitoring for regrowth of invasive species is ongoing. Removal of the old cabin, outbuildings, and associated habitat restoration is ongoing and scheduled for completion in early 2013. The project received $20,000 in NRDA settlement funding. As of June 30, 2012, no matching funds had been received.

Project Accomplishments

This project successfully reforested and restored degraded areas of the Bay Shore Blufflands and Shivering Sands Preserves, improving upland forest, riparian, and wetland habitats and benefiting water quality. Invasive species eradication in the wetland area was very successful, restoring habitat to support fish spawning and other wildlife uses. Ongoing eradication of invasive species will be managed by the Door County Land Trust through their stewardship and volunteer programs.

Phragmites, cut and treated canes *(Photo by The Nature Conservancy)*

Contact Information

The Nature Conservancy Door Peninsula Office (920) 743-8695

Lake Puckaway Aquatic Habitat Enhancement

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Installation of a timber breakwater to protect submerged aquatic vegetation

Benefits
Increased abundance of aquatic vegetation and improved water quality

Funding
$16,400 in natural resource damage assessment settlement funds

Timing
Natural resource damage assessment settlement funding approved in August 2009; project is ongoing

Land ownership
The Lake Puckaway Protection and Rehabilitation District manages the lake in partnership with the State of Wisconsin

Lake Puckaway emergent vegetation *(Photo by Green Lake County)*

Goal

To protect and sustain important emergent and floating-leaf aquatic vegetation in Lake Puckaway through the creation of a breakwater structure made of timber.

Project Description

Lake Puckaway is a natural shallow lake on the Fox River, approximately 40 river miles upstream of Little Lake Butte des Morts. It provides habitat for a wide range of fish, including walleye (*Sander vitreus*), northern pike (*Esox lucius*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), crappie (*Pomoxis* spp.), and perch (*Perca flavescens*), and helps to provide habitat for Forster's tern (*Sterna forsteri*), which nests in this area. This project will help improve water quality in the lake by creating a breakwater structure to protect emergent aquatic vegetation such as bulrush (*Schoenoplectus* spp.) and wild rice (*Zizania aquatica*), as well as floating-leaf aquatic vegetation such as white water lily (*Nymphaea odorata*) and lotus (*Nelumbo lutea*). The breakwater structure will be a 400-foot timber-log structure designed to protect aquatic vegetation from wind- and boat-driven waves that cause physical damage to aquatic plants. The breakwater will also reduce the amount of suspended sediment, which restricts the growth of emergent aquatic plants. The combination of decreased suspended sediment and increased plant growth improves water quality and habitat for fish and wildlife.

Benefits

Aquatic vegetation has been declining in many areas of Lake Puckaway. In the most prominent areas of decline (Pancake Island and Haystack Marsh), this has been attributed in part to the collapse of a dredge spoil bank created in the late 1800s. The creation of the new timber breakwater will improve spawning habitat by increasing native aquatic vegetation and improving water quality in the lake that flows into the Fox River. Birds foraging in the area, such as Forster's tern (a Wisconsin state-listed species), pelicans, egrets, and herons, are also expected to benefit by an increased abundance of forage fish and other prey.

Spatial Extent of Project

Once completed, the structure is expected to enhance approximately 4 acres of shallow-water habitat, although the exact project footprint has not yet been determined. The acres credited to natural resource damage assessment (NRDA) settlement funding will be calculated after the project is completed.

Status and Funding

The project was approved in August 2009 as part of a larger restoration effort on the lake. Implementation was delayed by weather, and the project was revised for a modified permit. As of June 30, 2012, construction was expected to begin in the fall of 2012. The project received $16,400 in NRDA settlement funding. Matching funds will be contributed by other sources.

Project Accomplishments

A design for the breakwater structure has been developed. Monitoring locations have been established throughout the lake. Pre-restoration vegetation monitoring and bird nesting surveys have already been initiated; monitoring will continue after restoration is completed.

Pelicans foraging near emergent vegetation on Lake Puckaway *(Photo by Green Lake County)*

Contact Information

Green Lake County Land Conservation Department (920) 294-4051
gllwcd@co.green-lake.wi.us

Allouez Habitat Protection and Restoration

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Protection and restoration of habitat along the East River through creation of a community park

Benefits
Improved water quality in the East River, protection of fish and wildlife habitats

Funding
$500,000 in natural resource damage assessment settlement funding

Timing
Completed in 2007, with ongoing restoration by the Village of Allouez

Land ownership
Village of Allouez

View of protected riparian corridor at Wiese Family Park in the Village of Allouez *(Photo by Brad Lange, Village of Allouez)*

Goal

To protect and restore fish and wildlife habitat along the East River near the Village of Allouez, outside the City of Green Bay.

Project Description

The East River, a tributary to the Lower Fox River, provides important habitat for walleye (*Sander vitreus*), bass (*Micropterus* spp.), and yellow perch (*Perca flavescens*), as well as spring spawning grounds for northern pike (*Esox lucius*). Stream bank cover along the lower 4 miles of the river is poor and water quality has been degraded by adjacent agricultural land use. Natural resource damage assessment (NRDA) settlement funds were provided to purchase land and create the Wiese Family Park on former farmland along the East River to restore native habitat, improve riparian habitat, and protect water quality in the East River. Restoration activities included planting 135 trees on a 2-acre portion of the property and seeding another 15 acres of the area to prairie. An additional 5 acres of existing woodland habitat were protected. This project also provided recreational facilities for the Village of Allouez, which are described separately (see project 5.5: Allouez Park Development and East River Trail Extension in Section 5, Public Use Enhancement).

Benefits

The established park now protects riverbanks to control erosion along a portion of the East River, protecting water quality and providing prairie and forest habitats for wildlife.

Spatial Extent of Project

Twenty-two acres in the Wiese Family Park were restored and are

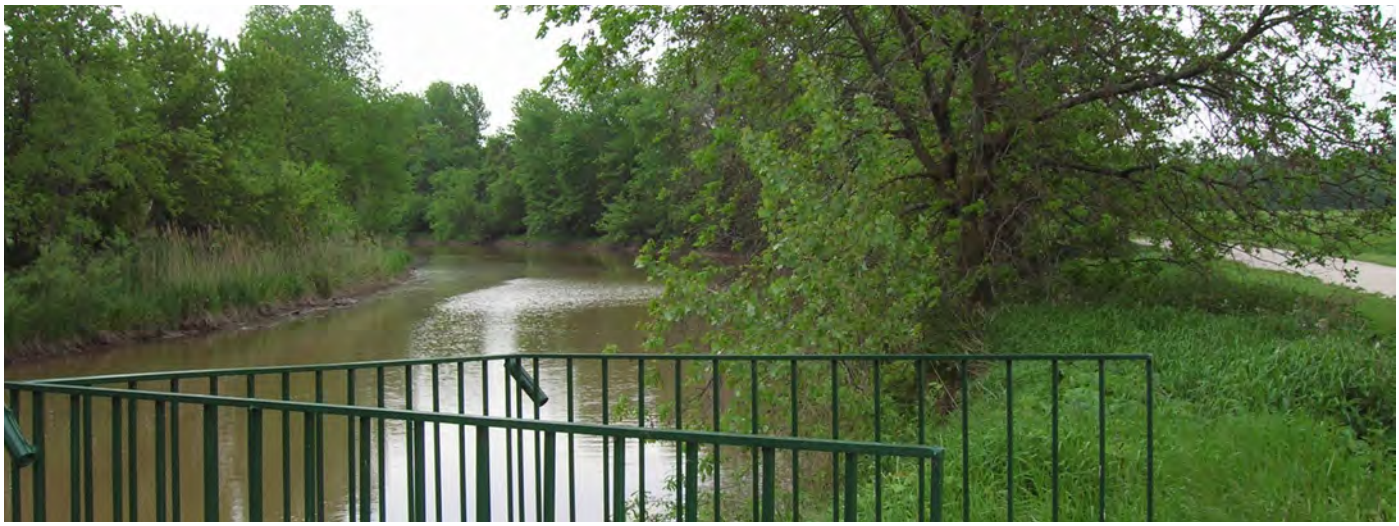
maintained as natural habitat. Six acres are maintained as recreational facilities (see project 5.5).

Status and Funding

Construction of the Wiese Family Park and restoration of habitat were completed in 2007. The project received $500,000 in NRDA settlement funding for restoration and preservation of natural habitat. NRDA settlement funds account for restoration of the 22 acres of natural habitat. Additional NRDA funds were used to develop the recreational facilities, which is described in project 5.5.

Project Accomplishments

Creation of the Wiese Family Park protects water quality in the East River and provides upland and riparian habitats for a variety of wildlife. This project benefits important sport fishing species, such as walleye, bass, yellow perch, and northern pike.



Protected riparian habitat along the East River *(Photo by Brad Lange, Village of Allouez)*

Restored prairie habitat at the Wiese Family Park *(Photo by Brad Lange, Village of Allouez)*

Contact Information

Village of Allouez Parks, Recreation & Forestry (920) 448-2800

Gilson Creek Glades Reserve Habitat Protection

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Conservation easements acquired to protect wetland habitat

Benefits
Habitat protection for brook trout, dwarf lake iris, rare alvar communities, and northern forest communities

Funding
$118,307 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $236,614

Timing
This project is complete, acquisition of the conservation easement was finalized in 2008

Land ownership
Private landowner will retain title to land; conservation easement granted to the Wisconsin Department of Natural Resources with the land managed by the Northeast Wisconsin Land Trust

Unnamed creek in Gilson Creek Watershed, part of the Red Banks State Natural Area *(Photo credit © by Jim Klinkert, Northeast Wisconsin Land Trust)*

Goal

To protect wetland habitat and water quality in the headwaters and channel of Gilson Creek, located within the Red Banks Alvar State Natural Area (SNA) on the eastern shore of Green Bay.

Project Description

The Red Banks Alvar SNA in Brown County supports a unique combination of natural habitats and rare species. The site includes alvar forest, which is a globally rare native community that occurs on thin soils overlying limestone. The site also supports unique white cedar (*Chamaecyparis thyoides*) woodlands as well as prairie and savanna habitats. The site provides important habitat for brook trout (*Salvelinus fontinalis*), the federally threatened dwarf lake iris (*Iris lacustris*), several species of rare snails, and a wide variety of insects. The Northeast Wisconsin Land Trust seeks to obtain conservation easements for parcels adjacent to the SNA to improve ecological connectivity in the area. The protected land has been incorporated into the Red Banks Alvar SNA and is managed according to a management plan developed in cooperation with the Gathering Waters Conservancy. In December 2008, the Northeast Wisconsin Land Trust used natural resource damage assessment (NRDA) settlement funding to acquire a conservation easement on 30.8 acres to protect the Gilson Creek Glades, which is adjacent to the Red Banks Alvar SNA. This site has been incorporated

into the SNA and is managed to preserve dwarf lake iris and brook trout populations.

Benefits

Protecting the property enhances water quality for the region, and ensures that habitat for endangered, rare, and ecologically important species is preserved. Native habitat for brook trout and the federally threatened dwarf lake iris is protected from development. The existing alvar, northern forest, and remnant glacial communities also benefit.

Spatial Extent of Project

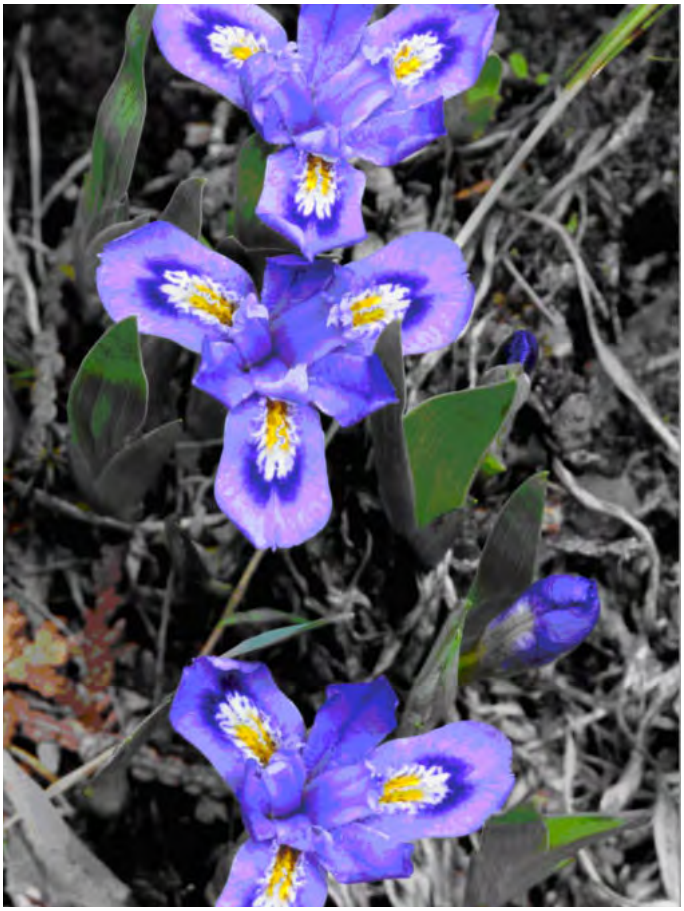
A conservation easement on a 30.8-acre parcel was acquired by the Northeast Wisconsin Land Trust and has been incorporated into the adjacent Red Banks Alvar SNA. NRDA settlement funds were credited with the protection of 15.4 acres (50%) of the parcel; other funds were credited with the protection of the remaining 15.4 acres.

Status and Funding

The conservation easement for the property was acquired in late 2008 and has been incorporated into the Red Banks Alvar SNA; it will be managed by the Northeast Wisconsin Land Trust (NEWLT). The property is currently open to the public except during the 9-day deer hunting season. Seven years after the purchase, the property will be open to the public at all times. NEWLT monitors the property annually. In addition, NEWLT has used work parties to remove trash and clean up the property, and has conducted field trips with NEWLT members; these activities will continue in the future. This project received $118,307 in NRDA funding and attracted additional matching funds and/or in-kind services for a total budget of $236,614.

Project Accomplishments

Acquisition of a conservation easement on this parcel protects water quality, protects habitat from development, and increases the habitat integrity and connectivity of the Red Banks Alvar SNA.



Dwarf lake iris on the 31-acre conservation easement *(Photo credit © by Jim Klinkert, Northeast Wisconsin Land Trust)*

Contact Information

Northeast Wisconsin Land Trust (920) 738-7265 newlt@newlt.org
http://www.newlt.org/

Green Bay and Gravel Island National Wildlife Refuge Habitat Management

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Part one of the project included habitat surveys and mapping, assessment of restoration needs, and development of a Comprehensive Conservation Plan. Part two of the project involved restoring habitat by controlling exotic species.

Benefits
Native plant communities, migratory bird species, and associated communities

Funding
$546,000 in natural resource damage assessment settlement funding

Timing
Project is complete

Land ownership
U.S. Fish and Wildlife Service

Great black-backed gull (*Larus marinus*) incubating a nest documented during a nesting survey on Gravel Island *(Photo by U.S. Fish and Wildlife Service)*

Goal

To develop habitat management plans and restore native habitat for the islands that make up the Green Bay National Wildlife Refuge (NWR) and Gravel Island NWR.

Project Description

The Green Bay and Gravel Island NWRs originally included three islands; two additional islands were recently added. All five islands are important stopover sites for a variety of migratory birds and are used as nesting sites by numerous species, including Caspian tern (*Hydroprogne caspia*) and common tern (*Sterna hirundo*). The islands support several state and federally listed species, and the surrounding water serves as a nursery area for native fish.

Funding for this project supported development of a Comprehensive Conservation Plan[3.2] for the refuge, which incorporates the NWR policy on double-crested cormorant (*Phalacrocorax auritus*) management for islands with large populations of cormorants. Cormorants can exacerbate the invasion of exotic vegetation because their acidic feces kill native vegetation.

To develop the Comprehensive Conservation Plan, ecological

[3.2] The Draft Comprehensive Conservation Plan for these islands has been created and is available at http://www.fws.gov/midwest/planning/GreatLakesIslands/CCP/Draft2_GLI_CCP-21August2012.pdf (accessed January 27, 2013).

surveys were completed on Hog, Spider, Gravel, Plum, and Pilot islands for bird, amphibian, reptile, and mammal populations to document habitat use throughout full annual cycles. These surveys were used to create detailed maps of native and nonnative species locations on the islands. Permanent vegetation plots were established and will be used to monitor restoration activities. As part two of this project, habitat was restored by controlling exotic species on 25 acres through hand-pulling and herbicide application on small patches.

Benefits

This project benefits native migratory birds and plant communities through the development of habitat management plans and restoration activities, including exotic species control. This work was an important component of the effort to bring two additional islands into the National Wildlife Refuge System, creating more extensive and ecologically diverse refuges. Other native species such as amphibians, reptiles, and mammals will also benefit from restoration and management.

Spatial Extent of Project

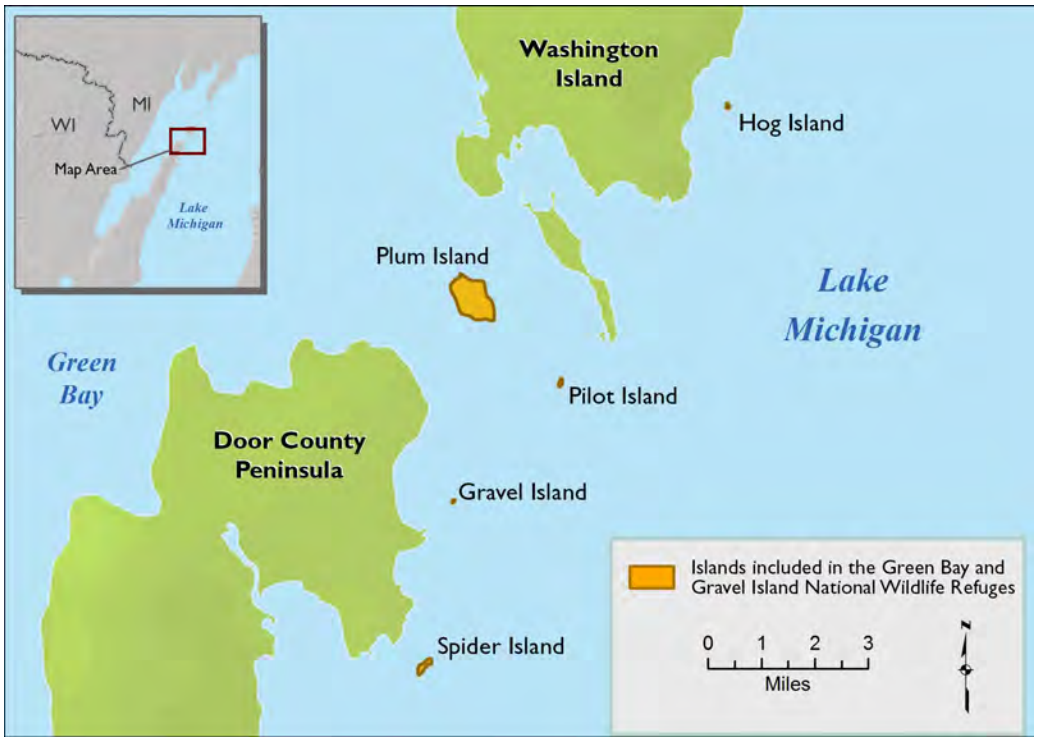
This project benefits the Green Bay and Gravel Island NWRs. Invasive species control work has been completed on 25 acres using natural resource damage assessment (NRDA) funding, which accounts for 100% of the restored acres.

Status and Funding

Project activities, including ecological surveys, vegetation mapping, exotic species control, and development of management plans, are complete. The project received $546,000 in NRDA settlement funding. A total of $188,000 was used to complete 25 acres of restoration; the remaining funds were used to complete the ecological inventory activities and develop the conservation plan.

Project Accomplishments

Restoration on the Green Bay and Gravel Island NWRs enhances the quality of habitat available on these islands, allowing for increased diversity for native species. The funding supported development of the Comprehensive Conservation Plan, which will guide future management and restoration actions, including continued invasive species treatment and other valuable restoration actions.



Contact Information

U.S. Fish and Wildlife Service, Gravel Island National Wildlife Refuge (920) 387-2658 gravelisland@fws.gov
http://midwest.fws.gov/horicon/

Cat Island Chain Restoration Project Feasibility Study

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Field investigation and modeling to design barrier islands, completion of feasibility study, construction of barrier islands

Benefits
Project contributes to the completion of barrier islands that will provide high-quality shallow water habitat for fish, waterbirds, migratory and resident waterfowl, and other wildlife

Funding
$1,100,000 in natural resource damage assessment settlement funding for feasibility study and construction activities; funding has been used as a match with other state, federal, and local funding sources toward total estimated project cost of $18,100,000

Timing
Feasibility study completed, construction of the first phase was initiated in 2012

Land ownership
Brown County

Aerial photo of the newly constructed access road and initiation of island footprints in the fall of 2012 *(Photo by Brown County)*

Goal

To begin restoring the Cat Island Chain of barrier islands and shoals to allow for the redevelopment of shallow-water habitat that provides high-quality spawning, nursery, and rearing habitat for fish and high-quality foraging habitat for birds.

Project Description

The islands and shoals of the Cat Island Chain in Lower Green Bay eroded from years of record-high lake levels in the 1970s and 1980s. These islands protected shallow-water habitat with extensive beds of submerged and emergent vegetation that provided important habitat for diverse populations of fish, invertebrates, furbearers, waterbirds, and migrating waterfowl. This shallow-water habitat was lost when the Cat Island Chain was destroyed by erosion and storms. An interagency group consisting of representatives from local, state, and federal agencies is working to restore the islands and associated habitats.

Construction plans for the Cat Island Chain include using dredged material from U.S. Army Corps of Engineers navigation projects to rebuild three islands. Island features will include headlands, gravel beaches on the exposed northeast side, and sloping sand beaches on the southwest lee side. Portions of the islands will be surfaced with topsoil and planted with native grasses, trees, and shrubs; other areas will be topped with sand and gravel substrates.

The Trustees received designated natural resource damage assessment (NRDA) settlement funding for this project as part of a 2002 consent decree with the Fort James Operating Company (now Georgia Pacific). The consent decree noted that the funding was intended to support design and/or construction of the western-most island (~ 30 acres) to ultimately create a protected "wave shadow" (610 acres), lagoon (2.5 acres), and shallow water habitat (9 acres). The current design for all three islands anticipates a total island footprint of 272 acres, which would protect up to an additional 1,225 acres of shallow-water and wetland habitat.

Benefits

This project is expected to ultimately restore terrestrial island habitat and aquatic and wetland habitat leeward of the islands. The reconstructed islands will serve as wind and wave barriers to reduce nearshore erosion, allowing for the reestablishment of submerged and emergent wetland vegetation in the wave shadow of the islands. This will provide high-quality spawning, nursery, and rearing habitat for fish and other aquatic species, as well as shallow-water foraging habitat for waterbirds and for migratory and resident waterfowl. The project will also create habitat for birds on the islands, benefitting common tern (*Sterna hirundo*), Forster's tern (*Sterna forsteri*), black-crowned night heron (*Nycticorax nycticorax*), and other colonial nesting birds, shorebirds, passerine species, and raptors.

Spatial Extent of Project

This project is expected to ultimately restore 272 acres of terrestrial island habitat and protect up to 1,225 acres of shallow aquatic and wetland habitat, with a total expected project cost of $18,100,000. NRDA settlement funding of $1,100,000 has been credited with restoring 91 acres of the expected 1,497 acres of future restored habitat.

Status and Funding

The feasibility study to guide design and restoration activities for the Cat Island Chain project, as well as initial construction, have been completed with the $1,100,000 settlement funding as directed by the consent decree. As of June 30, 2012, the total cost of the project was estimated to be $18,100,000, to be supported from a variety of federal, state, and local sources. The first phase of construction was initiated in 2012 and involved building an access road for island construction. Segments of this access road will eventually be developed as the spine of each island. The entire project is expected to take several decades to complete all phases.

Project Accomplishments

The design of the barrier islands and the feasibility study were successfully completed. Local, state, and federal funding sources have been identified to construct the wave barrier that also serves as an access road, as well as to construct the three islands. Initial construction activities began in 2012, with subsequent habitat development to follow (see aerial photo at start of this project summary).

Contact Information

Brown County Port and Solid Waste Department, (920) 492-4950

www.BrownCountyWiSolidWaste.org

Oneida Lake Habitat Creation

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Design and planning for a fishing lake on the Oneida Reservation

Benefits
Support future construction of a fishing lake, including aquatic, wetland, and upland habitats, and enhancement of Tribal recreational and cultural opportunities

Funding
$400,000 in natural resource damage assessment settlement funding for site selection, design, and planning; Tribal funds were used to acquire the site for lake construction; additional funding expected for construction

Timing
Acquisition, design, and planning completed in 2006, construction will begin when additional funding is available

Land ownership
Oneida Tribe of Indians of Wisconsin

An Oneida child fishing in a small, stocked pond on the Oneida Reservation *(Photo by Oneida Environmental Staff)*

Goal

To support the development of a lake on Oneida Tribal land to support a sustainable fishery, create habitat, and restore recreational and Tribal cultural opportunities which the Oneida lost due to PCB-related injuries to fishery resources.

Project Description

The release of polychlorinated biphenyls (PCBs) into the Fox River and Green Bay greatly impacted the cultural practices of the Oneida Tribe. To help regain some of the lost recreational and cultural opportunities that have been impaired as a result of PCB contamination, the Oneida Tribe is planning to construct a fishing lake on Oneida Tribal land.

The project focuses on the creation of a 40-acre fishing lake with a fishery that is expected to be self-sustaining approximately 10 years after the lake construction is complete.

The Trustees received designated natural resource damage assessment (NRDA) settlement funding for Phase 1 of this project as part of a 2002 consent decree with the Fort James Operating Company (now Georgia Pacific). The consent decree noted that the funding was intended to support site selection, assessment, and design work for the project. Using this funding, a project team evaluated potential sites for the lake within the Oneida Reservation. In the spring of 2006, the Tribe acquired a former sand and gravel pit using Tribal funds. Extensive scientific testing confirmed that the soil and hydrology of the project site were suitable for lake construction. The planning team, working with the Oneida community, drafted a conceptual plan for this site

that was completed in 2007. The Tribe is committed to completing the development of the lake, the fishery, and surrounding habitat.

Benefits

The project will create aquatic habitat and a self-sustaining fishery, benefiting fish and wildlife. When the project is complete, Tribal members will have increased opportunities for catching and consuming fish on the Oneida Reservation, as well as for Tribal ceremonial gatherings, recreation, and educational events.

Spatial Extent of Project

The project is expected to ultimately restore 40 acres of aquatic habitat at an expected project cost of $15,772,900 for lake and fishery development. Natural resource damage assessment (NRDA) settlement funding of $400,000 has been credited with restoring 1 acre of the expected 40 acres of future restored aquatic habitat.

Status and Funding

Site selection and planning have been completed with $400,000 in settlement funding (including $300,000 per the terms of the Fort James consent decree and $100,000 from other NRDA settlement funding). Acquisition of the project site was completed with Tribal funding; construction of the lake, the fishery, and surrounding habitat requires additional funds.

Project Accomplishments

This project successfully supported the planning phase for the lake. With additional funding, a former sand and gravel mine will be converted into a sustainable, functioning lake and fishery. Construction of a sustainable lake will accelerate the recovery of natural resources and cultural activities traditionally associated with fishing that were lost by the Oneida people as a result of PCB contamination in the Fox River.

Former sandpit acquired for the future lake and sustainable fishery *(Photo by Oneida Environmental Staff)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Wild Rice Reintroduction on the Menominee Indian Reservation

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Pilot project to study wild rice reintroduction in targeted areas on the Menominee Reservation

Benefits
Results from the pilot project could guide potential future wild rice restoration efforts

Funding
$58,827 in natural resource damage assessment settlement funding

Timing
The pilot project was completed in 2010

Land ownership
Menominee Indian Tribe of Wisconsin

Wild rice harvest *(Photo by the Menominee Tribe)*

Goal

To characterize the suitability of lake habitat on the Menominee Reservation for wild rice (*Zizania aquatica*) growth, and then seed suitable areas and reestablish wild rice on the reservation for harvesting.

Project Description

Wild rice harvesting is an important cultural practice for the Menominee people, who harvested and used the rice throughout the winter as a dietary staple. Wild rice grew previously in abundance on the reservation, but between 1954 (when the federal government ceased to recognize the Menominee) and 1972, when recognition was restored, a development project on the reservation altered the hydrology of eight lakes. Through damming and dredging, the stands of wild rice on the reservation were destroyed. The ecology of wild rice is not well understood or widely studied. For this project, the Tribe conducted studies on 30 lakes on the reservation, comparing the environmental, chemical, biological, and physical characteristics to areas known to support wild rice stands. Based on information from these studies, maps of potentially suitable habitat were created and wild rice was planted on approximately 74 acres on Menominee land; the intent was to reestablish stands that could be harvested.

Benefits

This project served as a pilot study that helped the Menominee learn more about wild rice cultivation. The intent of the project was to develop native stands of wild rice that would serve as a food source or as shelter for species such as waterfowl, muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*),

songbirds, and warm-water fish. The project was also intended to support an ongoing recovery of cultural practices, such as wild rice planting and harvesting, which will aid in recovering cultural identity.

Spatial Extent of Project

As a pilot project, this restoration action does not include a spatial component. Results of this planting effort will help improve any future wild rice restoration efforts.

Status and Funding

Studies of habitats to identify areas that could best support the reintroduction of wild rice, along with seeding of wild rice on Menominee land, were completed in the fall of 2006. The pilot project was completed in 2010. The trustees directed $58,827 in natural resource damage assessment settlement funding to this project.

Project Accomplishments

The initial study helped the Tribe identify areas where wild rice seeding had the potential to be successful. While the planted areas did not successfully produce harvestable wild rice stands, the pilot project helped support and reintroduce important cultural practices surrounding wild rice planting. The reseeding effort provided the opportunity for Tribal members to participate in traditional cultural activities. In addition, the pilot study provided important results that increased ecological knowledge about wild rice.

Wild rice and canoe *[CC-licensed photo by Eli Sagor (Flickr)]*

Contact Information

Menominee Indian Tribe of Wisconsin Environmental Services Department (715) 799-6152

Bald Eagle Nesting Habitat Restoration on the Oneida Reservation

PROJECT AT A GLANCE

Restoration category
Wetlands and Associated Uplands Habitat Restoration

Actions
Installation of 10 bald eagle nesting structures in restored wetland habitats throughout the Oneida Reservation

Benefits
Increased nesting and breeding opportunities for the bald eagle and other native bird species, and an increase in the presence of a key cultural symbol for Oneida Tribal members

Funding
$18,000 in natural resource damage assessment settlement funding, plus matching funds and in-kind services for a total budget of $25,269

Timing
Natural resource damage assessment settlement funding awarded in August 2009; nest structures installed in 2010

Land ownership
Oneida Tribe of Indians of Wisconsin

Immature bald eagles *(Photo by Ron Eckstein, Wisconsin Department of Natural Resources)*

Goal

To provide nesting structures for bald eagles in six restored wetlands within the Oneida Reservation.

Project Description

Currently, bald eagles (*Haliaeetus leucocephalus*) use restored wetlands within the Oneida Reservation. These restored habitats provide feeding and roosting opportunities for bald eagle, osprey (*Pandion haliaetus*), and common tern (*Sterna hirundo*). However, nesting habitats are not present within the restored areas and will require many years to develop naturally. The Oneida Tribe installed 10 bald eagle nesting structures within 6 restored wetland habitats on the Oneida Reservation. The nesting structures were built to last 25 to 30 years and will require minimal maintenance. Nesting sites will be routinely monitored for nesting activity and reproductive success.

Benefits

Bald eagle populations plummeted in Wisconsin and across the United States during the 1950s, 1960s, and 1970s due to habitat destruction and the use of DDT, the derivative of which accumulated in adult bald eagles and caused them to lay thin-shelled eggs that often cracked before hatching. While a ban on DDT in 1972 has helped the bald eagle population begin to recover, habitat

loss and degradation continue to be a challenge. In addition, bald eagle populations near Green Bay were injured by feeding on fish with high polychlorinated biphenyl (PCB) concentrations.

The installation of nesting structures will provide local bald eagle populations with increased opportunities for nesting on the Oneida Reservation. The project should also provide increased sightings of the bald eagle, an important cultural symbol for the Tribe. The reproductive success of the bald eagle, as well as any other raptor species using the structures, will be monitored to determine project success. Other raptor species, such as osprey, will also benefit from the installation of the new nest structures.

Spatial Extent of Project

Ten nesting structures were constructed at various locations throughout the 65,000-acre Oneida Reservation.

Status and Funding

This project was awarded natural resource damage assessment (NRDA) settlement funding in August 2009. The nest structures were completed, attached to poles, and installed in the winter of 2010. The trustees directed $18,000 in NRDA settlement funding to this project and attracted additional matching funds and/or in-kind services for a total budget of $25,269. A local utility company donated the poles.

Project Accomplishments

This project is ongoing. Remaining funds will be used to install nesting structures at wetland restoration sites throughout the Oneida Reservation. Installed nest structures will help support and improve the nesting success of bald eagle and other important raptor species, some of which were injured by the release of PCBs to the environment. Oneida Environmental Staff have already observed bald eagle and osprey near the nesting structures, although no nests have been observed as of June 30, 2012.

Oneida Conservation Corps technician installing nesting structure *(Photo by Oneida Conservation)*

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Forster's Tern Nesting Platform Installation in the Green Bay West Shores Wildlife Area

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Build nesting platforms for the Forster's tern

Benefits
Improved reproductive success of the Forster's tern, a Wisconsin state-listed endangered species

Funding
$2,400 in natural resource damage assessment settlement funding, plus matching funds and in-kind services for a total budget of $6,080

Timing
Project is complete

Land ownership
Wisconsin Department of Natural Resources

Forster's tern decoy used on platforms *(Photo by Wisconsin Department of Natural Resources)*

Goal

To provide suitable nesting habitat for the Forster's tern (*Sterna forsteri*), a state-listed endangered species in Wisconsin.

Project Description

Forster's tern populations have been negatively impacted by contaminants present in Green Bay. Additionally, over the past few decades, industrial activities, residential development, and recreation have contributed to the loss of coastal marshes in Green Bay, which provides suitable nesting habitat for Forster's tern. Even in areas where marsh habitat remains, it can be low quality, highly fragmented, or susceptible to disturbance from storms during the nesting season. This project provides much-needed nesting habitat by the construction of large nesting platforms (5' x 5') placed in clusters for Foster's tern populations in various locations in the Green Bay West Shores Wildlife Area. These floating platforms were constructed of polyvinyl chloride and a water-permeable material, which support the nests that terns create using native vegetation. To attract the desired Forster's tern to the site, tern decoys are displayed and calls are broadcast from the platforms.

Benefits

This project is intended to improve the reproductive success of Forster's tern populations by providing additional nesting habitat, which may lead to increased abundance over time.

Spatial Extent of Project

This project does not have a measurable spatial component. Nesting platforms were installed in several locations in the Green Bay West Shores Wildlife Area. Sixteen floating platforms were constructed and installed for the 2010 nesting season in the Peshtigo Harbor, Oconto Marsh, and Sensiba Units of the Green Bay West Shores Wildlife Area. In addition, 18 tern decoys and 2 audio players were placed with the nesting platforms to attract Forster's tern. Project work will continue and will include improving the audio system and monitoring for nesting activity.

Status and Funding

The project was approved for natural resource damage assessment (NRDA) settlement funding in August 2009. The trustees directed $2,400 in NRDA settlement funding to this project and attracted additional matching funds and/or in-kind services for a total budget of $6,080.

Project Accomplishments

The construction of nesting platforms has been identified as a technique that will effectively increase available nesting areas for Forster's terns in habitats where suitable nesting areas are limited. No nesting activity was observed in the 2010 nesting season due to a lack of tern activity in the bay that year. Terns were observed visiting the nests in 2011.

Forster's tern decoy *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Forster's Tern Nesting Enhancement Pilot Project on Lake Poygan

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Construction of sand shoals to protect and restore Forster's tern nesting habitat

Benefits
Protection and restoration of a Forster's tern nesting site habitat

Funding
$200,792 in natural resource damage assessment settlement funding

Timing
Construction of pilot project began in 2010; pilot project is expected to be complete in 2014

Land ownership
Town of Poygan, Winnebago County

High-quality Forster's tern nesting habitat in the West Bay canes *(Photo by Lake Poygan Sportsman's Club)*

Goal

To protect and restore Forster's tern (*Sterna forsteri*) nesting sites in the West Bay cane beds on Lake Poygan.

Project Description

Lake Poygan is one of a series of interconnected lakes fed by the Fox and Wolf rivers in Wisconsin that are collectively referred to as the Winnebago Pool. It covers 14,102 acres, and provides habitat for birds and a wide variety of fish. Historically, the Wisconsin endangered Forster's tern nested on shallow, vegetated sand bars in Lake Poygan that were protected by large beds of a native strain of giant reed grass (*Phragmites australis*), locally known as canes. The Lake Poygan cane beds lost approximately 20% of their total area between 1937 and 1997 due to a variety of stresses, including human development of marshes and lake shorelines, high summer water levels, wave and ice impacts, poor water clarity, and invasion of carp (*Cyprinus carpio*). Additional cane bed habitat has been lost since 1997. The loss of cane beds area has led to a corresponding reduction in nesting success and population declines for Forster's terns.

This pilot project aims to protect and restore a portion of the West Bay cane beds in Lake Poygan by rebuilding a section of the degraded sand bar. This was accomplished by refilling depleted areas of the bar with sediments dredged from the adjacent lake bed. Areas of the restored sand bar exposed to wave and ice energy were armored with concrete blocks to

protect and enhance Forster's tern nesting sites within the cane beds. Natural resource damage assessment (NRDA) settlement funding has supported initial phases of restoration to maintain the existing cane beds. A larger-scale restoration project, with the goal of sustaining the cane beds indefinitely, will be designed based on findings and experience gained from the NRDA-funded restoration.

Benefits

The protection and restoration of cane beds will protect the nesting habitat of Forster's tern. The cane beds also provide important protection for a diverse assemblage of rooted aquatic plants that attract a large variety of fish and wildlife, including northern pike (*Esox lucius*), walleye (*Sander vitreus*), and yellow perch (*Perca flavescens*).

Spatial Extent of Project

This pilot project does not have a measurable spatial component. NRDA settlement funding supported the expansion of the West Bay cane beds, beginning with a pilot project to restore a small test area of sand bar on which the cane beds are located. The ultimate goal is to protect and restore a much larger shallow-water area.

Status and Funding

The trustees directed $200,792 in NRDA settlement funding to this project. Construction began in 2010. The pilot project is scheduled to be complete in 2014.

Project Accomplishments

A field survey conducted in May 2012 identified 177 Forster's tern nests at the Lake Poygan cane beds, including nests that were built at the project site location. Project monitoring includes annual Forster's tern nest counts, emergent plant stem density counts, bathymetric surveys, and dredge spoil cross-section profiles.

Lake Poygan West Bay sand bar in 1986 (top) and in 2005 (bottom) showing the loss of cane beds in key areas *(Photo comparison by Lake Poygan Sportsman's Club)*

Contact Information

Wisconsin Department of Natural Resources Oshkosh Office, DNR Service Center (920) 424-3050

Common Tern Nesting Habitat Enhancement and Nest Island Construction on Lake Butte des Morts

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Nesting habitat was created on three islands to attract common terns and other migrating waterfowl and shorebirds

Benefits
Nesting common tern populations and associated species

Funding
$126,208 in natural resource damage assessment settlement funding for three projects

Timing
Construction completed in summer 2009

Land ownership
The constructed islands are owned by the State of Wisconsin; the lake bed is owned by the Butte des Morts Conservation Club and held in public trust

Willow Tree Island *(Photo by Wisconsin Department of Natural Resources)*

Goal

To increase nesting habitat for common terns (*Sterna hirundo*) and other shorebirds and waterfowl at the Terrell's Island Habitat Restoration Area on Lake Butte des Morts.

Project Description

Common terns, a state-listed endangered species in Wisconsin, were injured by their exposure to polychlorinated biphenyls (PCBs) released into Green Bay. This project enhances common tern nesting habitat on an existing island, and provides additional habitat for common terns and other birds by constructing two new islands in Lake Butte des Morts. Habitat was improved on an existing 0.1 acre island after terns abandoned it because of the growth of tall vegetation. The restoration project involved the renovation of common tern nesting habitat on the existing island through the installation of weed barrier fabric, capping with 6-12 inches of sand, and reinforcement of existing rock armoring. A new 0.1-acre circular island was constructed with clay fill and then capped with stone overlain by fine gravel to create additional common tern nesting habitat. Finally, a 0.3-acre island was constructed to provide nesting habitat for migrating waterfowl and shorebirds. Ongoing monitoring and maintenance work includes removing vegetation in the nesting area and monitoring for all ground-nesting species, with special attention focused on encouraging

common tern nesting populations and minimizing impacts of predatory ring-billed gulls (*Larus delawarensis*).

Benefits

Island construction and restoration increase available nesting habitat and help to ensure continued population growth and recovery of the common tern. Shorebirds and waterfowl are also expected to utilize these habitat areas.

Spatial Extent of Project

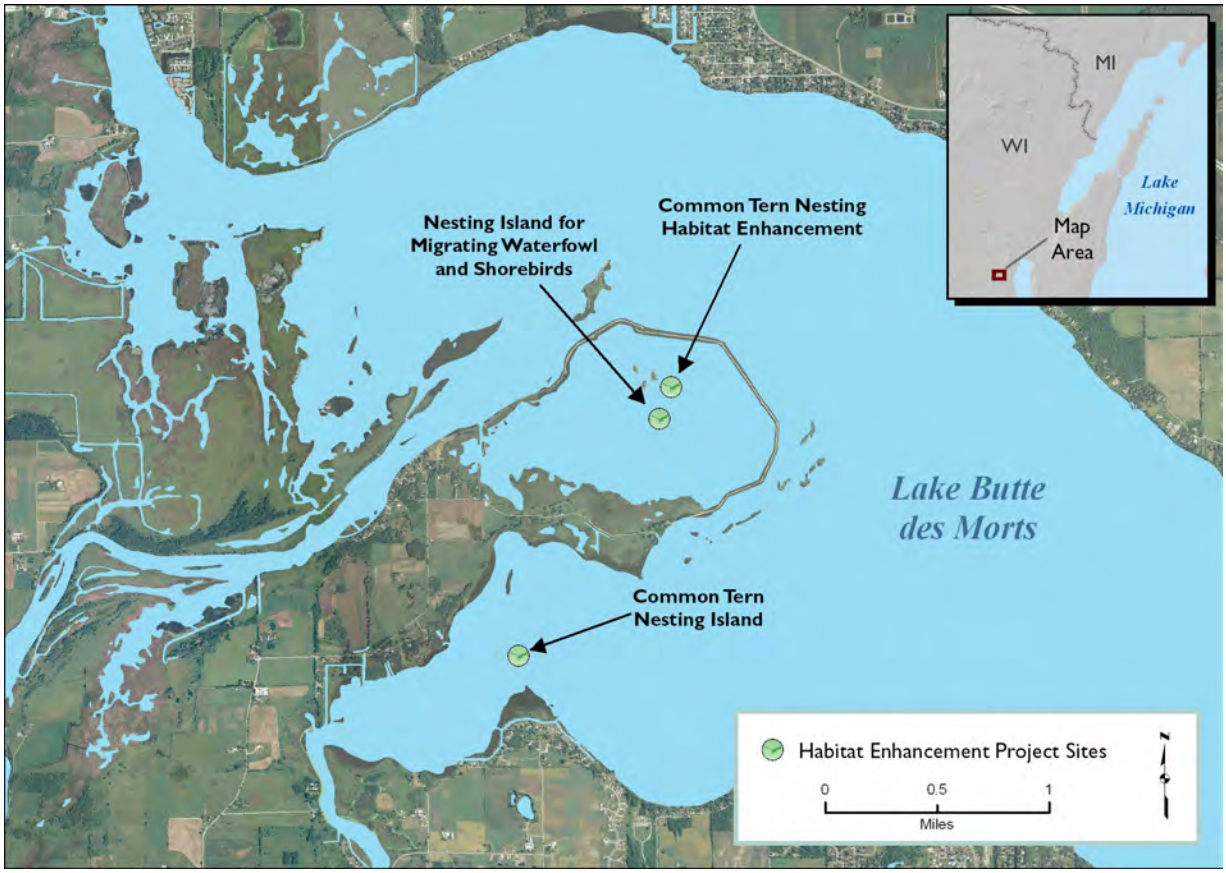
Three separate island projects benefit common terns and other shorebirds and waterfowl within and near the Terrell's Island Habitat Restoration Area in Lake Butte des Morts. Natural resource damage assessment (NRDA) settlement funds account for 100% of the restored habitat.

Status and Funding

Renovation of common tern habitat and construction of additional nesting habitat for shorebirds and waterfowl were completed in 2009. Monitoring and maintenance of these three project sites are ongoing. The trustees directed a total of $126,208 in NRDA settlement funding to this project.

Project Accomplishments

Renovation of existing tern habitats and construction of two new islands were completed in July 2009. These islands are increasing the availability of common tern habitat, which has led to an increase in common tern nesting. In May 2012, 33 common tern nests were observed on the common tern nesting island in Lake Butte des Morts.



Contact Information

Wisconsin Department of Natural Resources Oshkosh Office, DNR Service Center, (920) 424-3050

Piping Plover Population Enhancement

PROJECT AT A GLANCE

Restoration category
Aquatic, Nearshore, and Riparian Habitat Quality Improvement

Actions
Monitoring and protection of piping plover nesting habitat, and release of fledglings raised in captivity

Benefits
Increased piping plover populations

Funding
$21,698 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $206,698

Timing
The natural resource damage assessment-funded portions of this project were completed in 2005 and 2006; overall efforts to restore a healthy population of piping plover are ongoing

Land ownership
State of Wisconsin, U.S. Forest Service, private landholders

Piping plover *(Photo by U.S. Fish and Wildlife Service)*

Goal

To increase the population of the federally endangered piping plover (*Charadrius melodus*) in the Great Lakes Basin to 150 breeding pairs.

Project Description

Piping plover in the Great Lakes was listed as a federally endangered species in 1986. This project supported a U.S. Fish and Wildlife Service program designed to increase the piping plover population in the region. In 2003, there were just 50 breeding pairs in the Great Lakes Basin. The program goal was to increase this number to 150 breeding pairs by restoring and protecting nesting habitat and providing long-term population monitoring. Specific actions included conducting surveys for potential and current nesting sites, protecting active nests, and banding individual birds. In 2006, active nest sites were identified in Delta County, Michigan for the first time, and these new sites were protected with nest exclosures. In addition, eggs were removed from abandoned nests and the chicks were hatched in captivity, and then released back into the wild as fledglings. Natural resource damage assessment (NRDA) settlement funding was used to support project activities in the Green Bay watershed, including nest surveying, banding individual birds, and captive-rearing chicks.

Benefits

This project is helping to increase the numbers of piping plover in the Green Bay/northern Lake Michigan area.

Spatial Extent of Project

Surveys of potential breeding sites were done throughout the Green Bay/northern Lake Michigan area, including Marinette County, Wisconsin and Delta County, Michigan.

Status and Funding

NRDA-funded activities, including monitoring breeding pairs, protecting nesting sites, and rearing and releasing fledglings, were completed in 2007. The trustees directed $21,698 in NRDA settlement funding to this project and attracted additional matching funds and/or in-kind services for a total project budget of $206,698.

Project Accomplishments

The project successfully identified and protected active nest sites in the Great Lakes Basin, which includes Great Lakes shorelines in Michigan and Wisconsin. In addition, fledglings were successfully reared from eggs collected from abandoned nests in 2005 and 2006. At the end of 2007, there were 60 breeding pairs of piping plover throughout the project region. NRDA settlement funding supported project activities in the Green Bay watershed. A total of 18 nests in the Green Bay watershed, fledging over 30 chicks, were protected using NRDA settlement funding. From 2006 to 2008, piping plovers nested in Delta County, Michigan and fledged several chicks. Sites in Marinette County, Wisconsin have been used as stopover habitat during migration and in 2008, one pair of piping plovers nested in this area. Additionally, 44 chicks raised in captivity were released into the Great Lakes basin. Several of the captive-reared chicks from the Green Bay watershed have returned and nested successfully in the Great Lakes. NRDA settlement funds contributed to the ongoing and long-term success of recovery plans designed to help the piping plover survive and recover.

Piping plover nest in Wisconsin *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service, East Lansing Field Office (Piping Plover Great Lakes Population Recovery Plan HQ)
(517) 351-2555

SECTION 4

Fishery Resource Enhancement

Enhancement of fishery resources was included as an initial goal in the 2003 Joint Restoration Plan/ Environmental Assessment (RP/EA) published by the Lower Fox River and Green Bay Trustees. Specifically, the Trustees noted their interest in focusing on projects that would help to meet their goals of "self-sustaining fish populations and a healthy fish community in the Lower Fox River and Green Bay environment."

The fish communities of the Lower Fox River and Green Bay are impaired, with a lower abundance and diversity of top predators and native prey species and an excess of exotic species such as carp (*Cyprinus carpio*), alewife (*Alosa pseudoharengus*), round goby (*Neogobius melanostomus*), and white perch (*Morone americana*). The Lake Michigan ecosystem was transformed over the last century by pollution, habitat degradation, the introduction of exotic species, and the unrestricted harvest of native species. Projects completed in this category are intended to benefit fishery resources, which were injured by releases of polychlorinated biphenyls (PCBs) into the environment.

For this category, the Trustees primarily focused on projects that restored or enhanced the diversity and abundance of predators or native prey fish species within the Lower Fox River/Green Bay ecosystem. In the RP/EA, the Trustees also noted they would consider projects that can effectively control the abundance and distribution of aquatic nuisance species, but no projects had been funded in this area as of June 30, 2012.

The Trustees have targeted natural resource damage assessment (NRDA) settlement funds toward multiple projects improving the rearing facilities at existing fish hatcheries to increase production of predator species such as lake trout (*Salvelinus namaycush*), spotted musky (*Esox masquinongy*), chinook salmon (*Oncorhynchus tshawytscha*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*) (see project summaries 4.1 and 4.8). These projects improved two federal hatcheries in Michigan and Wisconsin (i.e., Pendills Creek and Iron River National Fish Hatcheries) and Wisconsin's flagship Wild Rose Fish Hatchery and have allowed the hatcheries to increase their stocking rates for these predators and important sport fish.

The Trustees have funded multiple projects focused on finding ways to improve native fish communities in the future. One study included an evaluation of the factors limiting yellow perch (*Perca flavescens*) populations and a second study was done to characterize and increase habitat for lake sturgeon (*Acipenser*

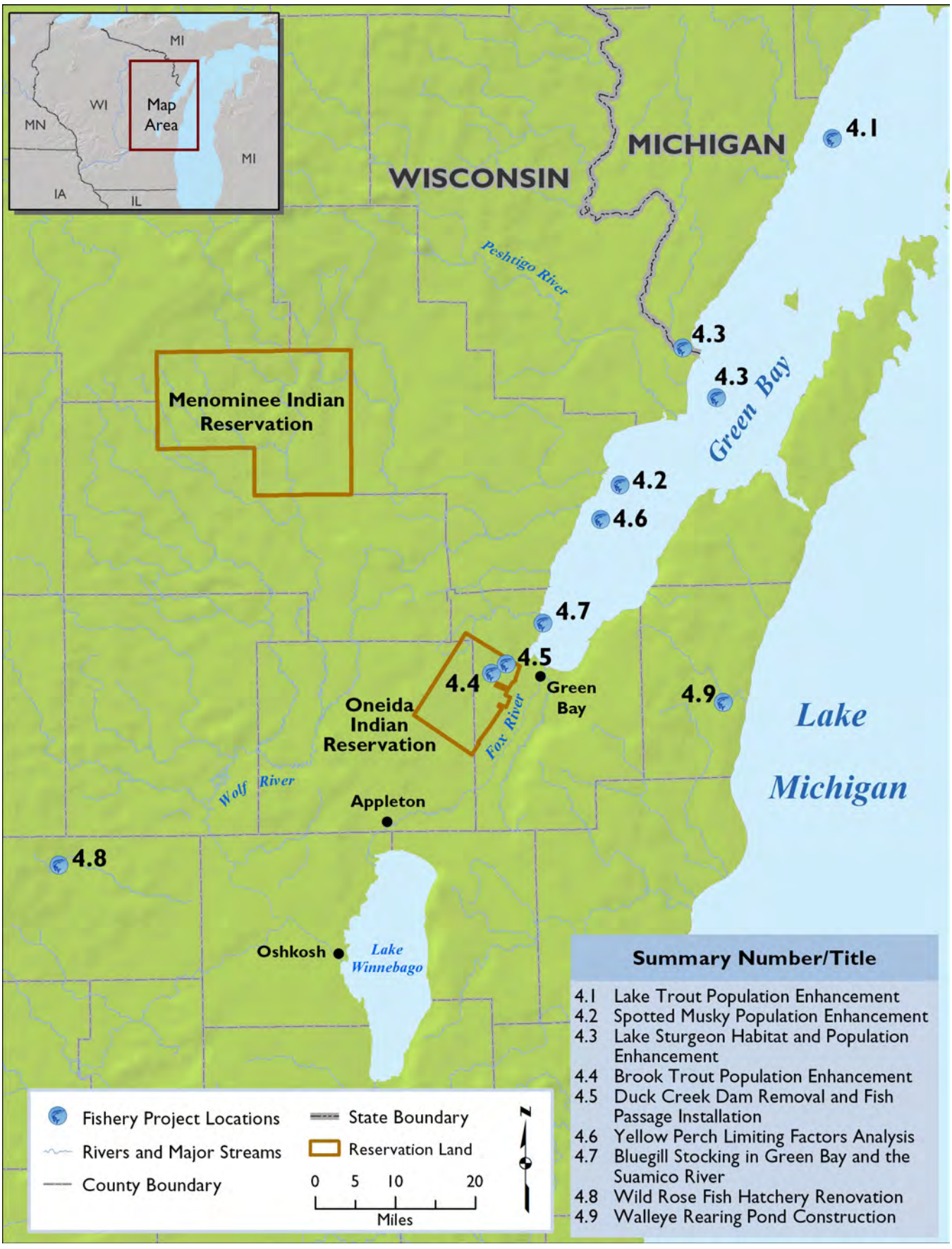
vulvescens) (see project summaries 4.3 and 4.6). The Trustees also have funded multiple projects focused on enhancing populations of native fish that are popular as sport fish, including brook trout (*Salvelinus fontinalis*), bluegill (*Lepomis macrochirus*), spotted musky, and walleye (*Sander vitreus*) (see project summaries projects 4.4, 4.7, and 4.9). Two projects (4.4 and 4.5) also benefit subsistence and recreational fishers and support traditional practices by Oneida Tribal members. Finally, the Trustees funded a project to remove a dam that had prevented fish migrating from Green Bay from accessing spawning habitat in Duck Creek (see project summary 4.5).

Through June 30, 2012, the Trustees had allocated $7,539,508 in NRDA settlement funding to restoration projects through Trustee council resolutions that direct funding to specific projects (see page 126 "Overview Map of Fishery Resource Enhancement Projects"). Project partners obtained $13,331,571 in additional leveraged funding to help complete the projects.

The Trustees did not establish a numeric target for projects in this restoration category in the RP/EA. However, as described in the 2000 Restoration and Compensation Determination Plan (RCDP) for the Lower Fox River/Green Bay Natural Resource Damage Assessment, a portion of the total natural resource damages for the Lower Fox River/Green Bay is associated with lost recreational fishing services. The value of lost recreational fishing services in all waters of Green Bay because of PCB fish consumption advisories was quantified as $64.5 million in the RCDP. The Trustees intend to direct recovered damages associated with recreational fishing losses toward projects in this fishery resource enhancement category. The Trustees have also considered cultural uses and recreational fishing opportunities in the selection of these projects. The NRDA-credited portion of these accomplishments is based on the percentage of total project funding provided by NRDA funds.

(Photos by Paul Peeters, Wisconsin Department of Natural Resources)

Overview Map of Fishery Resource Enhancement Projects



Summary of Fishery Resource Enhancement Projects

	Summary Number and Project Title	NRDA Settlement Funds Allocated	Leveraged Funds	Restoration Project Number(s)[a]
4.1	Lake Trout Population Enhancement	$300,000	$1,357,526	10
4.2	Spotted Musky Population Enhancement	$615,400	$76,379	11, 22, 88, 124
4.3	Lake Sturgeon Habitat and Population Enhancement	$92,000	$80,263	13, 122
4.4	Brook Trout Population Enhancement	$80,000	$17,000	166
4.5	Duck Creek Dam Removal and Fish Passage Installation	$15,000	$0	164
4.6	Yellow Perch Limiting Factors Analysis	$381,108	$25,500	19, 20, 76, 90
4.7	Bluegill Stocking in Green Bay and the Suamico River	$6,000	$6,000	77
4.8	Wild Rose Fish Hatchery Renovation	$6,000,000	$11,757,903	41
4.9	Walleye Rearing Pond Construction	$50,000	$11,000	63
	Total	**$7,539,508**	**$13,331,571**	

Table notes:

[a] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

Lake Trout Population Enhancement

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Raceways were replaced and covered, a new filtration system was constructed, and liquid oxygen was installed at two federal fish hatcheries

Benefits
Improved lake trout populations in Green Bay and Lake Michigan

Funding
$300,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $1,657,526

Timing
Completed in 2006

Land ownership
U.S. Fish and Wildlife Service

Young lake trout (*Photo by U.S. Fish and Wildlife Service*)

Goal

To improve the ability of two national fish hatcheries to supply lake trout (*Salvelinus namaycush*) in Green Bay and Lake Michigan.

Project Description

Some native fish populations in Lake Michigan and Green Bay are currently maintained by stocking because habitat loss and contamination have impeded their ability to reproduce and recover naturally. Two federal hatcheries –Pendills Creek and Iron River National Fish Hatcheries (NFHs) – that provide high-quality lake trout for restoration and harvest have been unable to meet stocking quotas because of inadequate facilities. To improve production within their facilities, both hatcheries installed liquid oxygen systems to increase oxygen levels within the water supplies used for fish rearing. The Iron River NFH also constructed a new fish production building and upgraded raceways to prevent predation by birds as well as provide shade and insulation.

Benefits

This project benefits Green Bay lake trout populations by improving the water quality and hatchery facilities at two national fish hatcheries. Lake trout are a native Great Lakes fish that have experienced population declines due to a multitude of reasons including habitat loss and sea lamprey (*Petromyzon marinus*) predation on adults. Lake trout recovery also increases biodiversity in Green Bay and Lake Michigan fish communities.

Project Location

The Pendills Creek NFH is located in Brimley, Michigan; the Iron River NFH is located in Iron River, Wisconsin. Fish from these two hatcheries are stocked throughout Green Bay and Lake Michigan.

Status and Funding

Project activities were completed in 2006. The Trustees directed $300,000 in natural resource damage assessment settlement funding, and with additional matching funds and/or in-kind services, this resulted in a total budget of $1,657,526 to complete these hatchery improvements.

Project Accomplishments

Two federal hatchery facilities that are needed to maintain and enhance stocking programs in Green Bay and Lake Michigan were successfully improved by this project. Pendills Creek NFH increased their production of lake trout to 150,000 yearlings and Iron River NFH improved production by 200,000 yearlings and 550,000 fall fingerlings. Fish are healthier at both facilities due to increased oxygen levels. Iron River NFH reports improved egg production, less annual mortality, and better overall fish health as a result of new raceways and construction of the new fish production building.

Lake trout *(Drawing by National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory)*

New raceways constructed for fish rearing at Iron River National Fish Hatchery *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

U.S. Fish and Wildlife Service National Wildlife and Fish Conservation Office (920) 866-1717

Spotted Musky Population Enhancement

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Eggs were collected and fertilized, fish were raised to several stocking sizes (fingerling, yearling, and fry) and then released, and future donor stocks were identified

Benefits
Increased spotted musky population, improved native fish population dynamics

Funding
$615,400 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $691,779

Timing
63,779 spotted muskies were released in 2005, 600 spotted musky yearlings were released in 2006, 1,063 spotted musky yearlings were released in 2009, stocking fish efforts continue each year, the search for disease-free broodstock is ongoing

Land ownership
Wisconsin Department of Natural Resources

Spotted musky yearling being stocked in the Fox River *(Photo by Kevin Naze, Wisconsin Department of Natural Resources)*

Goal

To help reestablish a self-sustaining spotted musky (*Esox masquinongy*) population in Green Bay.

Project Description

Long-term plans to reintroduce and maintain healthy populations of native predator fish species in Green Bay and Lake Michigan are ongoing and require support for hatcheries, rearing facilities, and staff. The spotted musky of Green Bay is an important native predator and trophy fish that was locally extirpated. Natural resource damage assessment (NRDA) settlement funding provided support to the Wisconsin Department of Natural Resources (DNR) to raise, feed, and stock spotted musky in Green Bay. Improved facilities at the Wild Rose Fish Hatchery (see project 4.8) were also utilized to raise 20,000 fingerlings and 1,000 yearlings annually.

To increase the genetic diversity of the spotted musky population the Wisconsin DNR, with assistance from the U.S. Fish and Wildlife Service, used NRDA settlement funds to identify, test, and collect wild egg sources from Canada for fish rearing and stocking into Green Bay and Lake Michigan. This program included cooperative work with the Ontario Ministry of Natural Resources that helped identify a number of wild populations of spotted musky in northern Lake Huron that could be used as donor populations.

Benefits

Reintroduction of top predator species such as spotted musky will help restore the native fish community. Improved

biodiversity will reduce exotic species populations and encourage recovery of other species associated with the reintroduced predators. As a popular trophy fish, spotted musky reintroduction and recovery will provide increased recreational opportunities for sport fishermen.

Project Location

Spotted musky are found throughout Green Bay and Lake Michigan. Stocking occurs throughout Green Bay, Lake Michigan, the Lower Fox River, and the four lakes of the Winnebago Pool.

Status and Funding

As of June 30, 2012, over 66,000 spotted muskies have been released into Green Bay. Continual monitoring will help to determine when natural reproduction is supporting populations in a given area and stocking is no longer required. Significant numbers of fish have been observed during surveys; however it may take up to 10 years to confirm natural reproduction. Spotted musky will continue to be reared and released into Green Bay until the population is self-sustaining. The Trustees directed $615,400 in NRDA settlement funding, and with additional matching funds and/or in-kind services, this resulted in a total budget of $691,779 to complete this project.

Project Accomplishments

Spotted musky stocking began in 1989 in relatively low numbers. As a result of NRDA settlement funding, the Wisconsin DNR was able to significantly increase stocking numbers and diversify stocking locations to begin to reestablish a self-sustaining spotted musky population in the region. Stocking efforts will continue until the existence of a successful self-sustaining population is confirmed.

Spotted musky, November 2005 *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

Lake Sturgeon Habitat and Population Enhancement

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Evaluate and prioritize areas where access to spawning habitat should be restored, and create lake sturgeon spawning habitat in the Menominee River

Benefits
Lake sturgeon populations in Green Bay and northern Lake Michigan tributaries

Funding
$92,000 in natural resource damage assessment settlement funding and additional funds and/or in-kind services for a total budget of $172,263

Timing
Restoration priorities analysis is complete, spawning habitat restoration is in progress

Land ownership
Project management by Wisconsin Department of Natural Resources and Michigan Department of Natural Resources

Lake sturgeon *(Photo by U.S. Fish and Wildlife Service)*

Goal

To increase lake sturgeon (*Acipenser vulvescens*) spawning success and populations in Green Bay and Lake Michigan by evaluating and prioritizing areas where spawning habitat should be restored and by restoring spawning habitat in the Lower Menominee River.

Project Description

Lake sturgeon are migratory fish that historically inhabited large rivers and lakes in the upper Midwest. The lake sturgeon is culturally important to Native Americans who often located their villages near sturgeon spawning grounds. Lake sturgeon populations declined dramatically in Lake Michigan and Green Bay in the late 1800s because of overharvest, pollution and habitat loss associated with rapid settlement and development of the region, including the construction of dams and other barriers that prevented lake sturgeon from accessing spawning and nursery habitat in tributary rivers. This project included two components – a habitat evaluation and prioritization of tributaries where fish passage would restore access to critical habitat and a project to restore spawning habitat in the Lower Menominee River. Both of these components are ultimately aimed at increasing lake sturgeon reproductive success by targeting future restoration work to restore access to areas with suitable spawning and rearing habitat.

Researchers at Purdue University conducted a comprehensive habitat assessment of 10 northern Lake Michigan and Green Bay tributaries in Wisconsin and the southern portion of Michigan's Upper Peninsula. They evaluated habitat characteristics above in-stream barriers that prevent lake sturgeon from moving upstream; their goal was to identify areas that could be suitable for lake sturgeon reproduction if fish migration past the barriers were restored.[4.1] Habitat characteristics evaluated included water depth, velocity, and substrate, as well as the presence of additional

obstacles above the barriers. This information was used to prioritize areas in which habitat restoration (e.g., installing fish passage structures or removing dams) would be most beneficial to lake sturgeon. The Wisconsin Department of Natural Resources (DNR), Michigan DNR, and the U.S. Fish and Wildlife Service are using this information to target future restoration work to restore access for lake sturgeon to areas with suitable spawning and juvenile rearing habitat.

The Wisconsin DNR and the Michigan DNR are working jointly to restore lake sturgeon spawning habitat in the Menominee River. Because lake sturgeon spawn in rocky substrates, the agencies will place rock in the Lower Menominee River, in areas where other habitat characteristics (e.g., water depth, velocity) are suitable for lake sturgeon spawning. The agencies will also install egg collection mats to monitor whether lake sturgeon successfully spawn in the restored habitat. If the Lower Menominee River restoration is successful, the new spawning habitat area will be expanded. This project is part of a Joint Fishery Management Plan for the Lower Menominee River that the two agencies have developed.

Benefits

This project ultimately benefits lake sturgeon populations in Green Bay and its tributaries. Other species associated with lake sturgeon will also benefit from the improved access to upstream habitats. Native American cultural practices will benefit as well because of the increased populations of this culturally important species.

Project Location

This project evaluated habitat characteristics in 10 Green Bay and Lake Michigan tributaries: the Fox, Peshtigo, Oconto, Pensaukee, Little Suamico, and Suamico rivers, and Duck Creek in Wisconsin; and the Menominee, Ford, and Manistique rivers in Michigan. In addition, lake sturgeon spawning habitat is being restored in the Menominee River.

Status and Funding

The restoration priorities analysis component of the project is complete; the spawning habitat restoration component of the project is in progress. The Trustees directed $92,000 in natural resource damage assessment settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $172,263.

Project Accomplishments

This project successfully evaluated and identified current and potential lake sturgeon spawning habitat in tributaries. Results from the habitat assessment study enable resource managers to prioritize areas where restoring fish passage for sturgeon is likely to have the greatest benefit. The spawning habitat restoration project will help resource managers evaluate effective restoration methods and may increase lake sturgeon spawning success in the Menominee River. Together, the two components of this project are expected to contribute to increased lake sturgeon spawning success in Green Bay.

[4.1] Daugherty, D.J. 2006. Development and Implementation of Habitat Availability Models to Determine Lake Sturgeon Restoration Strategies in Northern Lake Michigan Tributaries. Thesis, Purdue University, West Lafayette, IN. December.

Daugherty, D.J., T.M. Sutton, and R.F. Elliott. 2007. Potential for reintroduction of lake sturgeon in five northern Lake Michigan tributaries: A habitat suitability perspective. *Aquatic Conservation: Marine and Freshwater Ecosystems* 18:692–702. Doi: 10.I002jaqc.878.

Daugherty, D.J., T.M. Sutton, and R.F. Elliott. 2008. Suitability modeling of lake sturgeon habitat in five northern Lake Michigan tributaries: Implications for population rehabilitation. *Restoration Ecology* 17(2):245–257.

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100
Michigan Department of Natural Resources Lake Michigan Basin (269) 685-6851

Brook Trout Population Enhancement

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Remove a dam and create approximately 400 feet of new stream to bypass a golf course pond

Benefits
Restoration of a stretch of coldwater stream, and reintroduction of brook trout

Funding
$80,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $97,000

Timing
Natural resource damage assessment settlement funding approved in August 2009; restoration work is ongoing

Land ownership
Brown County

Dam structure that will be removed *(Photo by Brown County)*

Goal

To enhance native brook trout (*Salvelinus fontinalis*) restoration and reintroduction into a reach of Trout Creek.

Project Description

Brook trout habitat in Trout Creek has been impaired by the presence of a dam and pond. Brook trout are a coldwater fish, dependent on low water temperatures and high oxygen content. The dam reduces brook trout habitat value by restricting fish movement and increasing water temperatures, which also results in depleted oxygen levels. This project will remove the dam and construct approximately 400 feet of stream channel to bypass the pond and will also reintroduce brook trout into Trout Creek. The pond, which is a desired feature of the Brown County Golf Course, will be maintained through the construction of a control structure that will prevent water leakage. Stocking of brook trout fingerlings began in 2009.

Benefits

A variety of factors have led to the decline of brook trout populations in Wisconsin, including habitat degradation and competitive displacement of brook trout by non-native species. This project will improve water quality by rerouting the stream around a pond. The project

will improve habitat in Trout Creek, allowing brook trout to be reestablished. The reintroduction of brook trout will benefit subsistence and recreational fishers as well as support traditional practices by Oneida Tribal members. Benefits from this project will be further enhanced by the Trout Creek stream preservation and habitat restoration activities supported under project 3.8.

Project Location

The project is located within the Brown County Golf Course on the Oneida Reservation.

Status and Funding

As of June 30, 2012, the project design was completed and permits from the U.S. Army Corps of Engineers had been obtained. The bridge that will span the new stream channel had been ordered and work was scheduled to begin in fall 2012. The Trustees directed $80,000 in natural resource damage assessment settlement funding and attracted additional matching funding and/or in-kind services for a total budget of $97,000.

Project Accomplishments

Project planning and design are completed, permits have been obtained, and project supplies have been ordered. Matching funds necessary to complete the project have been secured. Pre-restoration monitoring, including water quality monitoring, fisheries surveys, macroinvertebrate surveys, and temperature logging, was conducted at the restoration site during the 2012 field season.

(top) Current photograph of pond. (bottom) Expected future condition. (computer visualization)

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Duck Creek Dam Removal and Fish Passage Installation

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Remove two dams on Duck Creek to increase access to spawning habitat, and improve the capability of a third dam to serve as a barrier to upstream migration of invasive sea lamprey and round goby

Benefits
Enhanced connectivity in 180 miles in Duck Creek and connected sub-watersheds, and prevention of upstream dispersal of non-native species

Funding
$15,000 in natural resource damage assessment settlement funding, additional matching funds are being contributed

Timing
Natural resource damage assessment settlement funding approved in August 2009; project work is ongoing

Land ownership
Brown County Parks, Oneida Golf and Country Club

Low-head dam slated for removal under this project *(Photo by Wisconsin Department of Natural Resources)*

Goal

To increase spawning habitat for native fish within Duck Creek, a tributary to Green Bay.

Project Description

Two low-head dams in Duck Creek, located approximately 5 stream miles from the confluence with Green Bay, serve as barriers to the passage of native fish and create pools that attract illegal fishing activity. This project will remove both dams, which are located in Pamperin Park, and restore riffle areas to improve habitat quality for fish and aquatic invertebrates. Dam removal will allow fish migrating from Green Bay to access spawning habitat that includes approximately 180 miles of stream and riparian wetlands. Removal of the dams will also reduce illegal fishing.

A third dam, which is upstream of the dams in Pamperin Park, is located in the Oneida Golf and Country Club. The dam requires repairs to continue to serve as an effective barrier to the invasive species sea lamprey (*Petromyzon marinus*), which is parasitic and harms native fish populations, and the invasive species round goby (*Neogobius melanostomus*). This project will include modifications to the dam to allow native fish to pass during high flow periods, while ensuring it is a complete, effective barrier that does not allow sea lamprey or round goby to reach upstream portions of Duck Creek.

Benefits

This project will enhance the ability of migratory fish from Green Bay to access approximately 180 miles of

historical spawning habitat upstream of Pamperin Park. The project will also prevent the dispersal of sea lamprey and round goby above the dam at the Oneida Golf and Country Club; these invasive species pose a threat to current fish populations in Duck Creek because of their parasitic behavior (sea lamprey) and through competition and predation (round goby). The removal of two dams and modifications to a third dam in this project will help improve the aquatic connectivity to Green Bay in the lower watershed, while also ensuring that harmful invasive species are unable to disperse into the upper reaches of the Duck Creek watershed.

Project Location

The project will restore Duck Creek aquatic habitat in Pamperin Park and within the Oneida Golf and Country Club; all work is located within the boundaries of the Oneida Reservation.

Status and Funding

Funding for the project was approved in August 2009. Restoration work will begin with the repair of the dam in the golf course, after which the two lower dams in Pamperin Park will be removed. Project work was delayed while agreements among project partners were finalized. As of June 30, 2012, agreements had been reached and project work was scheduled to begin in fall 2012. The Trustees directed $15,000 in natural resource damage assessment (NRDA) funding. Matching funds are expected from federal and state sources; the matching funds will be used to expand the scope of the original NRDA-funded project.

Project Accomplishments

Project planning, including acquiring permits and selecting a contractor for in-water work, is complete. The project must proceed in a phased fashion, with the upstream dam repaired as a secure lamprey and round goby barrier before the two downstream dams are removed. Matching funds have been secured by the project partners to expand the scope of the project.

Location of dams slated for removal (Dams 1 and 2) and for improvement to prevent dispersal of invasive species (Dam 3)

Contact Information

Oneida Tribe of Indians of Wisconsin Environmental, Health & Safety Division (920) 869-4591

Yellow Perch Limiting Factors Analysis

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

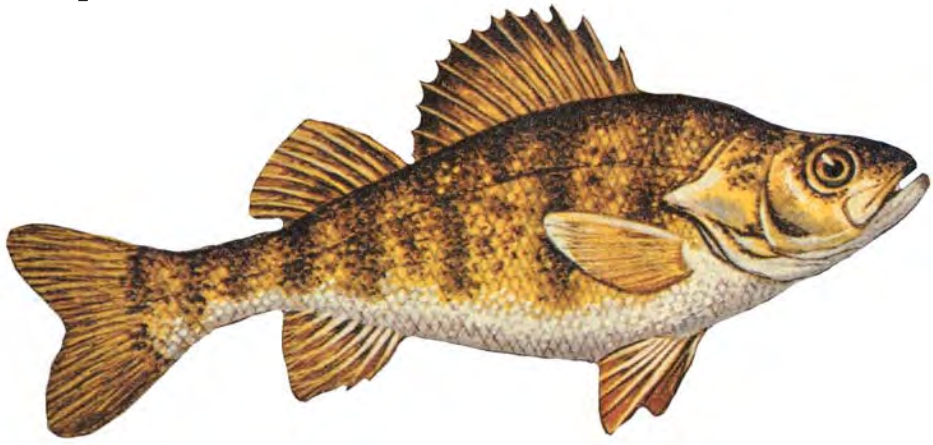
Actions
Public discussions, workshops, and development of a population assessment model to help manage the full recovery of yellow perch in Green Bay

Benefits
Improved yellow perch management, and enhanced native fish communities in Green Bay

Funding
$381,108 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total of $406,608

Timing
Assessment and model development work are complete

Land ownership
Project management by Wisconsin Department of Natural Resources



Yellow perch *(Drawing by National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory)*

Goal

To develop tools to identify the major factors limiting yellow perch (*Perca flavescens*) population restoration in Green Bay.

Project Description

The Wisconsin Department of Natural Resources has been working to manage and enhance the yellow perch population in Green Bay following consistent low reproductive success during the 1990s. Management requires balancing commercial and sport fishing harvest quotas and assessing the impact of predation by cormorant (*Phalacrocorax carbo*) populations to maintain a healthy, reproducing population of yellow perch. A series of expert forums, open to the public, facilitated a discussion among experts and public participants about factors potentially affecting yellow perch population recovery and possible courses of action to improve enhancement activities. Experts concluded that habitat destruction and predation were the most important factors for investigation. Subsequently, the U.S. Fish and Wildlife Service created a database using 25 years of survey data from Green Bay to develop a population model. The new model assesses the factors limiting population recovery and can be used to focus restoration efforts on areas and programs most likely to have a significant impact on increasing yellow perch populations.

Benefits

Model results will provide guidance for management and enhancement of yellow perch populations in Green Bay. This project will also lead to benefits for other species including native predators, and may lead to the removal of exotic species such as white perch (*Morone americana*), round goby (*Neogobius melanostomus*), and ruffe (*Gymnocephalus cernuus*). The overall ecological balance of Green

Bay will improve as populations of native species are reestablished.

Project Location

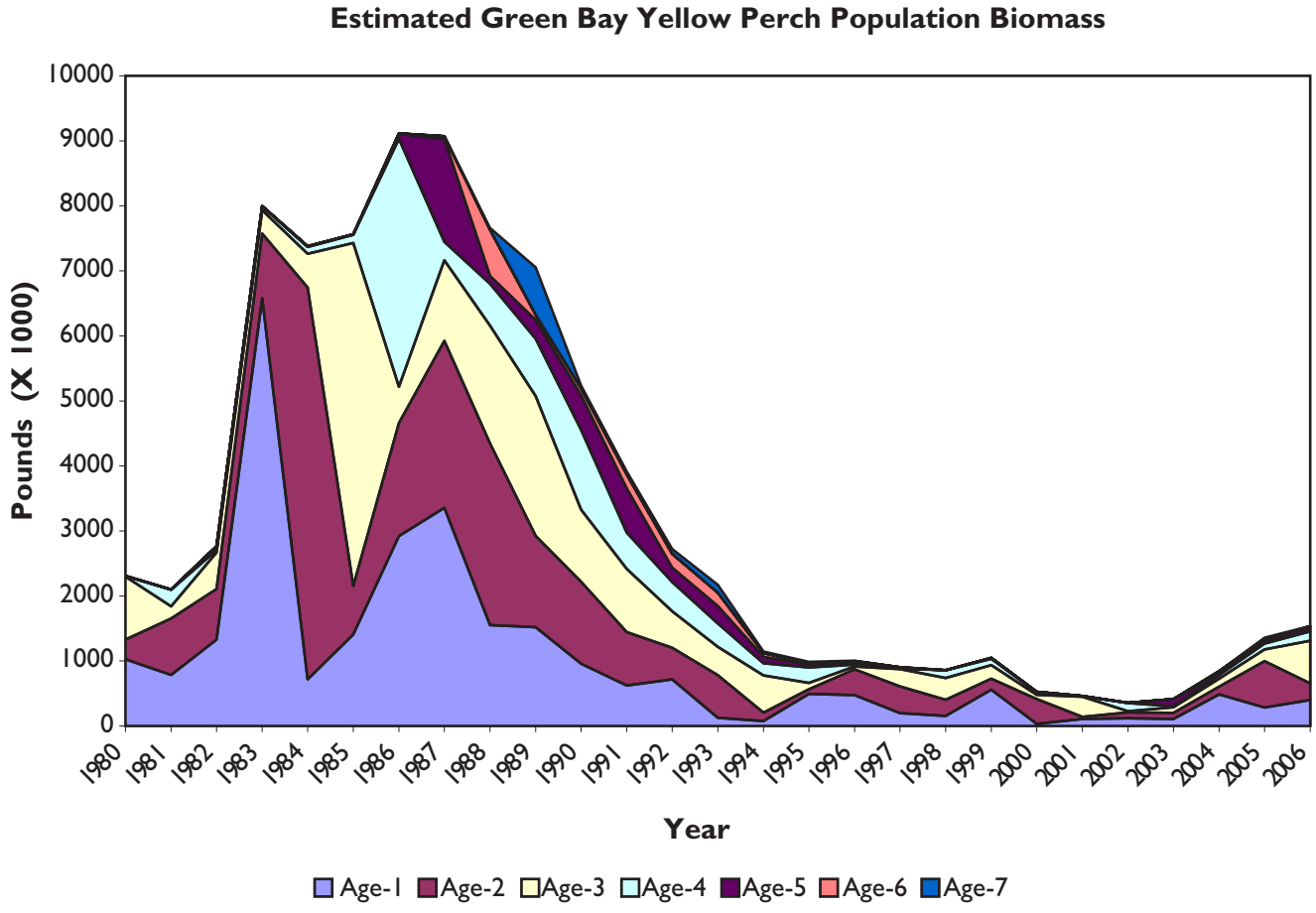
The project is focused on improving yellow perch populations in Green Bay.

Status and Funding

The yellow perch database and population recovery model were completed in 2006. Results are being used to guide perch management in Green Bay. The Trustees directed $381,108 in natural resource damage assessment settlement funds, and attracted additional matching funds and/or in-kind services for a total project budget of $406,608.

Project Accomplishments

This project resulted in the creation of a statistical catch and age-class model for yellow perch in Green Bay that is still in use by fisheries managers. The model has become the standard baseline tool for tracking the status of the yellow perch population and is updated on an ongoing basis with data from fish surveys. The model allows managers to create projections of future population sizes based on different management and catch restrictions. It is helping fisheries managers improve fish management to benefit the yellow perch population in Green Bay with the goal of enhancing and reestablishing self-sustaining populations in the bay.



Model estimates of yellow perch populations in Green Bay; results are being used to improve management decisions and enhance yellow perch population (Figure by U.S. Fish and Wildlife Service)

Contact Information

U.S. Fish and Wildlife Service Green Bay National Fish and Wildlife Conservation Office (920) 866-1717

Bluegill Stocking in Green Bay and the Suamico River

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
35,000 bluegill fingerlings were released in Green Bay and the Suamico River

Benefits
Increased bluegill populations and enhanced recreational opportunities

Funding
$6,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $12,000

Timing
Funding supported the stocking program for five years (2005–2009)

Land ownership
State of Wisconsin

Bucket of bluegills for stocking *(Photo by Steve Seilo, Green Bay Area Great Lakes Sport Fishermen)*

Goal

To increase bluegill (*Lepomis macrochirus*) numbers along the western shores of Green Bay and enhance related recreational fishing opportunities.

Project Description

Bluegill are a popular sport fish native to Wisconsin. Since 1996, the Green Bay Area Great Lakes Sport Fishermen club has been stocking bluegill near the mouth of the Suamico River to create better fishing opportunities in Green Bay, especially for ice fishing. This natural resource damage assessment (NRDA) restoration project enabled the club to increase the number of fish released annually between 2005 and 2009. To date, fingerlings have been stocked behind Long Tail Point and in the Suamico River. The long-term goal of the effort is to reestablish a self-sustaining native population of bluegill in Green Bay that will no longer require additional stocking efforts.

Benefits

This project enhances fisheries resources by increasing the bluegill populations in Green Bay and the Suamico River for sport fishing, especially for ice fishing.

Project Location

Fish were stocked at several locations in the Suamico River; the project is expected to increase bluegill populations in the Suamico River and Green Bay.

Status and Funding

Approximately 35,000 bluegill fingerlings were released over a 5-year period (2005–2009). The Trustees directed $6,000 in NRDA settlement funding and attracted additional matching funding and in-kind services for a total budget of $12,000.

Project Accomplishments

Funding for this project doubled the bluegill stocking efforts of the Green Bay Area Great Lakes Sport Fishermen club. The Wisconsin Department of Natural Resources does not monitor or evaluate the bluegill population, so a scientific assessment of stocking success is not available. However, it appears that the project has been successful in promoting and supporting sport fishing in Green Bay.

Bill Willis, Green Bay Area Great Lakes Sport Fishermen former president, releasing young bluegill into the Suamico River *(Photo by Steve Seilo, Green Bay Area Great Lakes Sport Fishermen)*

Bluegill fingerling for stocking *(Photo by Steve Seilo, Green Bay Area Great Lakes Sport Fishermen)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100
Green Bay Area Great Lakes Sport Fishermen (920) 863-2934

Wild Rose Fish Hatchery Renovation

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Wild Rose Fish Hatchery was renovated, expanded, and improved to meet the demands of rearing and stocking brown trout, rainbow trout, and Chinook salmon populations in northern Green Bay and Lake Michigan

Benefits
Increase top predator fish populations, and enhance fishing opportunities

Funding
$6,000,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $17,757,903

Timing
Renovation of the coldwater rearing facility was completed at the end of 2007

Land ownership
Wisconsin Department of Natural Resources

New water-efficient circular tanks with automatic feeders and vertical tray fish egg incubators visible in background *(Photo by Wisconsin Department of Natural Resources)*

Goal

To ensure continued coldwater fish production and stocking at levels sufficient to meet projected fisheries restoration and management needs for Green Bay and Lake Michigan.

Project Description

Healthy populations of predator fish can help reduce populations of exotic prey species and help rebalance the fish community in Lake Michigan and Green Bay. Currently, the populations of many of the top predators in Green Bay and Lake Michigan are supported by stocking. For this project, the Wild Rose State Fish Hatchery was significantly renovated to increase the effectiveness of coldwater fish production, stocking, and management, especially for brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), and Chinook salmon (*Oncorhynchus tshawytscha*) populations. The renovation included replacing aging and inefficient fish-rearing facilities and providing a new water supply that meets current groundwater standards. Continued stocking of predator fish species into Green Bay and Lake Michigan is expected to help restore a more natural, balanced fish community and provide enhanced fishing opportunities for the public.

Benefits

The improved fish rearing facility makes it possible for fisheries managers to continue stocking trout and salmon. Stocking will help decrease the prevalence of exotic prey

species by increasing the abundance and diversity of predator fish populations. Anglers will also have enhanced fishing opportunities due to the stocking efforts.

Project Location

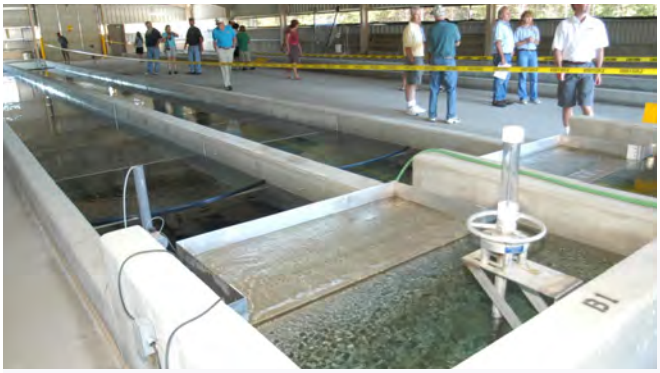
The Wild Rose State Fish Hatchery is located in Wild Rose, Wisconsin, southwest of Green Bay. Fish are stocked throughout Green Bay and Lake Michigan.

Status and Funding

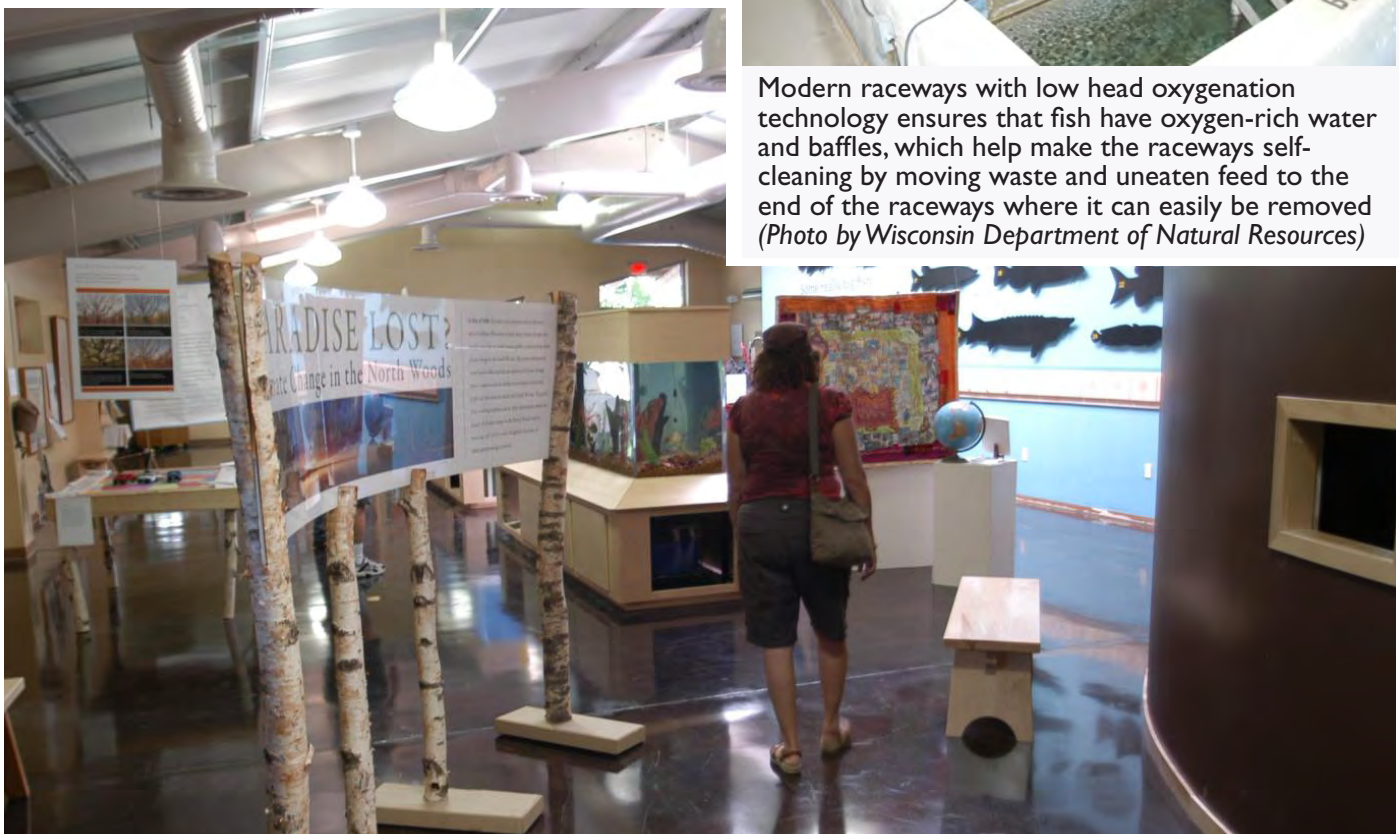
Renovations to the Wild Rose State Fish Hatchery were completed in 2007. The Trustees directed $6,000,000 in natural resource damage assessment settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $17,757,903.

Project Accomplishments

Renovating the Wild Rose State Fish Hatchery coldwater facilities has made it possible to rear and stock more fish, specifically brown and rainbow trout and Chinook salmon. For example, production of rainbow trout is expected to increase by 100,000 fish per year. The Wisconsin Department of Natural Resources has seen positive results with its stocking program, and the completion of renovation has improved coldwater fish stocking capabilities.



Modern raceways with low head oxygenation technology ensures that fish have oxygen-rich water and baffles, which help make the raceways self-cleaning by moving waste and uneaten feed to the end of the raceways where it can easily be removed *(Photo by Wisconsin Department of Natural Resources)*



Displays teach visitors about the aquatic world, the hatchery, and other department activities *(Photo by Wisconsin Department of Natural Resources)*

Contact Information

Wisconsin Department of Natural Resources, Wild Rose State Fish Hatchery (920) 622-3527
http://dnr.wi.gov/topic/fishing/hatcheries/wildrose.html

Walleye Rearing Pond Construction

PROJECT AT A GLANCE

Restoration category
Fishery Resource Enhancement

Actions
Construction of a walleye rearing pond to increase capacity for stocking of walleye fingerlings in Sturgeon Bay and Little Sturgeon Bay

Benefits
Increased walleye populations and enhanced recreational fishing opportunities

Funding
$50,000 in natural resource damage assessment settlement funding plus matching funds and/or in-kind services for a total budget of $61,000

Timing
Pond completed in June 2005, walleye rearing began in 2006

Land ownership
Kewaunee County

Completed earthen berm pond with gravel bottom, fish collection basin, and overflow drain at far end, spring 2005 (*Photo by Wisconsin Department of Natural Resources*)

Goal

To supply walleye (*Sander vitreus*) fry for a stocking program managed by the Wisconsin Department of Natural Resources (DNR) to reestablish self-sustaining populations of native walleye in southern Green Bay and the nearshore Green Bay waters of Door County.

Project Description

Walleye is a top native predator species in Green Bay and plays a key role in the overall ecological health of the Green Bay aquatic ecosystem. Natural reproduction of walleye is low in Sturgeon Bay and Little Sturgeon Bay in Door County because of the loss of prime spawning habitat. To overcome this limitation, the Wisconsin DNR stocks walleye annually to maintain the population of this important top predator and sport fish. However, the state hatchery system has lacked the capacity to meet stocking demands for fingerling-size walleye. To better meet these stocking demands, this natural resource damage assessment restoration project allowed the Wisconsin DNR to construct a ¾-acre walleye rearing pond. A well was drilled to fill the pond and electricity was supplied to provide power for a well pump and onsite hatching equipment. Construction of the pond, well, and associated utilities was completed in June 2005.

Benefits

This project benefits the ecological health of Green Bay by restoring a top predator into the system. Approximately 50,000 walleye fingerlings will be stocked into the Green Bay waters of Door County annually to restore walleye populations and to provide continued sport fishing opportunities for the public.

Project Location

The rearing pond is located at the Dana Farm Recreation Area in Kewaunee County. Stocking occurs throughout the Green Bay waters of Door County.

Status and Funding

The walleye rearing pond construction was completed in June 2005, and the walleye rearing and stocking began in 2006. The Trustees directed $50,000 in natural resource damage assessment settlement funding and attracted additional matching funds and/or in-kind services for a total project budget of $61,000.

Project Accomplishments

The rearing pond was successfully completed and is now used for rearing approximately 50,000 walleye fingerlings annually. The pond also has the capacity to raise larger extended-growth fingerlings, which have higher survival rates once stocked.

Early construction on the earthen berm for the pond, fall 2004 *(Photo by Wisconsin Department of Natural Resources)*

Walleye *(Copyright Shedd Aquarium, photo by Patrice Ceisel)*

Contact Information

Wisconsin Department of Natural Resources Northeast Region Headquarters (920) 662-5100

SECTION 5

Natural Resource-based Public Use Enhancement

Supporting projects that enhance public use of natural resources was included as a goal in the 2003 Joint Restoration Plan/Environmental Assessment (RP/EA) published by the Lower Fox River and Green Bay Trustees. Specifically, the Trustees stipulated that projects that increased public use and enjoyment of riparian and coastal habitats and directed high-intensity use away from ecologically sensitive areas were a priority in this category. Improvements to park facilities was also one of the categories of restoration actions described in the 2000 Restoration and Compensation Determination Plan for the Lower Fox River/Green Bay Natural Resource Damage Assessment. Projects completed in this category compensate for recreational losses caused by impairments to natural resources from polychlorinated biphenyl (PCB) contamination.

Trustee projects completed to date in this restoration category include trail construction and improvement, development of park facilities, and improvement of fishing access and facilities. Approximately 6 miles of trails were constructed or improved at the L.H. Barkhausen Waterfowl Preserve in Suamico, in the Village of Ashwaubenon along the Lower Fox River, along the East River in the villages of Allouez and Bellevue, and at the Gordon Nauman Conservation Area in the Village of Howard (see project summaries 5.1, 5.3, 5.5, 5.6, and 5.8).

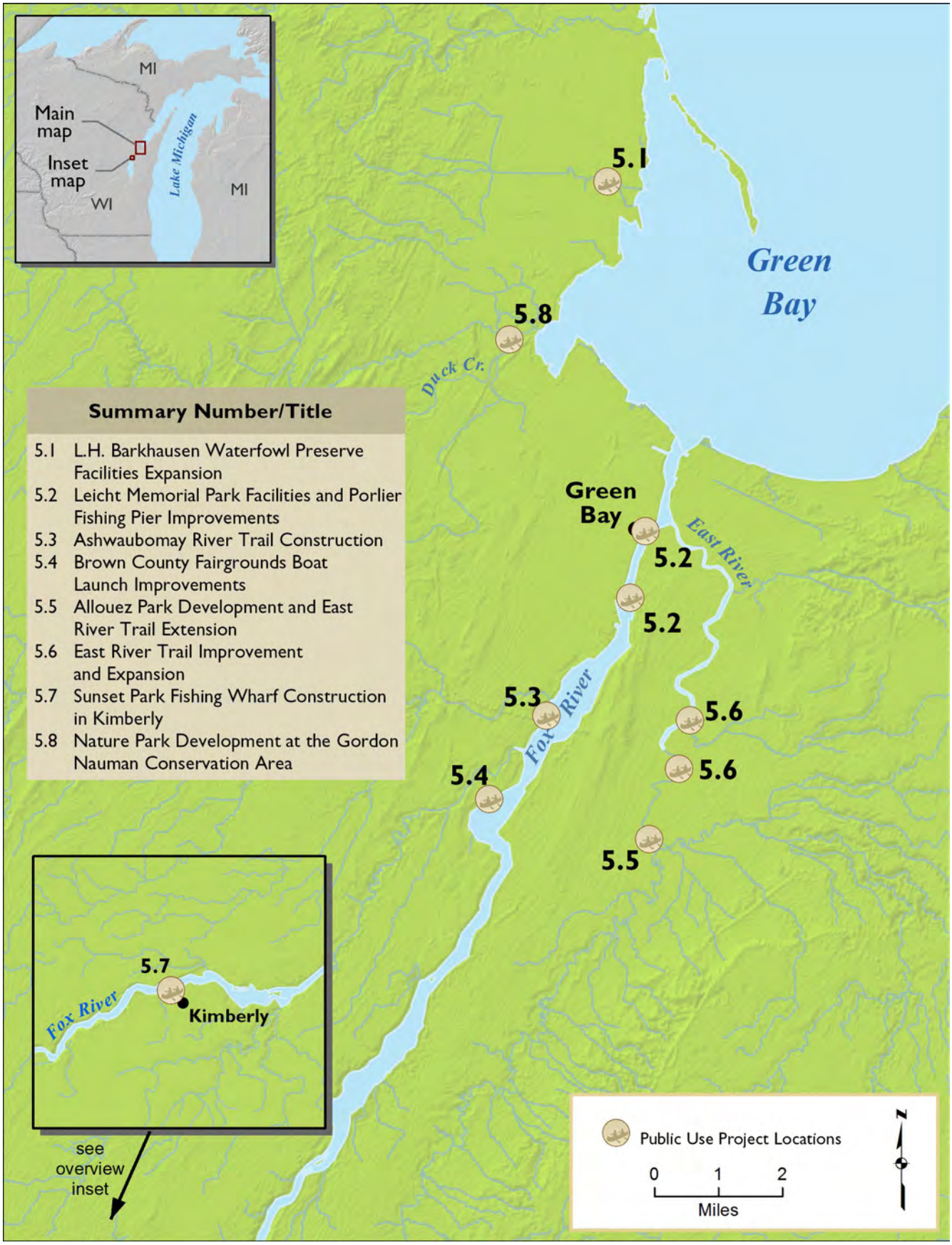
The Trustees have funded new or improved park facilities at multiple locations. A new educational building and a wildlife viewing platform were constructed at the L.H. Barkhausen Waterfowl Preserve. At Leicht Memorial Park in downtown Green Bay, a new park was created with a boat dock, a scenic walkway, and parking facilities; and a fishing pier, called Porlier Fishing Pier, was constructed upriver from the park. At the Wiese Family Park in the Village of Allouez, the new park included habitat restoration, a trail along the East River, and picnic facilities. At the Gordon Nauman Conservation Area in the Village of Howard, the new park included habitat restoration, an open-air shelter, and signage. (See project summaries 5.1, 5.2, 5.5, and 5.8 for park facility projects.)

The Trustees have funded projects to improve fishing access through a new boat launch and improved shoreline fishing. Projects included a boat launch in DePere on the Lower Fox River, a shoreline fishing pier along the Lower Fox River in Green Bay, and construction of the Sunset Park fishing wharf in the Village of Kimberly (see project summaries 5.2, 5.4, and 5.7).

The goal established by the Trustees for this restoration category is to spend no more than 10% of total settlement funds on public use enhancement projects. Through June 30, 2012, the Trustees had directed $2,932,475 in natural resource damage assessment (NRDA) settlement funding toward a variety of natural resource-based public use enhancement projects (see page 148 "Overview Map of Natural Resource-based Public Use Enhancement Projects"). Project partners obtained $52,161 in additional leveraged funding to help complete the projects. NRDA settlement funding allocated to projects in this category is 7.6% of the total amount of NRDA settlement funds received as of June 30, 2012 (excluding interest earned). The public use enhancement projects funded by the Trustees are therefore consistent with the type and extent of projects identified for this category in the RP/EA. The NRDA-credited portion of these accomplishments is based on the percentage of total project funding provided by NRDA funds.

The new handicapped-accessible fishing wharf at Sunset Park, Kimberly, Wisconsin *(Photo by Betsy Galbraith, U.S. Fish and Wildlife Service)*

Overview Map of Natural Resource-based Public Use Enhancement Projects



Summary of Natural Resource-based Public Use Enhancement Projects

	Summary Number and Project Title	NRDA Settlement Funds Allocated	Leveraged Funds	Restoration Project Number(s)[a]
5.1	L.H. Barkhausen Waterfowl Preserve Facilities Expansion	$375,000	—	98
5.2	Leicht Memorial Park Facilities and Porlier Fishing Pier Improvements	$800,000	—	101, 102
5.3	Ashwaubomay River Trail Construction	$500,000	—	95
5.4	Brown County Fairgrounds Boat Launch Improvements	$766,000	—	99
5.5	Allouez Park Development and East River Trail Extension	$199,000	$35,946	93, 94
5.6	East River Trail Improvement and Expansion	$270,000	—	96, 97
5.7	Sunset Park Fishing Wharf Construction in Kimberly	$12,475	$16,215	165
5.8	Nature Park Development at the Gordon Nauman Conservation Area[b]	$10,000	—	103
	Total	**$2,932,475**	**$52,161**	

Table notes:

[a] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

[b] Land acquisition for this project was described in Summary 1.10 in the Wetlands and Associated Uplands Habitat Preservation category.

L.H. Barkhausen Waterfowl Preserve Facilities Expansion

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Construction of a building to support educational programs, construction of a wildlife viewing platform, and improvements to recreational trails

Benefits
Enhanced opportunities for public use, enjoyment, and education at a wildlife preserve along the western shore of Green Bay

Funding
$375,000 in natural resource damage assessment settlement funding

Timing
Interpretive center and trails completed 2005-2006

Land ownership
Brown County, Wisconsin

Observation platform overlooking Green Bay coastal wetlands (*Photo by U.S. Fish and Wildlife Service*)

Goal

To expand nature education programs and recreational opportunities at the L.H. Barkhausen Waterfowl Preserve.

Project Description

The L.H. Barkhausen Waterfowl Preserve includes 925 acres of forest, meadows, and wetlands. The preserve supports one of the richest remnants of biodiversity along the western shore of Green Bay. This project improved educational and recreational facilities at the preserve. A new multipurpose 2,700 square-foot interpretive center building was completed in 2005. The building includes a large classroom, a work area for hands-on educational nature programs, office space, and a heated storage area for equipment and tools. The building also houses an aquaculture room where school groups can learn how fish such as yellow perch and bluegills are raised. Funds were also used to improve the accessibility for all users on five of the six existing miles of trails on the preserve and to construct an observation platform overlooking Green Bay coastal wetlands for viewing wildlife.

Benefits

The new educational building provides space where students can participate in hands-on resource and conservation projects to increase awareness and appreciation of the environment. The aquaculture portion of the facility will provide fish for stocking into ponds in Brown County parks. The new observation deck and hiking trails with improved access offer excellent opportunities for observing birds and other wildlife.

Project Location

The preserve occupies nearly 1,000 acres along the western shore of Green Bay. It is located approximately 5 miles north of Green Bay at 2024 Lakeview Drive in Suamico, Wisconsin.

Status and Funding

Improvements to the L.H. Barkhausen Waterfowl Preserve interpretive center and trails were completed in 2005 and 2006. The Trustees directed $375,000 in natural resource damage assessment settlement funding to this project.

Project Accomplishments

This project successfully expanded facilities for nature education programs and increased recreational opportunities in Brown County. School groups and other users have taken advantage of the new facilities; more than 30,000 people visited the interpretive center in 2006.

Hiking on the trails *(Photo by Matt Kriese, Brown County)*

Contact Information

Brown County Facility and Park Management (920) 448-4466

Leicht Memorial Park Facilities and Porlier Fishing Pier Improvements

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
A park with scenic walkways and a new fishing structure was constructed along the Lower Fox River

Benefits
Public recreation including fishing, hiking, biking, jogging, and viewing the river

Funding
$800,000 in natural resource damage assessment settlement funding

Timing
Completed in 2006

Land ownership
City of Green Bay

Fishing pier and park grounds at Leicht Memorial Park in downtown Green Bay *(Photo by City of Green Bay)*

Goal

To create a waterfront park for community and recreational opportunities and to increase shoreline fishing access to the Lower Fox River.

Project Description

This project involved the creation of a new park and construction of a fishing pier along the Lower Fox River. Leicht Memorial Park includes a boat dock for transient docking and launching of canoes and kayaks, a scenic walkway along the river, and parking facilities. The park was completed and is open to the public for recreational activities and community events. The Porlier Fishing Pier was constructed using an existing railroad trestle as its base. When the fishing pier was completed, lighting was added and the area around the pier was landscaped. A new asphalt trail leading from the Fox River Trail to the pier was built for public access. The Porlier Fishing Pier has already become a popular site for fishing and wildlife viewing.

Benefits

Community recreational activities along the Fox River, including picnics, special events, passive recreation, and watercraft-oriented sports, were increased by the creation of Leicht Memorial Park. Recreational and sport fishermen benefit from the construction of the Porlier Fishing Pier on the Lower Fox River.

Project Location

The park is located along the west bank of the Lower Fox River in the City of Green Bay, along Dousman Street on the west side of Ray Nitschke Memorial Bridge. Porlier Pier is south of the park located near the intersection of Porlier Street and South Adams Street on the East bank of the Fox River.

Status and Funding

Construction activities at the new park, park facilities, and the fishing pier were completed in the summer of 2006. The Trustees directed $800,000 in natural resource damage assessment settlement funding to this project.

Project Accomplishments

The creation of the 2.6-acre Leicht Memorial Park and construction of the Porlier Fishing Pier were successfully completed. The park provides opportunities for the public to enjoy the river and facilities for community activities. The new pier provides increased public access to the river for fishing and observing wildlife.

Porlier Fishing Pier near downtown Green Bay *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

City of Green Bay Parks, Recreation and Forestry (920) 448-3365

http://www.ci.green-bay.wi.us/parks/parks/LeichtPark.html

Ashwaubomay River Trail Construction

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Approximately 1 mile of new trail was built

Benefits
Public recreation including hiking, biking, jogging, and viewing the river

Funding
$500,000 in natural resource damage assessment settlement funding

Timing
Completed in summer 2007

Land ownership
Village of Ashwaubenon

View of the Ashwaubomay River Trail *(Photo by Francine Roberg, Village of Ashwaubenon)*

Goal

To develop a trail for recreation along the west side of the Lower Fox River.

Project Description

The Ashwaubomay River Trail connects Ashwaubomay Park with the Ashwaubenon Marina along a scenic portion of the Lower Fox River. The 1-mile trail follows along the river and ends within one block of the National Railroad Museum, a popular tourist destination. The trail is paved and lighted and allows access for various recreational activities. The trail has benches that overlook scenic views of the Lower Fox River. Facilities such as a boat dock, fishing pier, canoe launch, and picnic tables may be added along the trail in the future.

Benefits

The 12-foot wide trail provides recreational opportunities including hiking, biking, and jogging for visitors at the Ashwaubomay Park, the Ashwaubenon Marina, and the National Railroad Museum.

Project Location

The trail is located along the west shore of the Lower Fox River in the Village of Ashwaubenon, connecting Ashwaubomay Park to Marina Lane within one block of the National Railroad Museum.

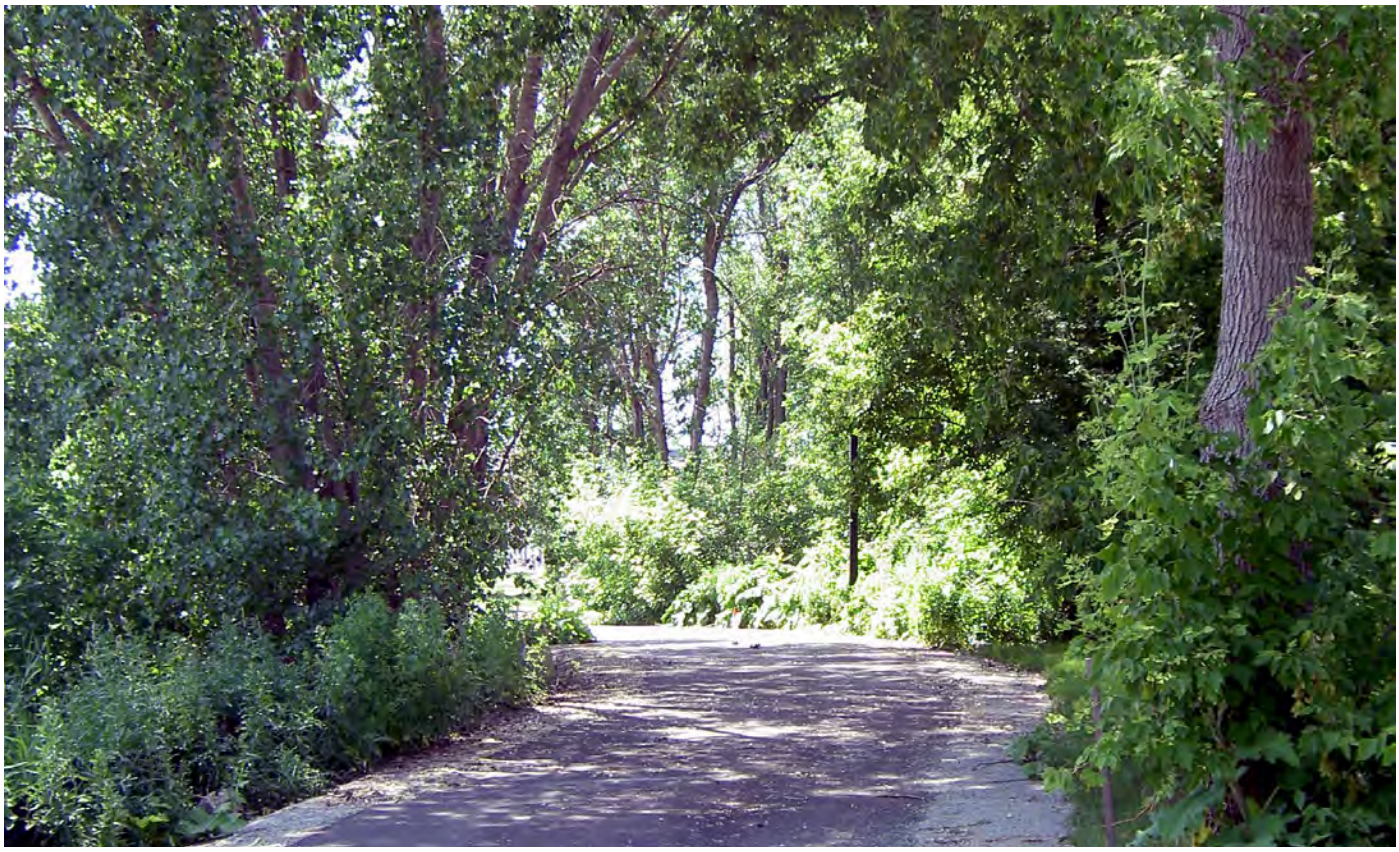
Status and Funding

Construction of a 1-mile trail along a scenic portion of the Lower Fox River was completed in the summer of 2007. The Trustees directed $500,000 in natural resource damage assessment settlement funding to this project.

Project Accomplishments

This project successfully increased recreational opportunities along the Lower Fox River. Future plans include expanding the trail to the National Railroad Museum and increasing access to the river for fishing and boating.

Sign to Ashwaubomay Park *(Photo by Francine Roberg, Village of Ashwaubenon)*



Ashwaubomay River Trail *(Photo by Francine Roberg, Village of Ashwaubenon)*

Contact Information

Village of Ashwaubenon Parks, Recreation & Forestry (920) 492-2331

Brown County Fairgrounds Boat Launch Improvements

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Boat launch renovation, floating dock construction, access road improvement, parking lot construction, and trail construction

Benefits
Improved public facilities for fishing and boating

Funding
$766,000 in natural resource damage assessment settlement funding

Timing
Completed in 2006

Land ownership
City of DePere

Perkofski Boat Launch *(Photo by Don Melichar, DePere City Forester)*

Goal

To renovate a previously unusable boat launch facility on the Lower Fox River at the Brown County Fairgrounds to increase public access for fishing and boating.

Project Description

Boat launch facilities on the Lower Fox River were congested by heavy use, especially during the spring walleye (*Sander vitreus*) run. To relieve pressure on existing boat launches, a previously unusable boat launch at the Brown County Fairgrounds was completely renovated, and a floating dock was constructed. In addition, the access road was improved, a parking lot was constructed, and a scenic ¾-mile multi-use trail for recreation was constructed.

Benefits

The improved facilities are safer and provide expanded opportunities for fishing, recreational boating, picnic, and leisure activities, along with general public access to the Lower Fox River. The new boat ramp relieved overuse at existing boat launch facilities.

Project Location

A five-lane boat ramp (Perkofski Boat Launch) was constructed at the Brown County Fairgrounds on the west side of the Lower Fox River, near the City of DePere. The boat launch is located at 1500 Fort Howard Ave. in De Pere, Wisconsin.

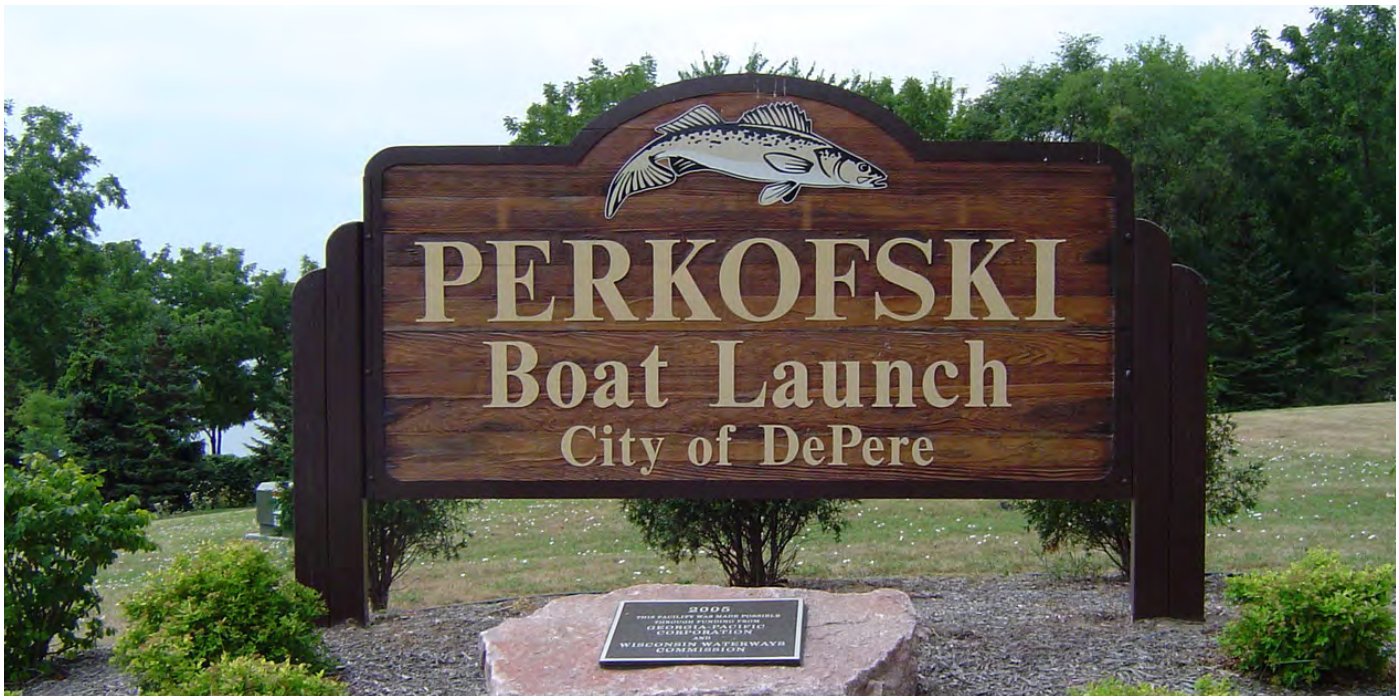
Status and Funding

All project activities, including boat launch renovation, floating dock construction, and construction of a multi-use trail, were completed in 2006. The Trustees directed $766,000 in natural resource damage assessment settlement funding to this project.

Project Accomplishments

Public access to the Lower Fox River has been improved and recreational opportunities such as fishing and boating have increased. Public use of the boat ramp has been high.

Multi-lane boat ramp and floating dock at Perkofski Boat Launch *(Photo by U.S. Fish and Wildlife Service)*



New sign and dedication at the boat launch *(Photo by U.S. Fish and Wildlife Service)*

Contact Information

City of DePere Parks, Recreation & Forestry (920) 339-4065

Allouez Park Development and East River Trail Extension

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Extension of East River Trail and development of a new park adjacent to the East River

Benefits
Public recreation opportunities adjacent to the East River including hiking, jogging, biking, and cross-country skiing

Funding
$199,000 in natural resource damage assessment funding plus matching funds and/or in-kind services for a total budget of $234,946

Timing
Completed in 2005

Land ownership
Village of Allouez

Crushed stone trail that connects to the East River Trail *(Photo by Brad Lange, Village of Allouez)*

Goal

To create a continuous trail along the East River by improving and extending the East River Trail between Allouez and DePere and to create a new park adjacent to the East River for public recreation.

Project Description

This project included two components: extension of the East River Trail and development of the Wiese Family Park. The East River Trail provides important recreational benefits to the Village of Allouez and surrounding communities. As part of the East River Trail development project, a new 1,000-foot long, 12-foot wide section of trail was built to connect the Allouez Trail to the DePere Trail, creating a continuous recreational trail that connects the nearby communities along the East River. The addition of the new section also makes the trail route more direct and decreases the potential for trail erosion and flooding.

The second component of this project was the development of a 6-acre park for public recreation. This park, known as the Wiese Family Park, was developed next to the river on the site of a newly acquired 30-acre parcel that had been previously used for agriculture. Most of the former farm was restored as native habitat (see Allouez Habitat Protection and Restoration, project 3.15, in the Aquatic, Nearshore, and Riparian Habitat Quality Improvement section). The remaining 6 acres were developed for public recreation as the Wiese Family Park.

Benefits

The trail extension and park development improve and increase recreational opportunities for the people of Allouez, DePere, Ledgeview, Bellevue, and Green Bay. The trail can be accessed easily from the park; trail use includes hiking, jogging, biking, and cross-country skiing. Recreational uses at the Wiese Family Park include picnicking, accessing the river and trail, and recreational sports.

Project Location

The Wiese Family Park is located at 900 Block LeBrun Road in Green Bay, Wisconsin, near the intersection of East River Drive and LeBrun Road.

Status and Funding

The Trustees directed $199,000 in natural resource damage assessment settlement funding and attracted matching funds and/or in-kind services for a total budget of $234,946 to this project. Park development was completed in 2005.

Project Accomplishments

The trail upgrade and extension were successfully completed. Public use of the trail has increased, with constant use by cyclists and pedestrians. The public park has also been very successful, with access to the East River Trail from the park.

Trail and river overlook *(Photo by Brad Lange, Village of Allouez)*

Contact Information

Village of Allouez Parks, Recreation & Forestry (920) 448-2800

East River Trail Improvement and Expansion

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Trailhead facilities improved at the northern end of the East River Trail in the Village of Bellevue, initial steps taken toward expansion of the East River Trail in the Village of Bellevue

Benefits
Public use recreation opportunities

Funding
$220,000 in natural resource damage assessment settlement funding for trail construction plus $50,000 in natural resource damage assessment settlement funding for trailhead improvements

Timing
Trailhead improvements completed in 2005; trail construction is ongoing, pending additional funding needed for completion

Land ownership
Village of Bellevue

East River Trail – bridge at Green Isle Park *(Photo by Village of Bellevue staff)*

Goal

To extend the East River Trail and promote public use by improving the trailhead facilities in the Village of Bellevue.

Project Description

The East River Trail provides important recreational benefits to the Village of Bellevue. Two projects were planned to encourage public use of the trail in the Village of Bellevue: (1) land acquisition and construction of 3,000 additional feet of trail between Manderly Way and Hoffman Road, and (2) improvement of the existing trailhead facility at the northern end of the East River Trail. Construction of the trail extension was initiated, but funding was insufficient to complete the trail construction. Trailhead construction was completed and included street improvements, a parking lot, a small open shelter, and the addition of picnic tables.

Benefits

The communities of Bellevue, Allouez, and Green Bay will benefit from the East River Trail expansion and access improvements by increased opportunities for walking, jogging, and biking. Improved recreational access to the East River may also increase public support for efforts to protect the river in the future.

Project Location

The trailhead was improved at the northern end of the East River Trail in the Town of Bellevue. The planned project extent is a 12-foot wide, 3,000-foot long addition to the East River Trail between Manderly Way and Hoffman Road in the Village of Bellevue.

Status and Funding

Trailhead improvements were completed in 2005 with $50,000 in natural resource damage assessment (NRDA) settlement funding. The Trustees have also directed $220,000 in NRDA settlement funding toward trail construction; additional matching funds and/or in-kind services will be required to complete the project.

Project Accomplishments

The improved trailhead facility offers the public increased opportunities to access and enjoy the recreational trail. Project costs for trail construction were underestimated and additional funding sources are being sought to finish construction.

East River Trail – Westminster Drive Trailhead Facility

East River Trail – Manderly Way Trailhead Facility

East River Trail – Westminster Drive Trailhead Facility, solar lighting *(Photos by Village of Bellevue staff)*

East River Trail – Village of Bellevue *(Photo by Village of Bellevue staff)*

Contact Information

Village of Bellevue Parks, Recreation, and Forestry (920) 468-5225

Sunset Park Fishing Wharf Construction in Kimberly

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Construct a handicapped-accessible fishing wharf in Sunset Park

Benefits
Improved access for fishing

Funding
$12,475 in natural resource damage assessment settlement funding, plus matching funds and/or in-kind services for a total budget of $28,690

Timing
Project completed in 2009

Land ownership
Village of Kimberly

Sunset Park fishing wharf *(Photo by Betsy Galbraith, U.S. Fish and Wildlife Service)*

Goal

To construct a fishing wharf on the Fox River in the Village of Kimberly.

Project Description

A handicap-accessible fishing wharf (approximately 100-feet long by 6-feet wide) in Sunset Park in the Village of Kimberly was constructed. Streamside fishing opportunities along this stretch of the Fox River were previously limited because of the ubiquitous presence of rip rap, which is difficult for most anglers to walk on. The wharf has increased access to streamside recreational fishing, particularly to those anglers without access to a boat.

Benefits

The wharf will increase access to recreational fishing along the Fox River. The project will benefit recreational fishermen, including disabled individuals and members of the community who do not have access to a fishing boat.

Project Location

The wharf will increase fishing access to a stretch (i.e., approximately 200 feet) of the Fox River in an area that otherwise has limited river shoreline fishing access. The location is adjacent to the boat launch at Sunset Park, off West Kimberly Ave.

Status and Funding

Natural resource damage assessment (NRDA) settlement funding was approved in August 2009, final project authorization was provided in October 2009, and the project was completed in November 2009. The Trustees directed $12,475 in NRDA settlement funding and attracted additional matching funds and/or in-kind services for a total budget of $28,690; matching funds were contributed by the Village of Kimberly.

Project Accomplishments

The newly constructed fishing wharf improves and increases fishing access along the Fox River in the Village of Kimberly. Village of Kimberly personnel have observed increased fishing at the new wharf and have received positive feedback from patrons who use the facility.

Contact Information

Village of Kimberly Parks and Recreation Department (920) 788-7507

Nature Park Development at the Gordon Nauman Conservation Area

PROJECT AT A GLANCE

Restoration category
Natural Resource-based Public Use Enhancement

Actions
Development of a conservation area for recreation

Benefits
Increased public access for recreation, including fishing, along Duck Creek near Green Bay

Funding
$10,000 in natural resource damage assessment settlement funding was used to enhance public recreation activities; $487,525 was used to acquire the land for the park (see project summary 1.10)

Timing
Park development completed in June 2007

Land ownership
Village of Howard, Wisconsin

Wildlife habitat in Gordon Nauman Conservation Area *(Photo by M. Pigeon, Village of Howard)*

Goal

To provide recreational opportunities at a newly acquired nature preserve along Duck Creek, near Green Bay.

Project Description

Two large parcels of land were acquired along Wietor Drive in the Village of Howard, near the existing fishing and boardwalk park known as Wietor Wharf (see project summary 1.10, Establishment of the Gordon Nauman Conservation Area). This project involved development of park facilities on the newly acquired property. New park facilities include a ¼-mile woodland trail with access to Duck Creek and an adjacent park at Wietor Wharf, a parking lot constructed on an old home site, and a rain garden adjacent to the parking lot to capture and naturally treat runoff. Park development also included building an open-air shelter on the old barn site and installing park signage. The park was further enhanced by planting trees and restoring native prairie habitat.

Benefits

The public has gained access to a large park for nature-based activities such as fishing, canoeing, picnicking, hiking, and nature observation and study.

Project Location

The Gordon Nauman Conservation Area is located at 1653 Wietor Drive in the Village of Howard, adjacent to Wietor Wharf Park.

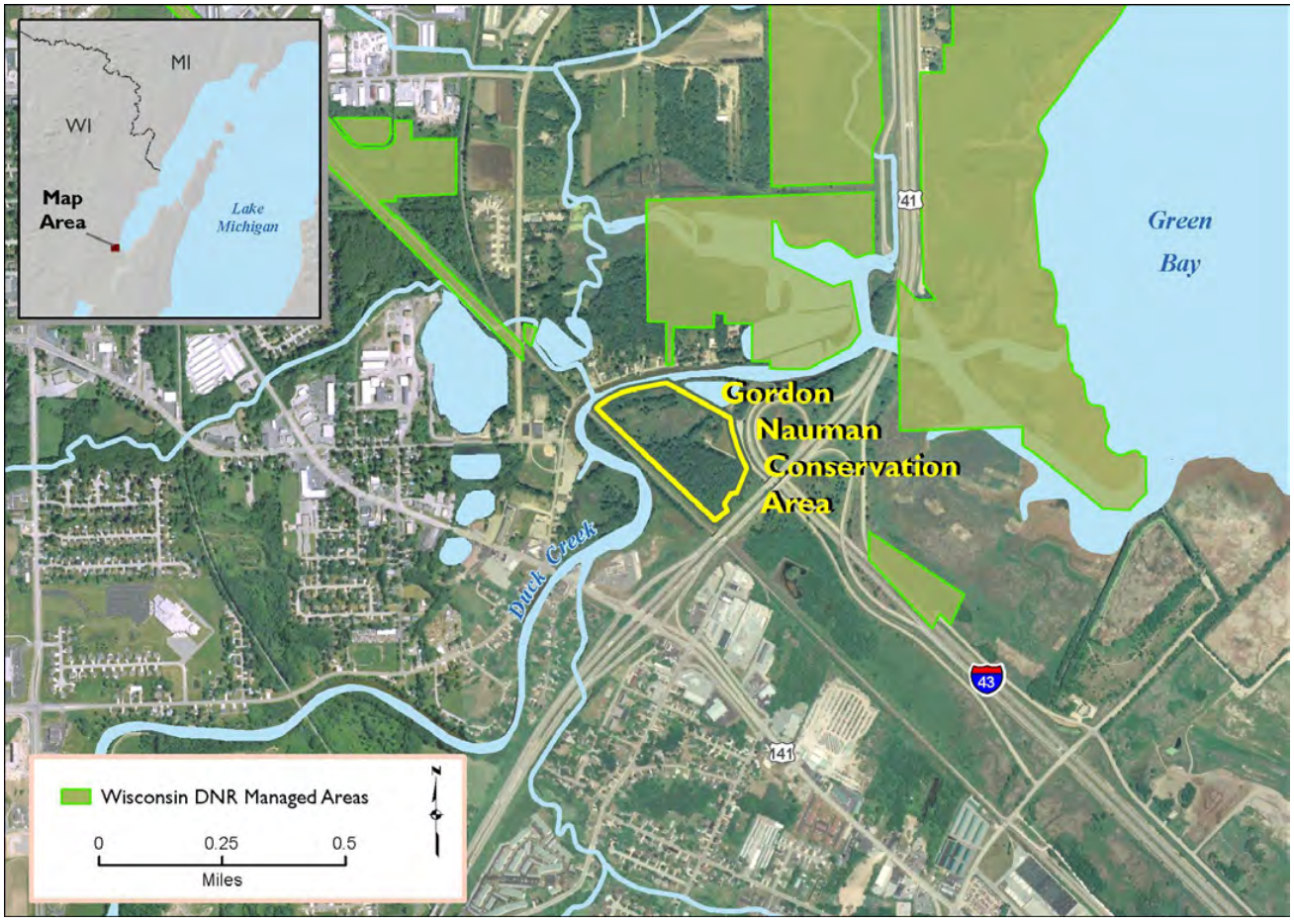
Status and Funding

Natural resource damage assessment (NRDA) settlement funds were awarded in 2005. The land acquisition was completed in 2006; habitat restoration and development of the recreational facilities were completed in June 2007. The Trustees directed $10,000 in NRDA settlement funding to develop the park facilities. The project also used $487,525 in NRDA settlement funding for land acquisition and restoration of natural habitat (see project summary 1.10).

Project Accomplishments

This project successfully developed public access for outdoor recreational activities at newly acquired natural habitat in the Village of Howard. The park offers the public increased opportunities for nature-based recreation along Duck Creek, near Green Bay.

Gordon Nauman Conservation Area and park
(Photo by U.S. Fish and Wildlife Service)



Contact Information

Village of Howard Parks Department (920) 434-4640

SECTION 6

Summary of Restoration Progress

The Lower Fox River and Green Bay Trustees have been implementing restoration projects since 2002 to compensate for injuries to natural resources caused by releases of polychlorinated biphenyls (PCBs) into the environment. Restoration efforts have been funded by initial natural resource damage assessment (NRDA) settlement funding from the final settlement with the Fort James Operating Company (now Georgia Pacific) and partial settlements with other potentially responsible parties, including Appleton Papers, Inc.; NCR Corporation; P.H. Glatfelter Company; and WTMI Company (formerly known as Wisconsin Tissue Mills, Inc.). Additional restoration funding was obtained through a final settlement with 11 parties that were considered to bear a minimal share of the liability for PCB contamination. As described in the previous sections of this report, restoration projects were completed through the efforts of the Trustees and other public and private partners working with the Trustees.

This section of the report briefly describes the restoration progress made by the Trustees, as of June 30, 2012, from three perspectives. First, the restoration progress is summarized with regard to accomplishment of the goals set forth in the 2003 Joint Restoration Plan/Environmental Assessment (RP/EA) published by the Lower Fox River and Green Bay Trustees. Next, progress is summarized geographically by comparing the locations of the restoration projects to the geographic priorities set forth by the Trustees in the RP/EA. Finally, progress is summarized financially by reporting on funding obtained and expenditures made from that funding. Following the discussion of restoration progress, this section then provides a description of Trustee management of NRDA restoration and a discussion of how restoration for this NRDA case contributes to landscape-level conservation activities in the Great Lakes.

Summary of Progress toward Restoration Plan Goals

As of June 30, 2012, the Trustees had completed restoration projects in each of the restoration categories described in the RP/EA and presented in the previous sections of this report (i.e., Preservation of Wetlands and Associated Upland Habitat; Wetlands and Associated Upland Habitat Restoration; Aquatic, Nearshore, and Riparian Habitat Quality Improvement; Fishery Resource Enhancement; and Natural Resource-based Public Use Enhancement). Thus they have made progress toward the initial goals set forth in the 2003 RP/EA.

As noted throughout this report, the Trustees have implemented these projects in partnership with others, and in many cases, these partnerships resulted in leveraged funds increasing the overall scope or extent of restoration accomplishments. For the three categories in which progress can be measured by acres completed, the Trustees credited the number of acres completed with NRDA settlement funding based on the percentage of total project funding provided by NRDA funds. For example, if NRDA settlement funding provided half of a total project budget, then half of the total acres restored by a project would be credited as NRDA-achieved acres. A table that lists all projects, expenditures, and acres achieved by category is provided in the appendix to this report.

As of June 30, 2012, the Trustees had made progress toward RP/EA goals for each of the five resource restoration categories as summarized in the following table:

Summary of Progress According to Geographic Priorities

In addition to presenting the initial goals for each of the five resource restoration categories, the 2003 RP/EA also defined a restoration area in the Lower Fox River and Green Bay area that was divided into four priorities:

- *First priority*: Thirty-nine miles of the Lower Fox River, adjacent floodplain, and ecologically associated uplands
- *Second priority*: Green Bay and adjacent coastal wetlands
- *Third priority*: Tributaries to the Lower Fox River and Green Bay up to the headwaters, including adjacent floodplains and ecologically associated uplands
- *Fourth priority*: Watersheds adjacent to the river systems in the first three priorities.

Summary of Progress toward Restoration Plan Goals as of June 30, 2012

Restoration category	Restoration plan initial goal	Restoration achieved with NRDA settlement funds as of June 30, 2012
Wetlands and Associated Uplands Habitat Preservation	9,900 acres	5,743 acres
Wetlands and Associated Uplands Habitat Restoration	3,300 acres	3,943 acres
Aquatic, Nearshore, and Riparian Habitat Quality Improvement	12,000 acres	1,512 acres
Fishery Resource Enhancement	Recovered damages associated with recreational fishing losses directed toward fishery resource projects	$7,539,508 allocated to projects
Natural Resource-based Public Use Enhancement	Spend no more than 10% of total settlement funds received for projects in this category	7.6% of NRDA funding allocated to date has been spent for projects in this category

The majority of the projects funded by the Trustees have been implemented in priority areas two and three, with some projects funded in priority areas one and four, as described below.

For priority area one, the Trustees have implemented multiple public use enhancement projects along the Lower Fox River, from the City of Green Bay down to the Village of Kimberly. Because of the heavy development along the Lower Fox River, the Trustees have found limited opportunities for wetland preservation, wetland restoration, or aquatic, nearshore, and riparian habitat quality improvements directly along the Lower Fox River and its adjacent floodplains and associated uplands.

In priority area two, the Trustees have made a concentrated effort to implement projects directly within Green Bay and its adjacent coastal wetlands. Multiple fishery resource enhancement projects have targeted fish species that are important to the overall health of the fish community in Green Bay and that also provide recreational fishing opportunities in Green Bay. The Trustees have funded multiple wetland preservation and wetland restoration projects adjacent to Green Bay, with a particular focus on important coastal wetlands along the western shore of Green Bay and in Door County. Finally, the Trustees have funded aquatic, nearshore, and riparian habitat quality improvement projects in this priority area to directly enhance water quality that enters Green Bay and to directly benefit the aquatic, nearshore, and riparian resources that are harmed when water quality is impaired.

In priority area three, the Trustees have funded projects along multiple tributaries to the Lower Fox River and Green Bay (including adjacent floodplains and uplands). They have focused particularly on work along the Suamico River, Wolf River, and Duck Creek tributaries. These projects have included wetland preservation, wetland restoration, and aquatic, nearshore, and riparian habitat quality improvement projects, as well as fishery resource enhancement projects benefiting native fish in Duck Creek.

In priority area four, the Trustees have funded only a few targeted projects that provide a high level of benefit to natural resources within the restoration area defined by the RP/EA. These projects include restoration projects benefiting the Upper Fox River and its adjacent floodplain, a project to benefit

Wood duck pair *(Photo by Joel Trick, U.S. Fish and Wildlife Service - retired)*

the West Branch of the Wolf River, and a project benefiting wildlife habitat in northern Lake Michigan adjacent to Green Bay.

Summary of Financial Progress

The Trustees received settlement funding through the final and partial settlements described above, and earned interest on that funding. The settlement funding plus interest equal the total funding that the Trustees have had available to fund restoration work and associated administrative costs. Of this total funding, more than 97% has been directed by the Trustee Council to specific restoration projects through their allocation process. The Trustees have also allocated funding to administrative costs and to preparation of this Restoration Progress Report (see table on the next page).

More specifically, the Trustees have directed $38,366,416 in NRDA settlement funding to specific restoration projects through funding allocations included in Trustee Council resolutions. A summary of this funding for each of the five resource restoration categories follows:

Preservation of Wetlands and Associated Upland Habitat

- The Trustees have allocated $20,236,653 toward specific restoration projects, achieving 5,743 acres of habitat protection.
- Ninety-six percent of this funding has been spent to date to implement these projects, with the remainder ($778,889) expected to result in additional acres when it is spent.

Wetlands and Associated Upland Habitat Restoration

- The Trustees have allocated $1,639,930 toward specific restoration projects, achieving 3,943 acres of habitat restoration.
- Ninety-eight percent of this funding has been spent to date to implement these projects. Of the unspent funds, $29,833 will be used to complete restoration or maintenance work on the credited projects, and the remaining $1,311 is expected to result in additional restoration credit.

Aquatic, Nearshore, and Riparian Habitat Quality Improvement

- The Trustees have allocated $6,017,850 toward specific restoration projects, achieving 1,512 acres of enhanced aquatic, nearshore, and riparian habitat.
- Eighty-eight percent of this funding has been spent to date to implement these projects. Of the unspent funds, $106,786 will be used to complete restoration or maintenance work on the credited projects, and the remaining $593,362 is expected to result in additional restoration credit.
- Additionally, $427,925 of the total allocated funds in this category was directed toward projects that benefit aquatic, nearshore, and riparian resources but do not have a spatial component that could be measured in acres.

Fishery Resource Enhancement

- The Trustees have directed $7,539,508 toward specific fishery resource enhancement projects.
- Ninety-seven percent of this funding has been spent to date to implement these projects.

Natural Resource-based Public Use Enhancement

- The Trustees have directed $2,932,475 toward public use enhancement projects, representing 7.6% of all allocated funding.
- All of this funding has been spent to implement these projects.

As indicated in the above summary, 95% of the allocated funding has been spent (as of June 30, 2012) to complete restoration projects. Of the funding that has been allocated but not yet spent, the Trustees estimate that $323,353 will be used to complete restoration or maintenance work on the project acreage already accounted for in this summary. Thus a total of $36,935,854 of NRDA settlement

Comparison of Settlement Funding and Trustee Allocations[a]	
Summary of Available Settlement Funds	
Total settlement funds received	$38,660,656
Interest earned as of December 31, 2012	$849,905
Total funding available (settlement funds + interest)	**$39,510,561**
Summary of Allocated and Spent Funding as of June 30, 2012	
Restoration Project Implementation Costs	
Allocated funds spent on restoration project implementation	$36,612,501
Unspent funds allocated to projects and expected to be used to complete restoration or maintenance on acreage already credited	$323,353
Subtotal: Funding that has resulted in NRDA restoration credit (restoration funds spent + unspent funds expected to be used to complete acreage already credited)	**$36,935,854**
Unspent funds allocated to projects and expected to be used for additional acres of restoration work	$1,430,562
Total allocated to restoration project implementation (funding that has resulted in NRDA credit + unspent funds expected to be used for additional acres)	**$38,366,416**
Trustee Administrative Costs	
Costs incurred (spent)	$395,734
Allocated but not spent	$200,000
Total allocated to administrative costs (costs incurred + allocated but not spent)	**$595,734**
Restoration Progress Report Costs	
Costs incurred (spent)	$421,580
Allocated but not spent	$101,508
Total allocated to Restoration Progress Report (includes $23,088 in interest earned on original $500,000 directed to the Restoration Progress Report)	**$523,088**
Total allocated funding (restoration project implementation costs + Trustee administrative costs + Restoration Progress Report costs)	**$39,485,238**
Summary of Remaining Funds	
Funds not yet allocated by Trustees (total funding available - total allocated funding)	$25,323
Unspent funds allocated to projects and expected to be used for additional acres of restoration work (also included above)	$1,430,562
Total remaining funding available for additional NRDA credit	**$1,455,885**

Table notes:

[a] "Allocated funds" are those settlement funds the Trustee Council has directed by resolution, or which have been specifically directed by Consent Decrees, to support restoration projects, Trustee administrative costs, and the Restoration Progress Report.

funding is associated with the restoration progress and completed acreage described in this report. A total of $1,455,885 is available for additional acres of restoration work, including $25,323 of funds that have not yet been allocated and $1,430,562 of funds that have been allocated to projects and are available to complete additional acres of restoration work.

Trustee Organization and Management of NRDA Restoration Activities

The Fox River/Green Bay Natural Resource Trustee Council consists of one representative from each of the following entities: Wisconsin Department of Natural Resources, U.S. Fish and Wildlife Service, Oneida Tribe of Wisconsin, and Menominee Indian Tribe (collectively referred to as the "Trustees"). A Memorandum of Agreement established the Trustee Council in 2002. The Trustees work together to restore the natural resources of the Lower Fox River and Green Bay area that have been injured by the release of PCBs. Trustee responsibilities include scoping, approving, implementing, and monitoring projects and actions to meet RP/EA goals.

The Trustees have established an organizational structure and operating processes to facilitate efficient and effective management of restoration projects. The Trustee Council Coordinator is responsible for managing council business; coordinating Trustee consideration, selection, and management of restoration projects; and managing the budget. A Technical Team provides support to the Trustee Council, with representation from each of the Trustee entities. The Technical Team evaluates potential restoration projects based on criteria identified in the RP/EA. Following evaluation by the Technical Team, restoration projects that meet the goals identified in the RP/EA are recommended to the Trustee Council for their consideration. By consensus, the Trustee Council approves projects for funding and subsequent implementation through resolutions signed by each Trustee Council Representative. The Trustees and restoration project partners then continue working together to ensure that projects are implemented and managed to meet the restoration goals identified in the RP/EA. Trustee administrative costs supporting these administrative responsibilities (as of June 30, 2012) are listed in the table "Comparison of Settlement Funding and Trustee Allocations."

Wilson's snipe *(Photo by Joel Trick, U.S. Fish and Wildlife Service - retired)*

Contributions of the Lower Fox River and Green Bay NRDA Restoration to Landscape Conservation in the Great Lakes

The Trustees continue to actively coordinate NRDA restoration activities with conservation partners, including Tribes, government agencies, municipalities, non-profit groups, and universities. As noted throughout this Restoration Progress Report, these partnerships frequently result in greater conservation accomplishments at individual project sites (achieved through leveraged funding and other resources) than would have been possible with NRDA funding alone. This is evidenced by the total amount of leveraged funds ($41,231,565) facilitated by Trustee restoration efforts to date, resulting in more than 6,500 additional acres of landscape conservation and recreational benefits.

Under the relevant NRDA authorities, the specific responsibility of the Trustees is to restore resources injured by the release of PCBs into the Lower Fox River and Green Bay environment. At the same time, the agencies and Tribes who make up the Trustee Council are part of a larger conservation community working to conserve natural resources throughout the Fox River watersheds, Green Bay, and the Great Lakes. This broader framework of activity includes, but is not limited to, long-standing efforts by the United States and Canada to improve water quality through efforts such as the Great Lakes Water Quality Agreement; activities coordinated by the federal Great Lakes Interagency Task Force; clean-up of contaminated sediment in Areas of Concern (AOCs) identified under the Great Lakes Legacy Act; significant investments by non-governmental organizations to protect and restore natural resources; and the Great Lakes Restoration Initiative, which began in 2010 and according to the U.S. Environmental Protection Agency is the largest investment in the Great Lakes in two decades, with an action plan covering fiscal years 2010–2014.[6.1]

Along with these public and private programs focused on the Great Lakes, the Lower Fox River and Green Bay NRDA is playing a pivotal role for Green Bay and Lake Michigan by facilitating cooperative restoration projects with a wide variety of partners. The Trustees are helping to achieve cumulative conservation results on the landscape by strategically directing NRDA settlement funds to projects and efforts within key geographic areas and working with multiple partners. For example, the Trustees have directed substantial funding toward restoration on the western shore of Green Bay, on the Door Peninsula, and in the Duck Creek watershed, which are all locations at which project partners have been actively engaged in conservation efforts at the landscape scale. To meet the RP/EA goal of self-sustaining fish populations and a healthy fish community in the Lower Fox River and Green Bay environment, the Trustees have directed funding to projects increasing populations of lake trout (*Salvelinus namaycush*), lake sturgeon (*Acipenser fulvescens*), and spotted musky (*Esox masquinongy*), and to projects enhancing spawning habitat for native predator fish, such as northern pike (*Esox lucius*). These projects also advance the Wisconsin Department of Natural Resource's collaborative fishery management plans for Green Bay to provide a more balanced fishery community in the Bay meeting a wide variety of public needs.

As a designated Great Lakes AOC, the Lower Green Bay and Fox River AOC has long been the focus of remedial action planning and implementation to address numerous "Beneficial Use Impairments" and related resource issues.[6.2] One of the most significant projects envisioned through these AOC efforts is the

6.1 See http://greatlakesrestoration.us/pdfs/glri_actionplan.pdf (accessed January 25, 2013).

6.2 See www.epa.gov/greatlakes/aoc/greenbay/index.html (accessed January 25, 2013).

restoration of the Cat Islands Chain in lower Green Bay. As a direct result of NRDA settlement funding, the conservation partnership leading this project has been able to complete feasibility studies and begin construction, attracting the additional funding necessary to make this keystone habitat restoration in Green Bay a reality in the coming years (see project summary 3.18). Funds provided by the Trustees also assisted with the preservation of additional acreage adjacent to the Point Sable Preserve, located within the AOC. UW-Green Bay, the project partner, has subsequently received funding for restoration activities on this land (see project summary 1.8). The Trustees' efforts to improve water quality through funding of restoration projects, such as riparian buffers and land acquisition in sensitive headwaters areas, coordinate well with ongoing work to address nonpoint source pollution within the AOC.

The above examples demonstrate the collaboration and partnerships between the Trustees and other entities engaged in conservation and restoration work in the Great Lakes. In addition to the public receiving compensation through the direct NRDA restoration accomplishments of the Trustees, as enabled by settlements to date, these partnerships provide the public with the additional benefits that derive from collaboration toward a vision of sustainable natural resources in the Lower Fox River and Green Bay area, now and into the future.

Great blue heron *(Photo by Joel Trick, U.S. Fish and Wildlife Service - retired)*

Summary Number and Project Title		Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]
Section 1: Wetlands and Upland Habitat Preservation						
1.1	Land Transfer in the Green Bay West Shores Wildlife Area	$2,512,708	$2,512,708	$2,512,708	$0	$0
1.2	Wolf River Basin, Green Bay West Shores, and Door Peninsula Wetlands Habitat Preservation	$8,965,945	$7,352,084	$6,797,195	$554,889	$554,889
1.3	Little Tail Point Area Habitat Preservation	$29,724	$9,300	$9,300	$0	$0
1.4	Green Bay West Shores Wildlife Area Wetlands Habitat Preservation	$128,400	$18,720	$18,720	$0	$0
1.5	Wolf River Bottomlands Natural Resource Area Habitat Preservation	$2,800,000	$2,800,000	$2,800,000	$0	$0
1.6	Upper Fox River Habitat Preservation	$578,101	$500,000	$500,000	$0	$0
1.7	Little Lake Butte des Morts West Shore Preserves Habitat Preservation	$2,002,875	$1,686,275	$1,686,275	$0	$0
1.8	Point au Sable Habitat Preservation	$340,787	$155,000	$155,000	$0	$0
1.9	Baird Creek Watershed Habitat Preservation	$575,450	$400,000	$176,000	$224,000	$224,000
1.10	Establishment of the Gordon Nauman Conservation Area	$487,525	$487,525	$487,525	$0	$0
1.11	Mink River, North Bay, Bayshore Blufflands Habitat Preservation	$2,816,058	$1,792,551	$1,792,551	$0	$0
1.12	Little Lake Wildlife Habitat Area Preservation	$1,441,435	$361,190	$361,190	$0	$0
1.13	Detroit Island, Detroit Harbor, Bayshore Blufflands, and Little Lake Habitat Preservation	$1,031,629	$626,000	$626,000	$0	$0
1.14	Detroit Harbor State Natural Area Habitat Preservation	$304,323	$35,300	$35,300	$0	$0
1.15	Garden Bluffs Habitat Preservation	$3,636,892	$1,500,000	$1,500,000	$0	$0
	Section 1 Totals	$27,651,852	$20,236,653	$19,457,764	$778,889	$778,889

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$0	100.00%	1,063.00	1,063.00	0.00	85
	$1,613,861	80.81%	3,440.73	2,780.54	660.19	1, 21, 82, 83
	$20,424	31.29%	68.80	21.53	47.27	174
	$109,680	14.58%	34.00	4.96	29.04	178
	$0	100.00%	973.53	973.53	0.00	125
	$78,101	86.49%	202.00	174.71	27.29	51
	$316,600	84.19%	80.00	67.35	12.65	75, 110, 117
	$185,787	45.48%	61.78	28.10	33.68	173
	$175,450	50.08%	52.00	26.04	25.96	42
	$0	100.00%	28.87	28.87	0.00	103
	$1,023,507	63.65%	460.00	292.81	167.19	14
	$1,080,245	25.06%	27.00	6.77	20.23	111, 119
	$405,629	60.68%	73.40	44.54	28.86	80
	$269,023	11.60%	5.20	0.60	4.60	131
	$2,136,892	41.24%	654.00	230.00	424.00	45
	$7,415,199		7,224.31	5,743.35	1,480.96	

Summary Number and Project Title		Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]
Section 2: Wetlands and Associated Upland Habitat Restoration						
2.1	Oconto Marsh Pump and Water Control Replacement	$64,500	$25,000	$25,000	$0	$0
2.2	Coyote Run Wetlands Restoration	$252,208	$240,000	$223,167	$16,833	$0
2.3	Wolf River Bottoms Wildlife Area Wetland Restoration	$270,447	$200,000	$200,000	$0	$0
2.4	Fox River National Wildlife Refuge Native Grassland Habitat Restoration	$200,000	$150,000	$150,000	$0	$0
2.5	Fox River National Wildlife Refuge Wetland Restoration	$279,791	$151,291	$151,291	$0	$0
2.6	Uihlein Waterfowl Production Area Habitat Restoration	$748,177	$264,139	$264,139	$0	$0
2.7	Rush Lake Habitat Restoration and Preservation	$970,722	$420,000	$420,000	$0	$0
2.8	Killsnake and Brillion Wildlife Areas Habitat Restoration	$27,042	$14,500	$14,500	$0	$0
2.9	Prairie Restoration for Waterfowl Nesting Habitat Near Wetlands, Waterways, and Rivers	$167,552	$100,000	$98,689	$1,311	$1,311
2.10	Outagamie Pump and Pumphouse Replacement	$69,042	$40,000	$40,000	$0	$0
2.11	Edge of the Woods Wetland Habitat Enhancement in the Duck Creek Watershed	$36,750	$35,000	$22,000	$13,000	$0
	Section 2 Totals	$3,086,231	$1,639,930	$1,608,786	$31,144	$1,311

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$39,500	38.76%	220.00	85.27	134.73	62
	$12,208	95.16%	160.00	152.26	7.74	116
	$70,447	73.95%	2,000.00	1,479.03	520.97	61
	$50,000	75.00%	200.00	150.00	50.00	3
	$128,500	54.07%	200.00	108.15	91.85	104
	$484,038	35.30%	683.00	241.13	441.87	50, 167
	$550,722	43.27%	3,073.00	1,329.59	1,743.41	49
	$12,542	53.62%	25.24	13.53	11.71	67
	$67,552	59.37%	277.21	164.57	112.64	69
	$29,042	57.94%	330.00	191.19	138.81	54, 55
	$1,750	95.24%	30.00	28.57	1.43	115
	$1,446,301		7,198.45	3,943.29	3,255.16	

Summary Number and Project Title		Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]
Section 3: Aquatic, Nearshore, and Riparian Habitat Quality Improvement						
3.1	Lowland Hardwood Forest Protection in Little River, Oconto County	$353,000	$189,000	$189,000	$0	$0
3.2	Pensaukee Marsh Northern Pike Habitat Enhancement	$55,154	$30,000	$30,000	$0	$0
3.3	Sensiba Wildlife Area Northern Pike Spawning Area and Waterfowl Enhancement Project	$35,000	$35,000	$0	$35,000	$35,000
3.4	Northern Pike Habitat Restoration on the Western Shore of Green Bay	$1,000,056	$622,000	$505,038	$116,962	$116,962
3.5	South Branch of the Suamico River Stream Restoration	$425,000	$425,000	$0	$425,000	$425,000
3.6	West Branch of the Wolf River Habitat Restoration	$95,188	$93,688	$93,688	$0	$0
3.7	Lancaster Brook Habitat Enhancement	$75,807	$30,000	$30,000	$0	$0
3.8	Trout Creek Habitat Preservation	$150,000	$75,000	$75,000	$0	$0
3.9	Duck Creek Watershed Habitat Preservation (Part 1)	$1,920,000	$960,000	$960,000	$0	$0
3.9	Duck Creek Watershed Habitat Preservation (Part 2)	$100,000	$100,000	$100,000	$0	$0
3.10	Door County Habitat Reforestation	$132,090	$131,530	$131,530	$0	$0
3.11	South Bay Marina Habitat Enhancement	$120,000	$98,000	$98,000	$0	$0
3.12	Invasive Species Control in Green Bay Coastal Wetlands	$100,000	$100,000	$100,000	$0	$0
3.13	Habitat Restoration in the Bay Shore Blufflands and Shivering Sands Preserves	$20,000	$20,000	$20,000	$0	$0

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$164,000	53.54%	140.00	74.96	65.04	162
	$25,154	54.39%	190.00	103.35	86.65	123
	$0	—	—[d]	—[d]	—[d]	35
	$378,056	57.19%	128.06	73.24	54.82	106
	$0	—	—[d]	—[d]	—[d]	153
	$1,500	98.42%	10.40	10.24	0.16	33
	$45,807	39.57%	7.60	3.01	4.59	114
	$75,000	50.00%	10.00	5.00	5.00	113
	$960,000	50.00%	192.00	96.00	96.00	168, 176
	$0	100.00%	—[e]	—[e]	—[e]	7
	$560	99.58%	179.00	178.24	0.76	15, 17
	$22,000	81.67%	6.00	4.90	1.10	18
	$0	100.00%	774.00	774.00	0.00	8
	$0	100.00%	35.00	35.00	0.00	16

Summary Number and Project Title	Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]
Section 3: Aquatic, Nearshore, and Riparian Habitat Quality Improvement (continued)					
3.14 Lake Puckaway Aquatic Habitat Enhancement	$16,400	$16,400	$0	$16,400	$16,400
3.15 Allouez Habitat Protection and Restoration	$500,000	$500,000	$500,000	$0	$0
3.16 Gilson Creek Glades Reserve Habitat Protection	$236,614	$118,307	$118,307	$0	$0
3.17 Green Bay and Gravel Island National Wildlife Refuge Habitat Management (Part 1)	$358,000	$358,000	$358,000	$0	$0
3.17 Green Bay and Gravel Island National Wildlife Refuge Habitat Management (Part 2)	$188,000	$188,000	$188,000	$0	$0
3.18 Cat Island Chain Restoration Project Feasibility Study	$18,100,000	$1,100,000	$1,100,000	$0	$0
3.19 Oneida Lake Habitat Creation[f]	To be determined	$400,000	$400,000	$0	$0
3.20 Wild Rice Reintroduction on the Menominee Indian Reservation	$58,827	$58,827	$58,827	$0	$0
3.21 Bald Eagle Nesting Habitat Restoration on the Oneida Reservation	$25,269	$18,000	$4,043	$13,957	$0
3.22 Forster's Tern Nesting Platform Installation in the Green Bay West Shores Wildlife Area	$6,080	$2,400	$2,400	$0	$0
3.23 Forster's Tern Nesting Enhancement Pilot Project on Lake Poygan	$200,792	$200,792	$107,963	$92,829	$0
3.24 Common Tern Nesting Habitat Enhancement and Nest Island Construction on Lake Butte des Morts	$126,208	$126,208	$126,208	$0	$0
3.25 Piping Plover Population Enhancement	$206,698	$21,698	$21,698	$0	$0
Section 3 Totals	$25,004,183	$6,017,850	$5,317,702	$700,148	$593,362

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$0	—	—[d]	—[d]	—[d]	155
	$0	100.00%	22.00	22.00	0.00	93
	$118,307	50.00%	30.82	15.41	15.41	74
	$0	100.00%	—[e]	—[e]	—[e]	4
	$0	100.00%	25.00	25.00	0.00	4B
	$17,000,000	6.08%	1,497.00	90.98	1,406.02	9, 87
	$0	2.54%	40.00	1.01	38.99	6, 91
	$0	100.00%	—[g]	—[g]	—[g]	5, 79
	$7,269	71.23%	—[g]	—[g]	—[g]	136
	$3,680	39.47%	—[g]	—[g]	—[g]	151
	$0	100.00%	—[g]	—[g]	—[g]	29
	$0	100.00%	—[g]	—[g]	—[g]	52, 59, 60
	$185,000	10.50%	—[g]	—[g]	—[g]	27
	$18,986,333		3,286.88	1,512.34	1,774.54	

Summary Number and Project Title		Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]	
Section 4: Fishery Resource Enhancement							
4.1	Lake Trout Population Enhancement	$1,657,526	$300,000	$300,000	$0	$0	
4.2	Spotted Musky Population Enhancement	$691,779	$615,400	$491,254	$124,146	$0	
4.3	Lake Sturgeon Habitat and Population Enhancement (Part 1)	$42,000	$42,000	$0	$42,000	$42,000	
4.3	Lake Sturgeon Habitat and Population Enhancement (Part 2)	$130,263	$50,000	$50,000	$0	$0	
4.4	Brook Trout Population Enhancement	$97,000	$80,000	$17,412	$62,588	$0	
4.5	Duck Creek Dam Removal and Fish Passage Installation	$15,000	$15,000	$0	$15,000	$15,000	
4.6	Yellow Perch Limiting Factors Analysis	$406,608	$381,108	$381,108	$0	$0	
4.7	Bluegill Stocking in Green Bay and the Suamico River	$12,000	$6,000	$6,000	$0	$0	
4.8	Wild Rose Fish Hatchery Renovation	$17,757,903	$6,000,000	$6,000,000	$0	$0	
4.9	Walleye Rearing Pond Construction	$61,000	$50,000	$50,000	$0	$0	
	Section 4 Totals	$20,871,079	$7,539,508	$7,295,774	$243,734	$57,000	

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$1,357,526	18.10%	—[h]	—[h]	—[h]	10
	$76,379	88.96%	—[h]	—[h]	—[h]	11, 22, 88, 124
	$0	—	—[h]	—[h]	—[h]	122
	$80,263	38.38%	—[h]	—[h]	—[h]	13
	$17,000	82.47%	—[h]	—[h]	—[h]	166
	$0	—	—[h]	—[h]	—[h]	164
	$25,500	93.73%	—[h]	—[h]	—[h]	19, 20, 76, 90
	$6,000	50.00%	—[h]	—[h]	—[h]	77
	$11,757,903	33.79%	—[h]	—[h]	—[h]	41
	$11,000	81.97%	—[h]	—[h]	—[h]	63
	$13,331,571					

Summary Number and Project Title		Total Funds	NRDA Settlement Funds Allocated[a]	NRDA Settlement Funds Spent as of June 30, 2012	NRDA Settlement Funds Remaining as of June 30, 2012	NRDA Settlement Funds Remaining for New Acres, as of June 30, 2012[b]
Section 5: Natural Resource-based Public Use Enhancement						
5.1	L.H. Barkhausen Waterfowl Preserve Facilities Expansion	$375,000	$375,000	$375,000	$0	$0
5.2	Leicht Memorial Park Facilities and Porlier Fishing Pier Improvements (Part 1)	$600,000	$600,000	$600,000	$0	$0
5.2	Leicht Memorial Park Facilities and Porlier Fishing Pier Improvements (Part 2)	$200,000	$200,000	$200,000	$0	$0
5.3	Ashwaubomay River Trail Construction	$500,000	$500,000	$500,000	$0	$0
5.4	Brown County Fairgrounds Boat Launch Improvements	$766,000	$766,000	$766,000	$0	$0
5.5	Allouez Park Development and East River Trail Extension (Part 1)	$214,946	$179,000	$179,000	$0	$0
5.5	Allouez Park Development and East River Trail Extension (Part 2)	$20,000	$20,000	$20,000	$0	$0
5.6	East River Trail Improvement and Expansion (Part 1)	$220,000	$220,000	$220,000	$0	$0
5.6	East River Trail Improvement and Expansion (Part 2)	$50,000	$50,000	$50,000	$0	$0
5.7	Sunset Park Fishing Wharf Construction in Kimberly	$28,690	$12,475	$12,475	$0	$0
5.8	Nature Park Development at the Gordon Nauman Conservation Area	$10,000	$10,000	$10,000	$0	$0
	Section 5 Totals	$2,984,636	$2,932,475	$2,932,475	$0	$0
	Restoration Progress Report Totals	$79,597,981	$38,366,416	$36,612,501	$1,753,915	$1,430,562

Table notes:

[a] Allocated funds are those settlement funds the Trustee Council has directed by resolution to support each restoration project.

[b] Dollars in this column are those allocated dollars that have not yet been spent by project partners and are expected to result in additional acres of restoration when expended.

[c] Restoration project numbers were assigned by the Trustee Council for tracking purposes.

[d] Acreage credit will be provided once the project is completed. Partnership contributions in the form of leveraged funds and in-kind services are anticipated. For Project 3.5, as of June 30, 2012, $116,156.42 of NRDA funding had been spent on project planning, but on-the-ground restoration work had not yet begun.

	Leveraged Funds as of June 30, 2012	% NRDA Funds	Total Acres	Restoration Achieved with NRDA Settlement Funds (acres)	Additional Restoration with Leveraged Funds (acres)	NRDA Project Number(s)[c]
	$0	100.00%	—[h]	—[h]	—[h]	98
	$0	100.00%	—[h]	—[h]	—[h]	101
	$0	100.00%	—[h]	—[h]	—[h]	102
	$0	100.00%	—[h]	—[h]	—[h]	95
	$0	100.00%	—[h]	—[h]	—[h]	99
	$35,946	83.28%	—[h]	—[h]	—[h]	93
	$0	100.00%	—[h]	—[h]	—[h]	94
	$0	100.00%	—[h]	—[h]	—[h]	97
	$0	100.00%	—[h]	—[h]	—[h]	96
	$16,215	43.48%	—[h]	—[h]	—[h]	165
	$0	100.00%	—[h]	—[h]	—[h]	103
	$52,161					
	$41,231,565		17,709.64	11,198.98	6,510.66	

[e] These projects include two parts – a planning or management component and a restoration component. The acreage credited for these projects appears in Part 2 of the project.

[f] Total cost of project is estimated to be $15.7 million, including the $400,000 of NRDA settlement funds already allocated and spent. The NRDA crediting for this project is based on this estimated project total; the project partner for this project is still working on obtaining the funding required.

[g] These projects benefit wildlife and cultural resources but cannot be spatially credited at this time.

[h] Fishery resource enhancement and natural resource-based public use enhancement projects are not spatially credited.