The Detroit River International Wildlife Refuge: An experience of binational conservation management in the Great Lakes*

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Abstract

The Detroit River International Wildlife Refuge was established as the first international refuge in the US Wildlife Refuge System in 2001. The Refuge includes a range of habitats such as small islands, coastal wetlands, marshes, shoals and riverfront lands along 48 miles of the lower Detroit River and shoreline of the western basin of Lake Erie. The US Fish and Wildlife Service is charged with management responsibilities for the Refuge, to establish partnerships with Canada and local communities and to enter into cooperative land management arrangements with private and public landowners within the Refuge. A Comprehensive Conservation Plan for the Refuge was approved in 2005. Currently over 1200 acres are under management ownership or cooperative arrangements within the Refuge. These efforts are also guided by the shared Conservation Vision for the Lower Detroit River Ecosystem developed by federal, state and provincial agencies in both countries.

Introduction

The Detroit River International Refuge is located along the Lower Detroit River and western shoreline of Lake Erie, in Wayne and Monroe Counties, Michigan (Figure 1). Established by Public Law 107-91 on December 21, 2001, the Refuge is the first international Refuge in North America. The authorized Refuge boundary includes islands, coastal wetlands, marshes, shoals and riverfront lands along 48 miles of the Lower Detroit River and Lake Erie in Michigan. Its location also makes it unique – the Detroit River International Wildlife Refuge is one of only a few Refuges situated in a major metropolitan area.

The Refuge-establishing act designated islands that were once part of Wyandotte National Wildlife Refuge (NWR) – Grassy Island, Mud Island and Mamajuda Island – as part of the new international Refuge. The 18.5-acre Mud Island and 71.5 acres of submerged aquatic shoals were added to

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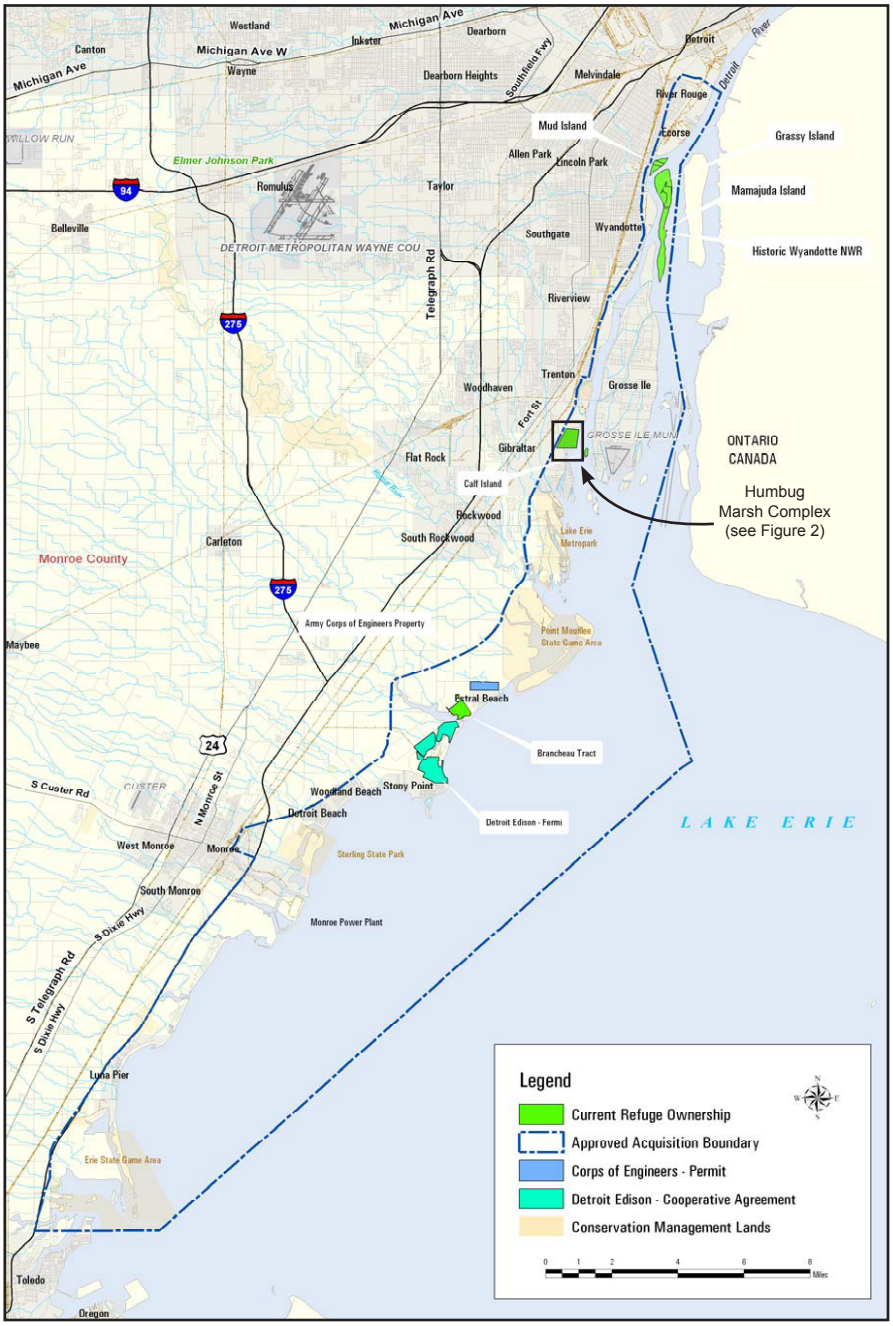
the Refuge on June 14, 2001. On September 26, 2002, Calf Island, an 11-acre island in the Trenton Channel of the lower Detroit River, was donated for inclusion in the Refuge. The Nature Conservancy purchased the island from

Figure 1. Detroit River International Wildlife Refuge



a private party while several organizations worked in partnership to secure reimbursement funds through a federal North American Wetlands Conservation Act grant. Partners that contributed in-kind matches for this grant included Ducks Unlimited, the Greater Detroit American Heritage River Initiative and Solutia, a chemical industry in Trenton, Michigan. A 152-acre Lake Erie coastal property was purchased from a private landowner on August 18, 2003. This acquisition, using funds from the Migratory Bird Conservation Fund, brings the entire Refuge to 544 acres in size.

On September 25, 2003, the US Fish and Wildlife Service (USFWS) and Detroit Edison Company entered into a cooperative agreement for managing wildlife habitat on over 600 acres of the 1,200-plus acre nuclear facility in Frenchtown Township (Fermi 2). In addition, the U.S. Army Corps of Engineers (Corps) is proposing to transfer a 168-acre parcel of land adjacent to the Pointe Mouillee State Game Area and Estral Beach for inclusion in the Refuge. The Service has accepted a management permit for the site and will be working on the transfer process with the Corps.

On May 19, 2003, Public Law 108-23, the Ottawa National Wildlife Refuge Complex Expansion and Detroit River International Wildlife Refuge Expansion Act, was signed by the President. The Act extends the authorized boundary of the Refuge along the Lake Erie coastline west to I75 and south to the Ohio/ Michigan border. The expansion area encompasses more than 7,500 acres and numerous coastal marshes and sensitive wetlands that would be suitable as part of the Refuge. The Act could eventually result in a string of protected coastal areas extending along the entire Lake Erie Western Basin in Michigan and Ohio. In January 2006 Gard Island in Maumee Bay – at the southern end of the Refuge area – was added to the complex with the signing of a cooperative management agreement with the University of Toledo, Ohio.

The National Wildlife Refuge System

The USFWS manages the National Wildlife Refuge System. The System is a network of more than 500 national wildlife refuges encompassing more than 93 million acres of public land and water. Refuges provide habitat for more than 5,000 species of birds, mammals, fish, and insects. Others were set aside for large mammals such as elk and bison. Most refuges, however, have been created to protect migratory waterfowl. This is a result of the United States' responsibilities under international treaties for migratory bird conservation as well as other legislation, such as the Migratory Bird Conservation Act of 1929. The National Wildlife Refuge System has Refuges along the four major flyways that waterfowl follow from their northern nesting grounds to southern wintering areas.

Refuges also provide unique opportunities for people. When compatible with wildlife and habitat needs, refuges can be used for wildlife-dependent

activities such as hunting, fishing, wildlife observation, photography, environmental education and environmental interpretation. Nationwide, more than 30 million people visited national wildlife refuges in 1997.

Comprehensive Conservation Plan

The comprehensive conservation plan (CCP), identifies the role the Refuge will play in supporting the mission of the National Wildlife Refuge System and provides guidance for Refuge management (Detroit River International Wildlife Refuge, 2005). Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of this plan. These mandates include:

- that wildlife has first priority in the management of refuges;
- that wildlife-dependent recreation activities of hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation are the priority public uses of the National Wildlife Refuge System, these uses will be facilitated when they do not interfere with the ability to fulfill the Refuge's purposes or the mission of the National Wildlife Refuge System; and
- that other uses of the Refuge will only be allowed when they are determined to be appropriate and compatible with the Refuge purposes and mission of the National Wildlife Refuge System.

The CCP will enhance the management of the Detroit River International Wildlife Refuge by several key objectives:

- Providing a clear statement of direction for future management of the Refuge;
- Giving Refuge neighbors, visitors, and the general public an understanding of the Service's management actions on and around the Refuge;
- Ensuring that the Refuge's management actions and programs are consistent with the mandates of the National Wildlife Refuge System;
- Ensuring that Refuge management is consistent with federal, state and county Plans;
- Establishing continuity in Refuge management; and
- Providing a basis for the development of budget requests.

The Detroit River and adjacent portions of the western Lake Erie shoreline have experienced tremendous industrial development within the last 100 years. Widespread pollution, loss of coastal wetlands, and environmental degradation in general became a normal course of events as the Detroit region grew in population and industry. However, along with the coming of a new century, a new attitude toward the river is emerging within local communities.

Beginning in 2000, individuals as well as local, regional, state, and federal agencies in the United States and Canada came together to discuss the future of the Detroit River and its environment. This large-scale effort resulted

in a binational conservation vision for the Lower Detroit River Ecosystem (Metropolitan Affairs Coalition, 2001). A principal element of this vision was to support specific legislation to create an International Wildlife Refuge to be managed in a partnership consistent with the vision statement.

The planning process for this comprehensive conservation plan began in April 2002. Initially, members from various Service programs met in the regional office to identify a list of issues and concerns that were associated with the management of the Refuge. A series of open house events, meetings, and workshops were held in local communities. In total, more than 150 people attended the open houses and meetings. The Planning Team received 35 written comment forms during these events and took numerous pages of notes from small group and individual discussions.

The Detroit River Ecosystem

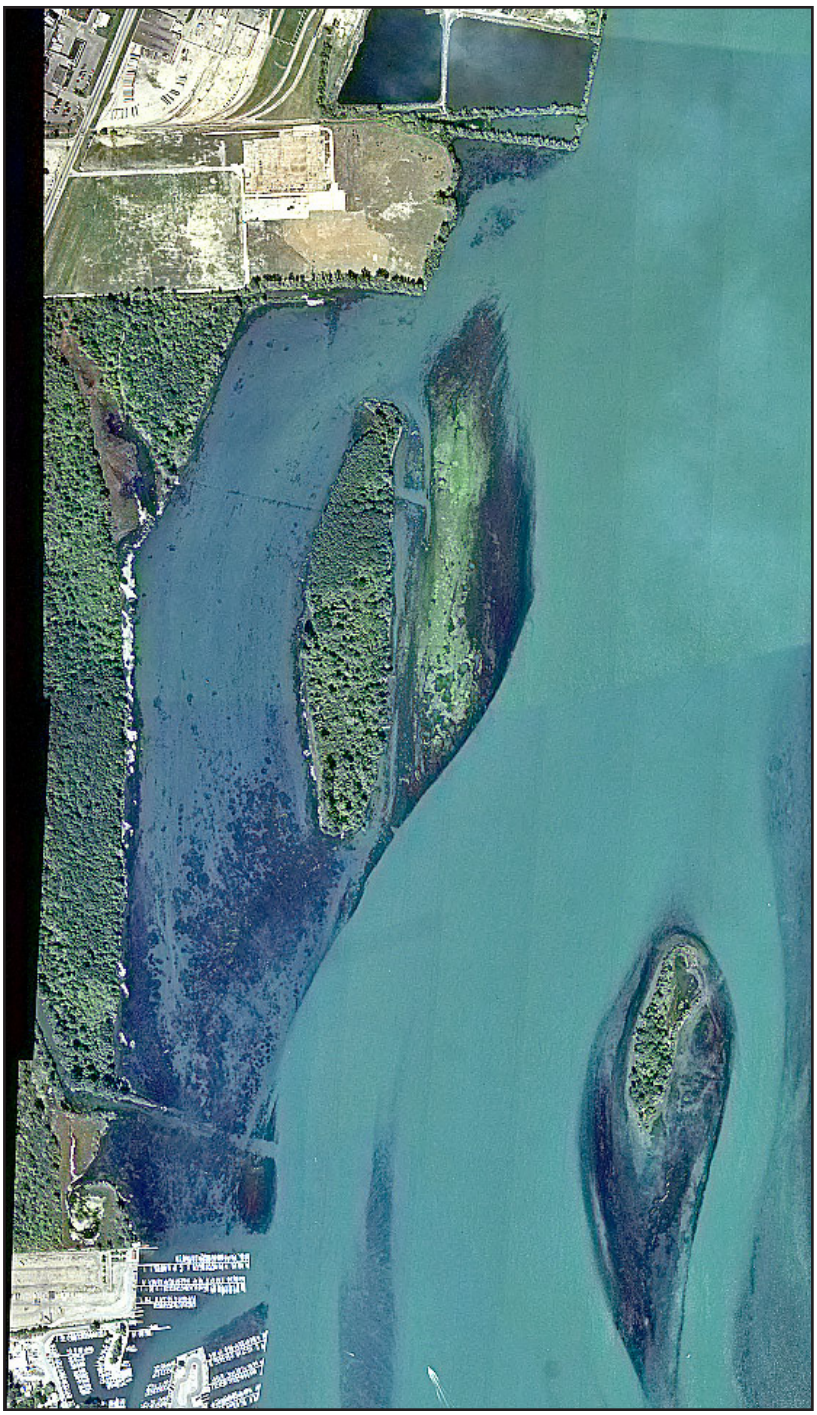
The U.S. Environmental Protection Agency and Environment Canada have identified the Detroit River as a portion of the Great Lakes shoreline with significant concentrations of coastal wetlands and distinctive characteristics (U.S. Environmental Protection Agency and Environment Canada, 1999). In 1990, Region 3 designated the marshes associated with Lake Erie and the Detroit River as a wetland focus area within the Regional Wetlands Concept Plan. Figure 2 shows the wetlands located within the Humbug Marsh Complex within the Refuge.

The Detroit River consists of a 32-mile-long channel bordered by a poorly drained clay lake plain. The rapidly flowing river is underlain by limestone bedrock. Heavy industrial development dominates the shoreline. The river has 66 miles of Canadian shoreline, 79 miles of U.S. shoreline, five Canadian wetlands with 2,808 acres, and 16 U.S. wetlands with 3,415 acres (Detroit River Canadian Cleanup Committee, 1999).

The Detroit River wetlands provide spawning areas for 26 percent of the fish species in the Great Lakes and nursery areas for 20 percent of the species. Compared with other shoreline reaches in the Great Lakes, the Detroit River is above the 50th percentile for providing spawning and above the 75th percentile for nursery areas (Francis, 2000; Haas *et al*., 1985). One hundred species of breeding birds, approximately 50 percent of the breeding birds of Ontario, use the Detroit River wetlands along the Canadian shoreline. It is expected that an equivalent bird use occurs in the remnant wetlands on the U.S. side.

The Detroit River has been designated a bi-national Area of Concern under the Great Lakes Water Quality Agreement. Based on the Great Lakes Water Quality Agreement, the Michigan Department of Natural Resources and Michigan Department of Environmental Quality (1996) have listed concerns for the Detroit River. They report the following concerns: degradation of benthic populations; fish tumors and other deformities; restrictions on fish and

Figure 2. Humbug Marsh Complex (See location on Figure 1)



wildlife consumption; beach closings due to bacteria in the water; restrictions on dredging; taste and odor in drinking water; degradation of aesthetics; and loss of fish and wildlife habitat.

The Detroit River was designated as an American Heritage River in 1998, one of only 14 rivers nationwide with this distinction. The American Heritage Rivers Initiative is a federal effort to support the local community's goals for the river by providing focused federal support. It is a locally driven program formally chartered as the Greater Detroit American Heritage River Initiative. In Detroit, the private and municipal sectors are the primary forces within the steering committee. Late in 1999, a Federal contact was named for the river and stakeholders held their first major event. In July 2001, the Canadian government designated the river as a Canadian Heritage River, and made the Detroit River the only binationally designated heritage river in the world.

The Detroit River has experienced over a century of heavy contaminant discharges from industry and municipalities. The sources of contaminants vary and include: non-point sources such as stormwater runoff and air deposition, combined sewer overflows, municipal and industrial point sources, tributaries, sediments and upstream inputs (MDNR and MDEQ, 1996). The quality of the Detroit River ecosystem is closely connected to the high water volume flowing from Lake Huron, St. Clair River, and Lake St. Clair. The primary contaminants have been cadmium, copper, lead, mercury, zinc, and polychlorinated biphenyls (PCBs), but other contaminants also have been identified (Froese *et al*., 1997; Hamdy and Post, 1985; Heidtke *et al*., 2003; Kaiser *et al*., 1985; Kreis *et al*., 2001).

Improvements in water and sediment quality have occurred during the past three decades. The long-term trends of lead, copper and zinc concentrations in the water show distinct decreases from 1981 through the present (MDNR and MDEQ 1996). Although the sharpest declines were observed through the mid-1980s, fairly uniform concentrations have been observed since that time. Water quality trend data for concentrations of mercury and PCBs are not continuous or readily available, but appear to show decreases over time.

Recent studies reveal important facts about current mercury distribution in the Detroit River (Kreis *et al*., 2001). The historic pockets of high concentration no longer exist; instead mercury is now distributed quite evenly throughout the river. For PCBs, the situation is similar. Unlike mercury, however, where the major sources were upstream in the St. Clair River, inputs along the shoreline of the Detroit River have dominated PCB loadings. Both PCBs and mercury are persistent chemicals; they bioaccumulate to increasingly higher concentrations in the food web and are recognized to be very toxic (Froese *et al*., 1997; Hamdy and Post, 1985; Kreis *et al*., 2001).

Current Partnership Activities

A wide variety of conservation, environmental education and habitat restoration initiatives are ongoing within the authorized boundary of the Refuge. The Service has been involved in many of these programs including the Greater Detroit American Heritage River Initiative, the Downriver Linked Greenways Initiative, and the bi-national Conservation Vision for the Lower Detroit River Ecosystem, and programs of the Friends of Detroit River and Detroit Audubon. County and local level programs are also important but too numerous to list. Future staff of the Refuge will be involved in a tremendous number of citizen and agency-led conservation programs.

The Downriver Linked Greenways Initiative is a community-based program that seeks to build "green" infrastructure and create outdoor recreational opportunities in Wayne and Monroe counties. A large part of this new program is focused on the Detroit River waterfront and connecting existing recreational trails in Detroit area communities. The project is part of the Greenways Initiative, a 5-year, $75 million private/public partnership for southeast Michigan. More that 200 individuals from 21 communities and seven counties participated in the initial Greenway vision planning process.

Canadian Partnerships

Environment Canada has been working in partnership with the U.S. Fish and Wildlife Service and Canadian agencies to achieve a compatible, mutually shared bi-national focus for fish and wildlife habitat protection, conservation, and rehabilitation on the Canadian side of the Detroit River. This Canadian focus complements the goals of the Detroit River IWR and the Conservation Vision for the Lower Detroit River Ecosystem. In achieving the shared goals of the Conservation Vision and the Refuge, Environment Canada's goal is to promote the establishment of a network of ecologically significant protected areas in the lower Detroit River for the purpose of conserving and protecting remaining fish and wildlife habitat as identified in the Conservation Vision document.

This will be accomplished through:

- Developing conservation/rehabilitation plans for these areas in conjunction with other agencies and landowners on a strictly voluntary basis;
- Linking goals of the Refuge/Vision with existing Canadian/binational programs under the Great Lakes Water Quality Agreement such as the Detroit River Remedial Action Plan, the Lake Erie Lakewide Management Plan, the Detroit River Canadian Cleanup Committee and the Great Lakes Sustainability Fund, as well as the federal Ecological Gifts Program, and the Eastern Habitat Joint Venture under the North American Waterfowl Management Plan; and
- Meeting and partnering with local agencies and interest groups to gain support for Environment Canada's approach to meeting the Refuge/Vision

goals and to discuss how programs can be better coordinated to achieve these goals.

The Conservation Vision document identifies examples of ecologically significant areas that are deemed to be worth protecting and, where need be, rehabilitated. These examples include both federally owned and privately owned properties in the lower Detroit River. Two significant federal properties, White Sands and Crystal Bay/Island, are owned by the Department of Fisheries and Oceans. The Department of Fisheries and Oceans has an agreement with Essex Region Conservation Authority (ERCA) to manage the properties as conservation areas. Since this arrangement has been in effect, ERCA has cleaned up the sites, posted them as conservation areas, patrolled them to prevent overnight camping, and encouraged day use for recreational purposes.

In partnership with ERCA, Environment Canada organized an Ecological Gifts Workshop in 2002 in the Windsor area. The federal Ecological Gifts Program entitles private and corporate landowners who donate land, a conservation easement, or a covenant through the Program to preferential income tax benefits. Ongoing discussions are also under way with agencies/organizations with similar habitat conservation interests to promote the Refuge/Vision goals and Environment Canada's role in partnering to help establish a network of protected areas in the Detroit River. These include the Ontario Ministry of Natural Resources, Ducks Unlimited, and the Nature Conservancy of Canada.

Private Lands Partnerships

Partners for Fish and Wildlife is a voluntary program that focuses on restoring and enhancing wetlands, grasslands, stream corridors and in-stream habitats on private lands to provide wildlife, fisheries, water quality and recreational benefits for private landowners. The Partners Program within the counties surrounding the Refuge is currently administered by Service staff located in the East Lansing Field Office, Ottawa NWR and Shiawassee NWR. When Partners Program staff are added to the Refuge, a Management District will be created which may include Wayne and Monroe counties and surrounding counties that are within the watersheds of the Detroit River, St. Clair River and Lake Erie. Projects are funded by the Service with cost-share assistance provided by conservation organizations, other governmental agencies, and landowners. Project construction is often completed at little or no cost to the landowner. Landowners are required to sign an agreement to leave the project in place on their property a minimum of 10 years.

The USFWS also assists the federal USDA Farm Service Agency in identifying important wetland and floodplain resources on government foreclosed farm properties. Once these resources have been identified, the Farm Services Administration conserves the areas through perpetual easements

and transfers the management responsibility to the Service. When biological and/or enforcement staff are added to the Refuge, a Management District will be created which may include Wayne and Monroe Counties and surrounding counties that are within the watersheds of the Detroit River, St. Clair River and Lake Erie.

Future Management Direction

The USFWS and partners recognize that they face major challenges in providing for fish and wildlife in the Detroit River and Lake Erie Western Basin. Grassy Island and many other sites in the authorized Refuge boundary are contaminated and development has altered most of the natural system. There will be a need to work together with partners to conserve the last remnants of coastal wetlands and undeveloped islands. But beyond the minimum, there is an expectation to restructure areas to benefit wildlife and the aquatic environment. Figure 3 illustrates a conceptual vision for Grassy Island reflecting restoration and remediation planning.

For existing Refuge lands and waters, and lands that could be added in the coming years, there is intent to learn about the waterfowl use of the area. It is known that the Lower Detroit River is important for waterfowl, but there is not sufficient knowledge as to how big a role the Refuge plays in this importance. A better idea of the role the Refuge plays in providing for waterfowl will allow USFWS us to judge how to allocate funds and time among the lands that it manages.

It is felt that fishing and hunting from boats in Refuge-owned waters is compatible with the purposes of the Refuge and in the spirit of facilitating priority uses as specified in the Refuge System Improvement Act of 1997. USFWS plans to amend the Refuge regulations to permit fishing from boats in the Detroit River near existing Refuge islands.

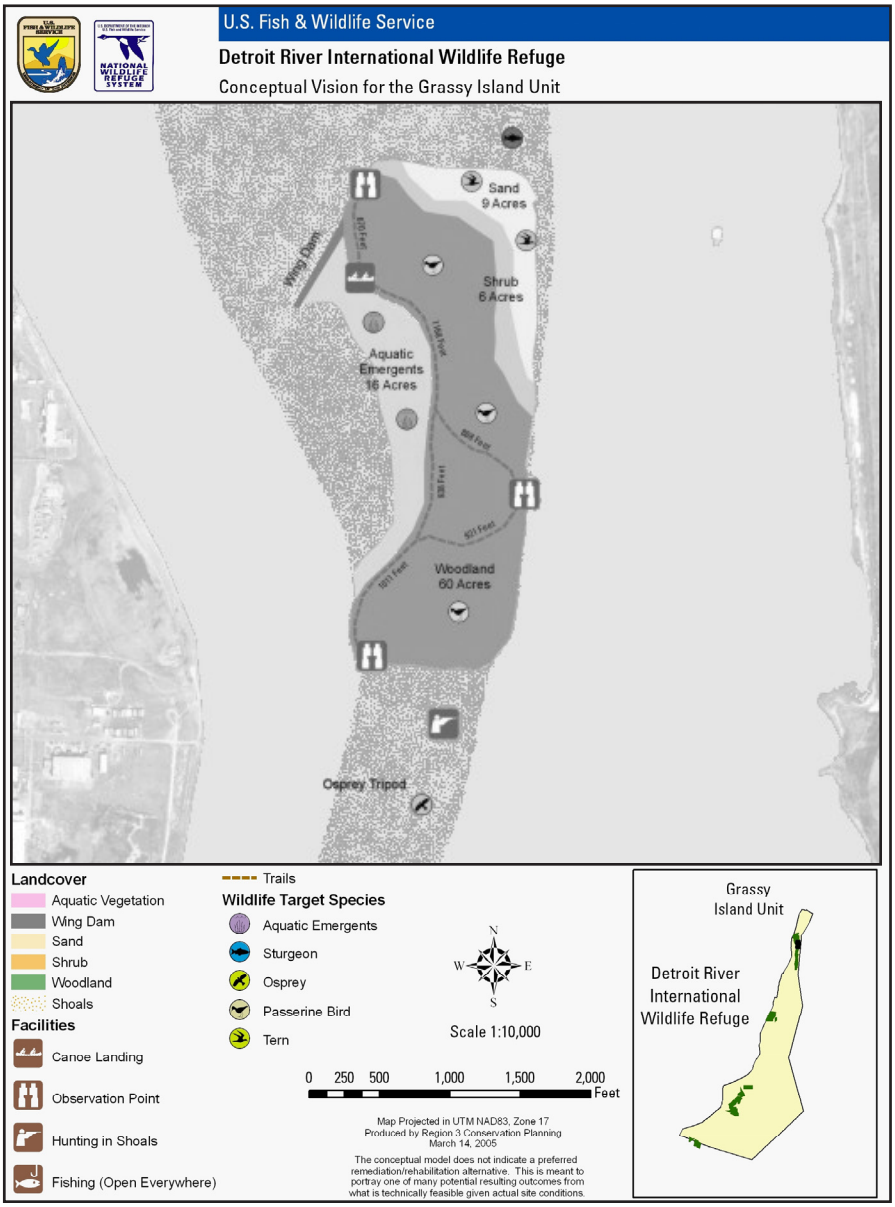
The Refuge will participate as partners in efforts to monitor and restore the lake sturgeon spawning area. The interest is to work with others to conserve the remaining lands in the area for migratory birds, fish, endangered species and other Service Trust resources. By preserving coastal marshes and areas of submerged plant beds, USFWS aims to benefit migrating and wintering waterfowl and spawning and juvenile fish along this international border. Working with the Service's Great Lakes Ecosystem Team and other partners, the Refuge will assess and conserve the important lands in the Detroit River corridor and Western Lake Erie Basin.

Plan Implementation

To achieve the objectives of this plan, the Midwest Region of the Service has requested additional funding from Congress to establish a Refuge office, including staff and equipment, in the vicinity of the Refuge boundary. Figure 4 shows the

area of the Chrysler Tract property, where there are plans to establish a visitor and education center for the Refuge. The cost of remediation and restoration of Grassy Island, and possible cleanup on lands proposed for acquisition in the future, is expected to far exceed any routine Refuge funding request. The work will require special appropriations from Congress or an alternative funding source. Standard surveys of fish and wildlife use and habitat diversity of the

Figure 3. Conceptual Vision for Grassy Island Management Unit



lower Detroit River area are needed to obtain accurate documentation of flora and fauna in the area of the Refuge.

The establishment of a bi-national refuge, and the sheer number of communities and interests along the U.S. and Canadian shoreline, will necessitate involvement with a host of governments, agencies, organizations, and recreational groups. Successful partnerships will be the key element for the future of the Refuge. Such partnership will be actively sought with additional public and private groups as staff and funding increases. Current partnerships of non-profit groups and governments support a wide variety of conservation, environmental education and habitat restoration initiatives within the authorized boundary of the Refuge. The Service has been involved in many of these programs including the Greater Detroit American Heritage River Initiative, the Downriver Linked Greenways Initiative, and the bi-national Conservation Vision for the Lower Detroit River Ecosystem and programs of the Friends of Detroit River and Detroit Audubon. Future staff of the Refuge will be involved in a tremendous number of citizen and agency-led conservation programs.

Conclusions

A number of lessons have been learned from cooperative conservation efforts on the Detroit River. Cooperative conservation initiatives are helping recreate gathering places for wildlife and people along the Detroit River. These unique conservation places are now a key factor in providing the quality of life that is so important in achieving competitive advantage for communities and business.

Figure 4. Chrysler Tract Property

Cooperation is helping provide an exceptional conservation experience to over 5 million people in the Detroit River watershed to help develop the next generation of conservation stewards within the community.

A key factor in the ongoing conservation efforts within the Detroit River International Wildlife Refuge is the ability to rally around existing resources. These resources include the presence of a high profile local champion, ability and means to build strong partnerships, and establishment of a core project delivery team to move projects and initiatives forward. Several key elements need to be place to undertake conservation planning: cooperative learning environments, local ownership, taking a step-wise approach to efforts, focusing on an ecosystem (watershed) approach, developing innovative cooperative solutions (including land stewardship and cooperative management agreements), and sufficient levels of government responsiveness (local, state and federal) to planning.

Ultimately the implementation of the binational conservation undertaken within the Detroit River International Wildlife Refuge will be dependent upon the ability of partners to leverage resources and support cost effectiveness on an ecosystem basis, and the effort taken to publicly celebrate progress, achievements and accomplishments.

Acknowledgements

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