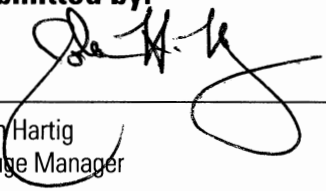


Detroit River

International Wildlife Refuge

Comprehensive Conservation Plan Approval

Submitted by:

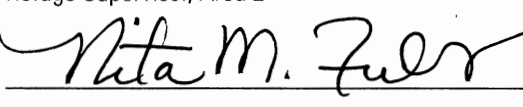
 2-22-05

John Hartig Date
Refuge Manager

Concur:

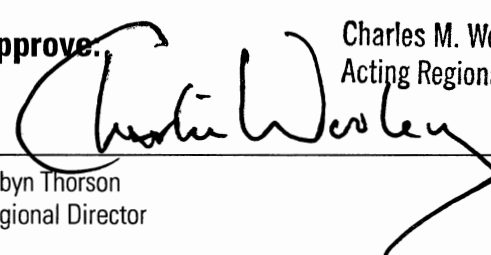
 4-14-05

Jon Kauffeld Date
Refuge Supervisor, Area 2


 4.25.2005

Nita M. Fuller Date
Regional Chief, National Wildlife Refuge System

Approve:

 4/27/05

Charles M. Wooley Date
Acting Regional Director

 for Robyn Thorson
Regional Director

Detroit River

International Wildlife Refuge

Comprehensive Conservation Plan and Environmental Assessment

Table of Contents

Chapter 1: Introduction	1
Refuge Location	2
The U.S. Fish and Wildlife Service	3
The National Wildlife Refuge System	4
Goals of the National Wildlife Refuge System	5
Great Lakes Basin Ecosystem Team Objectives	5
Refuge Purposes	6
Refuge Vision	6
Vision Statement for Lower Detroit River Ecosystem (2001)	6
Draft Vision Statement for the Detroit River International Wildlife Refuge	6
Purpose and Need For the Plan	7
Relationship to Existing Wyandotte CCP (2001)	7
History and Establishment	8
Refuge Expansion Act (2003)	9
Legal Context	9
 Chapter 2: The Planning Process	 10
Introduction	10
Vision, Goals and Objectives Workshop	11
Issues and Opportunities	11
Preparation and Publishing of the CCP	12
Comments From the Public on the Draft CCP	12
 Chapter 3: The Refuge Environment	 13
Geographic/Ecosystem Setting	13
The Great Lakes Basin Ecosystem	13
The Detroit River	14
American Heritage River	15
Lake Erie (Western Basin)	16
The Upper Detroit River: A Report to Congress	16
Migratory Bird Conservation Initiatives	18
Nongame Bird Conservation Initiatives	18
North American Waterfowl Management Plan	18
Region 3 Fish & Wildlife Resource Conservation Priorities	19
Establishment History, Refuge Resources, Cultural Values and Uses	20
History of the Refuge	20

General Habitat Description	21
Wetlands	21
Wet Prairie	22
Uplands and River Islands	22
Fish and Wildlife	25
Waterfowl	25
Other Bird Species	26
Mammals	27
Threatened and Endangered Species	27
Fish	27
Reptiles and Amphibians	28
Environmental Contaminants	28
Contaminants in Fish	31
Contaminants in Benthos	31
Contaminants in Wildlife	32
The Detroit River Remedial Action Plan	32
Grassy Island Remediation	33
Cultural Resources	34
Special Topics	35
Jurisdiction on Navigable Waterways	35
Coast Guard Memorandum of Understanding	35
Wilderness Review	36
Chapter 4: Refuge Management	37
Current Refuge Programs: Where We Are Today	37
Current Partnership Activities	37
Canadian Partnerships	38
Habitat Restoration and Management	40
Exotic Species Control	40
Private Lands Partnerships	41
Lake Sturgeon Research	42
Visitor Services	43
Hunting	44
Fishing	44
Law Enforcement	45
Future Management Direction: Where We Want To Go Tomorrow	47
Climate Change Impacts	48
Refuge Goals, Objectives and Strategies	48
Introduction	48
Chapter 5: Plan Implementation	62
Future Staffing Requirements	62
Funding	63
Refuge Operating Needs	63
Partnership Opportunities	64
Step-down Management Plans	64
Monitoring and Evaluation	65
Plan Amendment and Revision	65

Appendix A: Environmental Assessment	69
Appendix B: Glossary	105
Appendix C: Priority Refuge Operating Needs	111
Appendix D: Compatibility Determinations	115
Appendix E: Bird Species List	117
Appendix F: Compliance Requirements and Authorizing Legislation	129
Appendix G: Bibliography	141
Appendix H: Mailing List	147
Appendix I: List of Preparers	151
Appendix J: The Upper Detroit River: A Report to Congress	155
Appendix K: Habitat Conservation Options	161
Appendix L: Species List	167
Appendix M: Summary and Disposition of Public Comments on the Draft Comprehensive Conservation Plan	183

Detroit River

International Wildlife Refuge

Comprehensive Conservation Plan and Environmental Assessment

List of Figures and Tables

Figure 1:	Location of the Detroit River International Wildlife Refuge	2
Figure 2:	Detroit River International Wildlife Refuge Authorized Boundary	3
Figure 3:	National Wildlife Refuges and Waterfowl Flyways.....	4
Figure 4:	U.S. Fish and Wildlife Service Great Lakes Basin Ecoregion.....	14
Figure 5:	Watersheds of the Detroit River and Western Lake Erie Basin.....	17
Figure 6:	Historic Vegetation of the Lower Detroit River and Lake Erie Shoreline	23
Figure 7:	Landcover (1992) of the Lower Detroit River and Lake Erie Shoreline.....	24
Figure 8:	Historic Spawning Sites for Lake Sturgeon in the Lower Detroit River	29
Figure 9:	Conservation Priority Lands Within the Lower Detroit River, Michigan	56
Figure 10:	Conservation Priority Lands Along the Western Lake Erie Shoreline	57
Figure 11:	Detroit River International Wildlife Refuge Organizational Chart, 2018	62
Table 1:	November Waterfowl Survey Results for the Lower Detroit River and Northern Portion of Lake Erie (Kafcas and Robison, 2002)	25
Table 2:	Historic Aerial Count-estimates of Waterfowl on the Lower Detroit River from the Ambassador Bridge to Lake Erie (Miller, 1961)	26

Chapter 1: Introduction



U.S. Fish & Wildlife Service

The Detroit River has long served the United States and Canada as a vital transportation corridor and center for industries that helped forge the economies of both nations. But the river and its ecosystem have paid a tremendous price for human progress. Indeed, in our mind and in reality, most of what was natural in and around the Detroit River is gone. Yet special places exist alongside the concrete, steel, and groomed gardens of this vast metropolitan area; the beginnings of North America's first International Wildlife Refuge. A place where wildlife can come first.

What could be the future of this fledgling refuge in the midst of millions of people? We try to answer that question in this Comprehensive Conservation Plan. We will describe the creation of the Refuge, the historical and current conditions of the area, and a vision for its future.

A positive view for the future of the Detroit River and Lake Erie Western Basin reflects an abiding faith in nature. One possible view would have been to look at what has been lost, wring our hands, and give up. Another possible view is to recognize what is left and what can recover, value it, and work for its conservation. The multitude of partners that are making the Detroit River International Wildlife Refuge a reality have chosen the second view.

Our view is influenced by the recognition of wildlife's persistence. Despite almost complete conversion of the riverbank to concrete and steel, despite elimination of more than 95 percent of the coastal wetlands, despite decades of industrial pollution, the lower Detroit River remains a globally significant area for congregating waterfowl, especially diving ducks. Sport fishing, once in dire trouble, has become a foundation for a growing tourism economy.

We intend to help make the Detroit River ecosystem a safer place for fish, wildlife, and people. We intend to work with others on both sides of the border to conserve, re-establish and improve natural areas in the ecosystem. In this plan we describe our intended actions for the next 15 years.

Refuge Location

The Detroit River International Wildlife 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 Detroit River International Wildlife 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 (Figure 2). 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 redesignated islands that were once part of Wyandotte National Wildlife Refuge (NWR) – Grassy Island, Mud Island and Mamajuda Island –

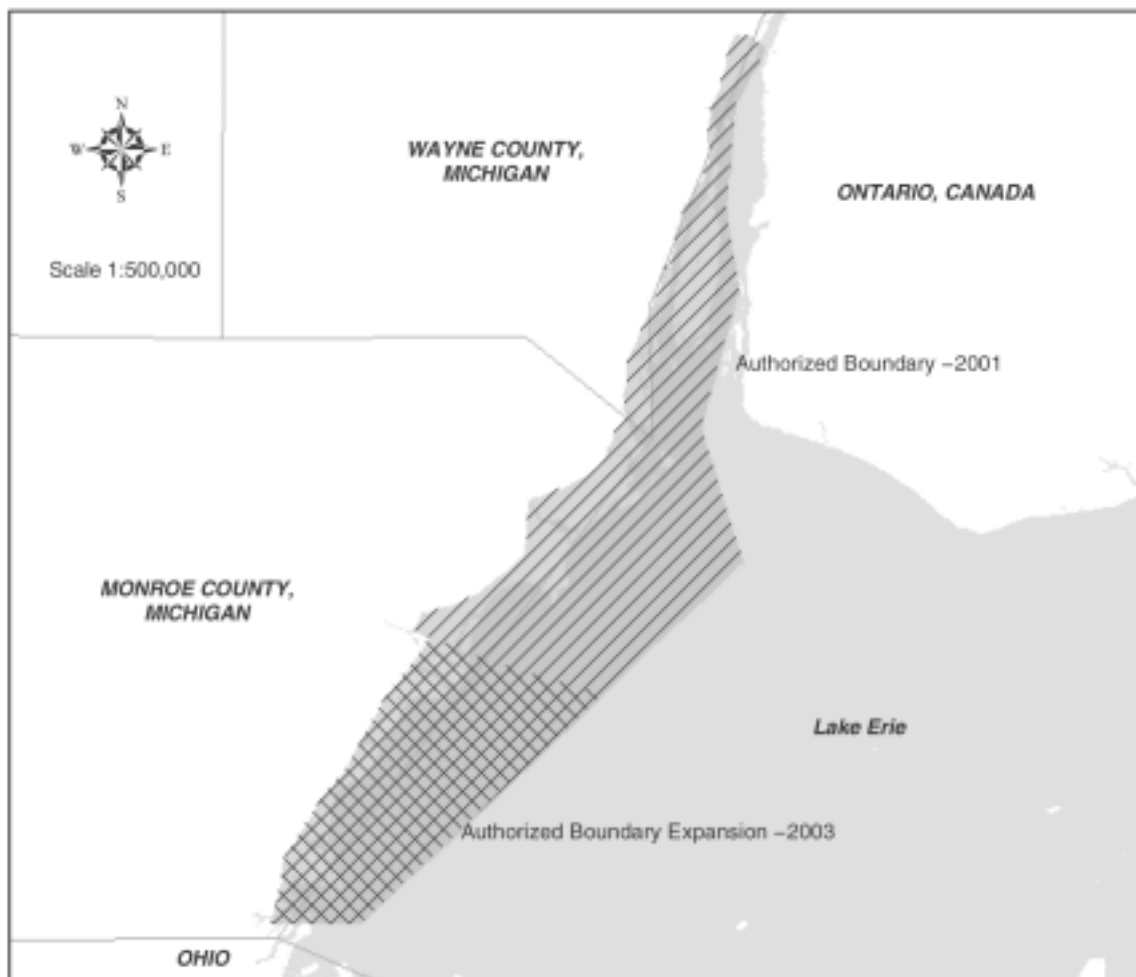
as part of the new international refuge. When created in 1961, the original Wyandotte NWR consisted of two islands, Grassy and Mamajuda, and the shallow water shoals around the islands. Since the early 1960s, Mamajuda Island has decreased in size and is exposed only during low water levels. Both islands are located on a bar that lies between the Trenton and Fighting Island ship channels in the central part of the Detroit River. This bar extends from the mouth of the Ecorse River to the head of Grosse Ile, a distance of approximately 3.5 miles. It ranges from one-quarter to one-half mile in width and at present it is covered with 3 to 8 feet of water. At the present time, only 72 acres of Grassy Island are exposed.

The 18.5-acre Mud Island and 71.5 acres of submerged aquatic shoals were added to 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 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.

Figure 1: Location of Detroit River International Wildlife Refuge



Figure 2: Detroit River International Wildlife Refuge Authorized Boundary



On September 25, 2003, the Service 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 over the next year or so.

The U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service is the primary Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. Specific responsibilities include enforcing Federal wildlife laws, managing migratory bird populations, restoring nationally significant fisheries, administering the Endangered Species Act, and restoring wildlife habitat such as wetlands. The Service also manages the National Wildlife Refuge System.

Figure 3: National Wildlife Refuges and Waterfowl Flyways



The National Wildlife Refuge System

Managing the National Wildlife Refuge System has evolved into a significant role for the Service. Founded in 1903 by President Theodore Roosevelt with the designation of Pelican Island as a refuge for Brown Pelicans, the National Wildlife Refuge System is the world's largest collection of lands specifically managed for fish and wildlife. The System is a network of more than 500 national wildlife refuges encompassing more than 93 million acres of public land and water. The majority of these lands – 82 percent – is in Alaska, with approximately 16 million acres spread across other states and several island territories. Refuges provide habitat for more than 5,000 species of birds, mammals, fish, and insects. Like Pelican Island, many early national wildlife refuges were created for herons, egrets and other water birds. 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. A map of the National Wildlife Refuge System shows refuges dotting the four major flyways that waterfowl follow from their northern nesting grounds to southern wintering areas (Figure 3).



National wildlife refuges also play a vital role in preserving endangered and threatened species. Among the refuges that are well known for providing habitat for endangered species are Aransas National Wildlife Refuge in Texas, the winter home of the Whooping Crane; the Florida Panther National Wildlife Refuge, which protects one of the nation's most endangered mammals; and the Hawaiian Islands National Wildlife Refuge, home of the Laysan Duck, Hawaiian monk seal, and many other unique species.

Refuges also provide unique opportunities for people. When it is 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. Many refuges have visitor centers, wildlife trails, automobile tours, and environmental education programs. Nationwide, more than 30 million people visited national wildlife refuges in 1997.

The National Wildlife Refuge System Improvement Act of 1997 established many mandates aimed at making the management of national wildlife refuges more cohesive. The preparation of comprehensive conservation plans is one of those mandates. The legislation requires the Secretary of the Interior to ensure that the mission of the National Wildlife Refuge System and purposes of the individual refuges are carried out. It also requires the Secretary to maintain the biological integrity, diversity, and environmental health of the Refuge System.

Goals of the National Wildlife Refuge System

- # To fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- # Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- # Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- # Conserve a diversity of fish, wildlife, and plants.
- # Conserve and restore, where appropriate, representative ecosystems of the United States, including ecological processes characteristic of those ecosystems.
- # To foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Great Lakes Basin Ecosystem Team Objectives

The Great Lakes Basin Ecosystem Team is composed of 43 U. S. Fish and Wildlife Service field stations in the Great Lakes ecosystem that represent a range of Service programs including Fisheries, national wildlife refuges, and law enforcement. Through the Team and its partners in the ecosystem, the Service addresses landscape-scale resource objectives using an ecosystem approach. The Great Lakes Basin Ecosystem Team is focusing much of its efforts on the basin-wide issues of lake sturgeon restoration and island conservation. Specific objectives of the team in these two areas include the following:

- # Restoration of Lake Sturgeon: Restore the lake sturgeon throughout the Great Lakes through population assessment, assessment of the genetic make-up of various stocks, development and implementation of recovery plans, and development of fish passage technology. Identify, coordinate, and undertake activities with appropriate internal and external partners.
- # Conservation of Great Lakes Islands: Recognize the importance of islands to wildlife – particularly migratory birds, fish, and endangered species – and the need to complete an overall assessment of the islands for protection and restoration efforts.

Refuge Purposes

The Detroit River International Wildlife Refuge was established by an Act of Congress, which became Public Law 107-91 on December 21, 2001. Section 4 of the Act states the following purposes for the new Detroit River International Wildlife Refuge:

- # To protect the remaining high-quality fish and wildlife habitats of the Detroit River before they are lost to further development and to restore and enhance degraded wildlife habitats associated with the Detroit River.
- # To assist in international efforts to conserve, enhance, and restore the native aquatic and terrestrial community characteristics of the Detroit River (including associated fish, wildlife, and plant species) both in the United States and Canada.
- # To facilitate partnerships among the United States Fish and Wildlife Service, Canadian national and provincial authorities, State and local governments, local communities in the United States and in Canada, conservation organizations, and other non-Federal entities to promote public awareness of the resources of the Detroit River.

Wyandotte National Wildlife Refuge was established by an Act of Congress known as Public Law 87-119, 75 Stat. 243, 87th Congress, H.R. 1182, dated August 3, 1961: ... “to be maintained as a refuge and breeding place for migratory birds and other wildlife...” Mud Island was added to Wyandotte NWR in January 2001 using the authority to accept donations of real property contained in the Fish and Wildlife Act of 1956 (16 U.S.C. 742f). The islands and shoals of the former Wyandotte NWR retain their original legislative purposes as well as gaining new ones from the 2001 legislation.

Refuge Vision

A draft vision for the Detroit River International Wildlife Refuge was produced during a public comprehensive conservation plan workshop held in October 2002. Workshop participants first reviewed a vision statement for the Lower Detroit River developed in 2001 as part of a broad-scale partnership of Federal, provincial, and local governments, conservation groups, and industry representatives.

Vision Statement for Lower Detroit River Ecosystem (2001)

“In 10 years the Lower Detroit River Ecosystem will be an international conservation region where the health and diversity of wildlife and fish are sustained through protection of existing significant habitats and rehabilitation of degraded ones, and where the resulting ecological, recreational, economic, educational and ‘quality of life’ benefits are sustained for present and future generations.”

Draft Vision Statement for the Detroit River International Wildlife Refuge

“The Detroit River International Wildlife Refuge, including the Detroit River and Western Lake Erie Basin, will be a conservation region where a clean environment fosters the health and diversity of wildlife, fish, and plant resources through protection, creation of new habitats, management, and restoration of natural communities and habitats on public and private lands. Through effective

management and partnering, the Refuge will provide outstanding opportunities for “quality of life” benefits such as hunting, fishing, wildlife observation and environmental education, as well as ecological, economic, and cultural benefits, for present and future generations.”

Purpose and Need For the Plan

This comprehensive conservation plan, or CCP, identifies the role the Refuge will play in supporting the mission of the National Wildlife Refuge System and provides guidance for Refuge management. The plan articulates management goals for the next 15 years and specifies objectives and strategies that will achieve those goals. Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of this plan. These mandates include:

- # Wildlife has first priority in the management of refuges.
- # 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 our ability to fulfill the Refuge's purposes or the mission of the National Wildlife Refuge System.
- # 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.

This CCP will enhance the management of the Detroit River International Wildlife Refuge by:

- # 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.
- # Providing a basis for the development of budget requests on the Refuge's operation, maintenance, and capital improvement needs.

Relationship to Existing Wyandotte CCP (2001)

A Comprehensive Conservation Plan for Wyandotte NWR was completed in September 2001, 3 months prior to the act that established the Detroit River International Wildlife Refuge. The Wyandotte NWR CCP presented a set of goals, objectives and strategies for long-term management of the existing 394-acre Refuge. The following CCP for the Detroit River IWR will incorporate a large portion of the material presented in the original plan. The scope of the Detroit River IWR is necessarily much larger than the former Wyandotte NWR. However, at the time of this writing, the three islands of the former Wyandotte NWR

still constitute most of the land owned by the Refuge. Specific strategies for managing Grassy, Mamajuda and Mud islands, including contaminant remediation, still apply to the new Refuge. Please refer to the Wyandotte NWR CCP for more specific information on these islands and future management.

History and Establishment

The Detroit River is being recognized by many people as an asset to local communities and as an important natural resource in its own right. Recently, the Detroit River was designated as both an American and Canadian Heritage River, the first such international label. Today, we value the river for the many natural, recreational, and cultural benefits it

provides. The river has not always enjoyed such a reputation. 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.



U.S. Fish & Wildlife Service

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 (MAC 2001). A principle 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 Detroit River International Wildlife Refuge was established by an Act of Congress, which became Public Law 107-91 on December 21, 2001. The authorized Refuge boundary includes islands, coastal wetlands, marshes, shoals and riverfront lands along 18 miles of the Lower Detroit River. The establishing Act included Mud Island, Grassy Island and Mamajuda Shoal, lands already managed by the Service as Wyandotte NWR (394 acres).

Wyandotte NWR was established by an Act of Congress in 1961. The Refuge was established as part of a negotiated agreement with the U.S. Army Corps. of Engineers on a 300-acre dredge spoil disposal area surrounding Grassy Island. Mud Island was added to the Wyandotte Refuge in January 2001 as a donation from National Steel Corporation.



Great Blue Heron. USFWS

Refuge Expansion Act (2003)

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 I-75 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.

Legal Context

In addition to the Refuge's establishing legislation and the National Wildlife Refuge System Improvement Act of 1997, several Federal laws, executive orders, and regulations govern its administration. A portion of the Refuge also operates under a Memorandum of Understanding between the United States Coast Guard and the Department of the Interior for

the management of navigational aids on Grassy and Mamajuda islands. See Appendix F for the full text of Public Law 107-91- the Detroit River International Wildlife Refuge Establishment Act, memorandum of understanding, and a list of the guiding laws and orders.

Chapter 2: The Planning Process

Introduction

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. These preliminary issues and concerns were based on staff knowledge of the area and contacts with citizens in the community. The Planning Team then asked Refuge neighbors, organizations, local government units, and interested citizens to share their thoughts at a series of open house events. Public input toward development of the CCP continued throughout the summer and fall of 2002. A series of open house events, meetings, and workshops were held in local communities:



U.S. Fish & Wildlife Service

- # On June 19, 2002, an open house was held at the Copeland Recreation Center in Wyandotte.
- # On June 20, 2002, an open house was held at Monroe City Hall.
- # In conjunction with these open houses, we held small group discussions centered around three issue categories; (1) hunting and fishing, (2) wildlife observation, wildlife photography, environmental education, and (3) habitat conservation and restoration.
- # On August 30, 2002, an interagency meeting was held in Windsor, Ontario, to coordinate planning efforts for the Refuge and for other purposes. In attendance were 24 representatives from various Service programs, Environment Canada, Ontario Ministry of Natural Resources, and several non-profit conservation groups.
- # On September 24, 2002, a joint open house event with Michigan DNR was held at the Lake Erie MetroParks facility in Brownstown.
- # On September 24, 2002, we also met with a group of industry representatives to discuss ways to work together to enhance fish and wildlife habitats. Industries such as BASF, Detroit Edison and National Steel are the major landowners along the river.
- # On September 26, 2002, the Service, along with many Canadian partner organizations, participated in an open house in Windsor co-hosted by Environment Canada.

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.

Vision, Goals and Objectives Workshop

The Planning Team hosted a workshop on October 15-17, 2002, at the Lake Erie MetroParks facility in Brownstown Township. The purpose of the workshop was to develop a draft vision statement, goals and objectives for the Refuge. Representatives from state, county and local governments, private industry, conservation groups and private citizens were invited to participate in the 2.5 day workshop. The 28 participants were divided into two working groups and both made significant progress during the workshop. The results of the workshop were used by the Planning Team to develop the Environmental Assessment associated with this plan.

Issues and Opportunities

Members of the public, resource agencies, conservation groups and Service staff raised a diverse range of issues and opportunities during scoping for the CCP. These topics have been considered in the decision-making process and many have been developed into implementation strategies in this CCP.

The CCP planning team organized all of the issues/concerns/opportunities received during the public scoping process into seven major categories. Many of the goals and strategies to be presented in this CCP relate to one or more of the issue categories. The categories include Habitat Restoration, Management and Creation, Land Conservation, Contamination/Pollution, Functional Partnerships, Environmental Education, the Future of Hunting and Fishing, and Secondary Public Uses.

Habitat Restoration, Management & Creation: This topic concerns the appropriate level of habitat restoration and maintenance given funding constraints and desired future conditions. The Detroit River ecosystem has been heavily altered and natural or “soft” shoreline restoration, wetlands, and specific migratory bird and fish habitats will be a priority for the future.



U.S. Fish & Wildlife Service

Land Conservation: The CCP will need to identify the key areas within the Refuge boundary that require conservation measures. Many people have suggested reviewing the remaining natural islands and coastal wetlands in the area for possible acquisition and long-term conservation within the Refuge System.

Contamination/Pollution: The shorelands, islands, and sediments of the Detroit River contain

environmental contaminants that have the potential to affect wildlife and human health. Many participants expressed a desire for the Refuge to help reduce the level of

environmental contamination within the river ecosystem. Contamination issues also create unique management decisions, including whether recreational use should be prohibited on some existing Refuge lands.

Functional Partnerships: A functional partnership between governments, conservation groups, landowners, industry, and local citizens was often recognized as key to success of the Refuge. A number of benefits and strategies for forming partnerships were outlined by planning participants.

Environmental Education: Natural areas for local residents to enjoy along the Detroit River and adjacent Lake Erie shoreline are limited. School-age children, especially in the urban region near Detroit, often have very little contact with wildlife in a natural setting. Participants encouraged us to garner support for the Refuge within the vast human population in southeast Michigan by providing education opportunities at the Refuge and at other locations with education centered on the importance of habitat and the management of fish and wildlife populations.

Future of Hunting and Fishing: Several participants expressed concern over the future of hunting and fishing within a growing metropolitan region. We were asked to provide opportunities for hunting, especially of waterfowl, without impacting critical feeding and resting areas of these migratory birds.

Secondary Public Uses: The demand for recreational use on any open space in the Detroit region is high, especially on the river itself. Sometimes there is competition and even conflict between users of these limited resources and the needs of fish and wildlife. Some participants encouraged us to manage Refuge-owned lands and waters to resolve conflicts between wildlife habitat and recreational uses.

Preparation and Publishing of the CCP

Sections of the Detroit River IWR CCP and EA were written by a variety of Service and Michigan DNR staff. Contributions of text also came from Environment Canada and the U.S. Geological Survey. The plan was published in draft and final phases and in accordance with the National Environmental Policy Act. The Draft EA (Appendix A) presented a range of alternatives for future management and identified the preferred alternative. A public review period of at least 30 days followed release of the draft CCP and EA in June 2004.

Comments From the Public on the Draft CCP

Verbal and written comments received from the public concerning the Draft CCP contributed to several modifications in this document. The Planning Team received 20 letters, forms and e-mail comments during the 30-day review period. The comments covered a variety of topics and detail and not all thoughts could result in direct changes to the CCP. For example, several writers simply endorsed the future direction of Refuge management or a specific program presented in the plan. In a few cases, reviewers offered technical changes in wording and we were able to easily incorporate those changes. Please see Appendix M for a listing of comments we received and how we have addressed them in the final plan.

Chapter 3: The Refuge Environment

Geographic/Ecosystem Setting

The Great Lakes Basin Ecosystem

The U.S. Fish and Wildlife Service has implemented an ecosystem approach to fish and wildlife conservation. Under this approach the Service's goal is to contribute to the effective conservation of natural biological diversity through perpetuation of dynamic, healthy ecosystems by using an interdisciplinary, coordinated strategy to integrate the expertise and resources of all stakeholders.

The Detroit River IWR lies within the Great Lakes Basin Ecosystem, a system shared with Canada and eight states. The ecosystem is made up of the world's largest freshwater body, which holds 18 percent of the world's supply of freshwater, covers 95,000 square miles, has 9,000 miles of shoreline, over 5,000 tributaries, and a drainage basin of 288,000 square miles.



U.S. Fish & Wildlife Service

Biological concerns within the ecosystem include the impact of exotic species, the precarious nature of the aquatic community structure, and contaminant levels. Various fish and wildlife activities, drinking water, recreation, hydropower production, industrial waste supply, waste disposal, and commercial navigation affect the natural resources in the ecosystem. The basin contains critical breeding, feeding, and resting areas as well as migration corridors for waterfowl, colonial nesting birds, non-game birds, and many species of migratory birds.

Within the Great Lakes basin certain species have drawn special concern. Fish species of special interest include lake trout, lake sturgeon, lake whitefish, walleye, Pacific salmon, and landlocked Atlantic salmon and their forage. There is a concern for native mussels because they are being seriously impacted by zebra mussels and are in danger of extirpation from the Great Lakes Basin. Thirty-one species of migratory non-game birds of management concern to the Service are found in the Great Lakes ecosystem. (Figure 4.)

A recent survey of biological diversity in the basin identified 130 globally rare or endangered plant and animal species. The Bald Eagle, Peregrine Falcon, Kirtland's Warbler, Piping Plover, Mitchell's satyr blue butterfly, Indiana bat, gray wolf, lake sturgeon and deepwater sculpin are some of the threatened, endangered, and candidate species that inhabit the Great Lakes ecosystem. The Bald Eagle, Peregrine Falcon and lake sturgeon have been observed on the Detroit River. The Great Lakes Basin Ecosystem is divided into seven focus areas. The Lower Detroit River focus area contains the Detroit River IWR. The

Figure 4: U.S. Fish & Wildlife Service Great Lakes Basin Ecoregion



Refuge is also within the St. Clair/Detroit River focus area identified by the Midwest Natural Resources Group, which consists of 14 federal agency partners.

The Detroit River

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.

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. The wetlands are principally of two types: (1) channel-side (fringing) wetlands with mineral and organic soils and (2) submergent beds of vegetation with mineral soil, cobble, and limestone bedrock. The submergent beds, which once characterized large portions of the river, have been degraded, and the fringing emergent marsh has been almost completely destroyed. At one time extensive wild celery beds were important for diving ducks. After a decline in the beds from the 1950s to the 1970s, it appears that the beds are recovering and may be at the levels that existed in the 1950s.

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. One hundred species of breeding birds, approximately 50 percent of the breeding birds of Ontario, use the Detroit River wetlands along the Canadian shoreline. We would expect an equivalent bird use in the remnant wetlands on the U.S. side.

In their evaluation of the importance of the Detroit River wetlands, the EPA and Environment Canada noted that although the wetlands are important for a large number of plant and animal species, the number of rare species in coastal wetlands is very low. In valuing the various shoreline reaches, the agencies weighed the distribution, size, uniqueness, and quality of wetlands. They acknowledged the general perception that the Detroit River's large submergent vegetation beds provide important habitat for migrating waterfowl and nursery areas for fish. However, they identified the wetlands along the Detroit River as deserving high priority not only because they serve as important habitat for a large number of fish and bird species, but especially because there are so few wetlands remaining in the area. Challenges to wetlands along the Detroit River include:

- # Wetland loss from dredging, filling, and urban and industrial development.
- # Contamination by phosphates, heavy metals, oils, and PCBs, especially along the U.S. shoreline.
- # Vulnerability to invasive exotic species of plants, fish, and invertebrates.
- # Many marshes are diked with accompanying problems of being isolated from the river.

Based on the Great Lakes Water Quality Agreement, the Government of Canada and the U.S. Environmental Protection Agency (1995) 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 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 has been designated a bi-national Area of Concern under the Great Lakes Water Quality Agreement. The U.S. Environmental Protection Agency has the lead on the Remedial Action Plan to restore and protect beneficial uses in the Area of Concern. U.S. Fish and Wildlife Service coordination and collaboration in the Remedial Action Plan process is important to address the restoration and protection of fish and wildlife habitat in the Detroit River.

American Heritage River

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 bi-nationally designated heritage river in the world.

Lake Erie (Western Basin)

The authorized boundary of the Detroit River International Wildlife Refuge extends along the western shore of Lake Erie to the Ohio state boundary and extends along portions of four separate watersheds (see Figure 5). The western shore is characterized by several small communities, marinas, agricultural fields, state wildlife areas, and coastal lagoons and wetlands. The City of Monroe (population 22,000) is the largest community along this coast. The shoreline in many locations has been subject to erosion from storms and wave actions during periods of high water on Lake Erie. The coastline near most lakeshore communities and developments has been armored to prevent erosion.

In 1990, the Great Lakes Coastal Barrier Act identified privately-owned coastal barrier lands for inclusion in the Coastal Barrier Resource System. Due to their susceptibility to flooding and erosion, lands included in this program are ineligible for federal economic development funds or federal flood insurance. However, development is not precluded on these lands. Two sites within Monroe County are included in the program; undeveloped lands around Toledo Beach and the Fermi Nuclear Facility.

Two large barrier reef-like structures have been constructed along the shoreline to recreate the protection afforded by eroded barrier islands. The Pointe Mouillee Confined Disposal Facility is a 3-mile-long structure constructed to contain dredgings from the Detroit River and the Lake Erie Shipping Channel. The banana-shaped structure assists in the restoration of the former wetlands and managed water impoundments of the Pointe Mouillee State Game Area. Another confined disposal facility has been constructed in the northeast corner of Sterling State Park. This 90-acre site is intended to hold dredged sediments from the River Raisin. After closure, the facility will be developed for public recreational purposes.

The Upper Detroit River: A Report to Congress

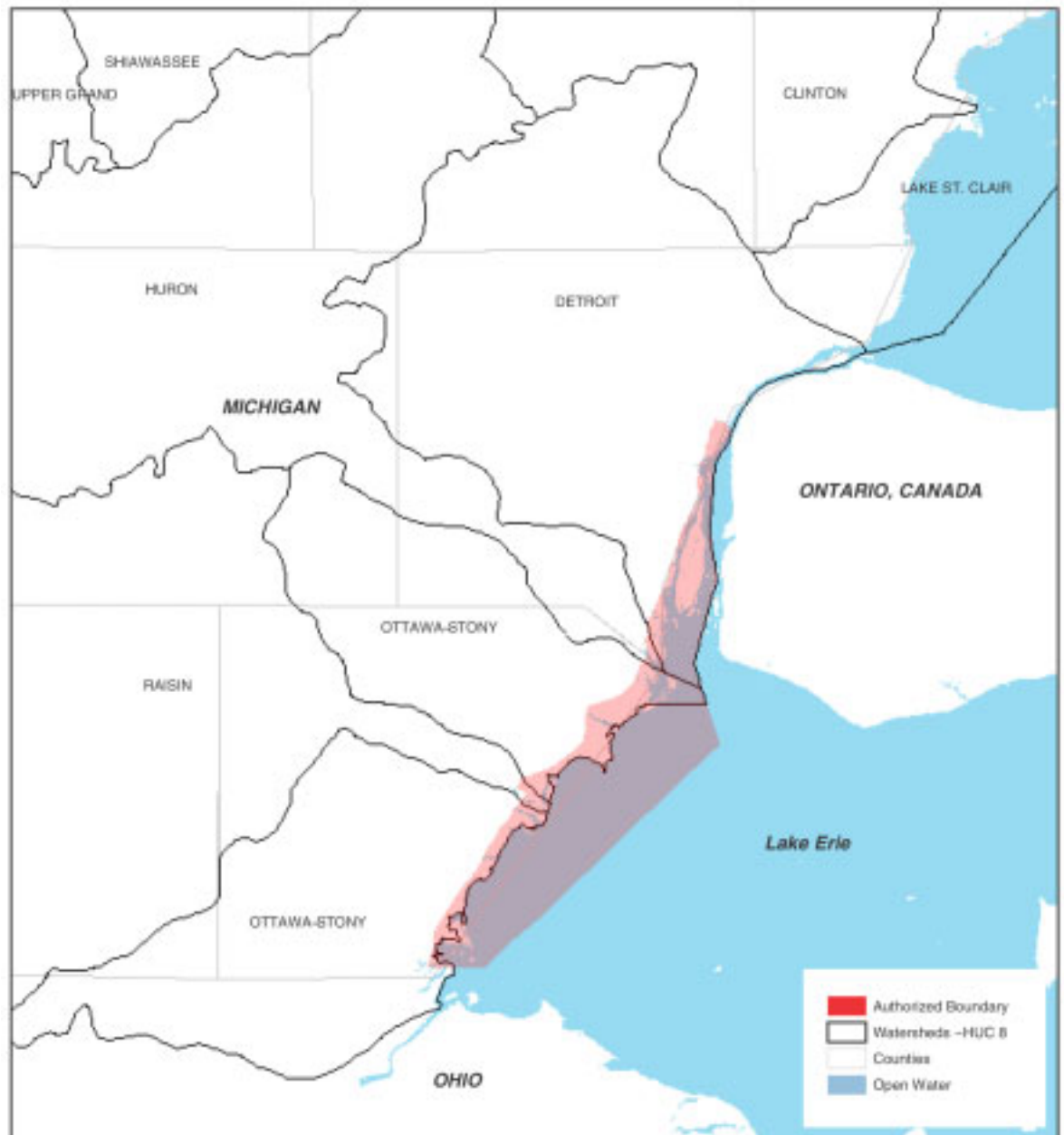
The Detroit River International Wildlife Refuge Establishment Act included a provision to study the resource merits of the Upper Detroit River. The Service was given 18 months to conduct a study of fish and wildlife habitat and aquatic and terrestrial communities of the north reach of the Detroit River for potential inclusion in the Refuge, and to report its findings to Congress. To meet this directive, the Service developed this CCP for the Refuge.

The subsection of Public Law 107-91:

Section 5(f) STUDY OF ASSOCIATED AREA.—The Secretary (acting through the Director of the United States Fish and Wildlife Service) shall conduct a study of fish and wildlife habitat and aquatic and terrestrial communities of the north reach of the Detroit River, from the northernmost point of Ojibway Shores north to the mouth of Lake St. Clair, for potential inclusion in the Refuge. Not later than 18 months after the date of the enactment of the Act, the Secretary shall complete such study and submit a report containing the results thereof to the Congress.

As a general rule, lands included in the National Wildlife Refuge System were selected because they contain habitats of high value to fish and wildlife species considered Trust resources of the agency. Trust species are those in which the Service has been legislated jurisdiction and include migratory birds and wildlife, invertebrate, or plant species on the federal threatened and endangered species list.

Figure 5: Watersheds of the Detroit River and Western Lake Erie Basin



The Service has determined that the shoreline of the 14-mile-long Upper Detroit River does not contain sufficient undeveloped lands or Trust resources to warrant inclusion in the authorized boundary for a national wildlife refuge. However, we recognize that the waters of the Detroit River, and some small sections of mainland shoreline and areas on Belle Isle, do provide habitats for resident and migratory birds and fish. The Service will remain involved in habitat restoration efforts on these sites through the Great Lakes Coastal Program, Partners for Fish and Wildlife program, endangered species consultations, and through environmental education programs to be developed by future staff of the adjacent Detroit River International Wildlife Refuge. Please see Appendix J for more details and the text of our report to Congress.

Migratory Bird Conservation Initiatives

Nongame Bird Conservation Initiatives

Nationally and internationally, several nongame bird initiatives have been developed in recent years. The Refuge will strive to implement the conservation strategies they outline to the extent possible and practical.

Partners In Flight (PIF) deals primarily with landbirds and has developed Bird Conservation Plans for numerous physiographic areas across the United States. These plans include priority species lists, associated habitats, and management strategies. The Refuge lies within Partners in Flight Physiographic Area No. 16, Upper Great Lakes Plain (see <http://www.partnersinflight.org>).



U.S. Fish & Wildlife Service

The U. S. Shorebird Conservation Plan and the North American Waterbird Conservation Plan have regional components that identify priority species and conservation strategies, mostly focused around habitat, which will address the needs of these groups of birds (see <http://www.manomet.org/USSCP.htm> and <http://www.nqacwcp.org>).

All migratory bird conservation programs will be integrated under the umbrella of the North American Bird Conservation Initiative (NABCI). This is a continental effort to have all bird initiatives operate under common Bird Conservation Regions and to consider the conservation objectives of all birds together to optimize the effectiveness of management strategies. The goal of NABCI is to facilitate the delivery of the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships.

North American Waterfowl Management Plan

The North American Waterfowl Management Plan (NAWMP), signed in 1986, outlines a broad framework for waterfowl management strategies and conservation efforts in the United States, Canada, and Mexico. The goal of the NAWMP is to restore waterfowl populations to historic levels of the mid-1970s. The NAWMP is designed to reach its objectives through key habitat joint venture areas, species joint ventures, and state implementation plans within these joint ventures.

The entire State of Michigan is within the Upper Mississippi River and Great Lakes Region Joint Venture. Areas within Michigan have substantial use by waterfowl during migration, particularly the coastal waters and marshes of Saginaw Bay, the Lake St. Clair and Erie complex, and the eastern Upper Peninsula along the St. Mary's River and northern Lake Huron. Emphasis for Michigan in the Joint Venture is waterfowl reproduction, as well as maintenance of important migration areas.

The greatest potential to increase Michigan wetland wildlife populations exists on relatively productive lake plain landscapes where agricultural practices have eliminated or significantly altered wetlands and associated uplands. The 1998 Michigan implementation strategy emphasizes waterfowl reproduction and does not include new migration habitat objectives. However, maintenance of these traditional migration areas is viewed as extremely important, especially for black ducks and many species of diving ducks. Please see <http://northamerican.fws.gov/NAWMP/nawmphp.htm> for more information.

Region 3 Fish & Wildlife Resource Conservation Priorities

The Government Performance and Results Act (GPRA) required the Service to identify its most important functions and to direct its limited fiscal resources toward those functions. From 1997 to 1999, a group of staff looked at how best to identify the most important functions of the Service within the region. The group recognized that the Service has a complex array of responsibilities specified by treaties, laws, executive orders, and judicial opinions that dwarf the agency's budget.

The group recognized that at least two approaches are possible in identifying conservation priorities – habitats and species. The group chose to focus on species because (1) species represent biological and genetic resources that cannot be replaced; (2) a focus on species conservation requires a concurrent focus on habitat; and (3) by focusing on species assemblages and identifying areas where ecological needs come together the Service can select the few key places where limited efforts will have the greatest impact. Representatives of the migratory bird, endangered species, and fisheries programs in Region 3 identified the species that require the utmost attention given our current level of knowledge. Representatives prioritized the species based on biological status (endangered or threatened, for example), rare or declining levels, recreational or economic value, or “nuisance” level. The group recognized that species not on the prioritized list are also important. But, when faced with the needs of several species, the Service should emphasize the species on the priority list.

The Detroit River IWR provides habitat for 11 species, including eight bird species and three fish species, that are currently listed as a Resource Conservation Priority.

We have considered the American Heritage River Initiative, the ecosystem context, state-listed species, and the regional resource conservation priorities as we wrote this comprehensive conservation plan.

Establishment History, Refuge Resources, Cultural Values and Uses

History of the Refuge



U.S. Fish & Wildlife Service

Grassy Island and surrounding shoals, including the submerged Mamajuda Island, constitute the first properties added to what is now the Detroit River IWR. Grassy Island appears as a 6-acre marshy area on 1796 maps of the Detroit River. At that time, the river bottom around the island sloped gradually off on all sides into deeper channels. The area was called “Île Marecageuse” on the 1796 map and “Grassy Island” on later maps. An 1873 fisheries report contains a line drawing of the “Grassy Island Pond

Fishery” for spawning whitefish. The drawing depicts a large seine being drawn in by horse-drawn windlasses and several sheds on the island. The fishery employed 30 men, working night and day, September to November and produced 45,000 adult whitefish per spawning season.

An executive order in 1843 reserved the islands for lighthouse purposes, and navigation lights have been on the islands for years. In 1955, Grassy Island was under the jurisdiction of the U.S. Treasury Department, which had reserved it for installation of navigation aids by the U.S. Coast Guard. In September 1959, the U.S. Army Corps of Engineers (Corps) began diking a 300-acre area around Grassy Island for disposal of polluted dredge spoils from the Rouge River. In October 1959, at a meeting between the Corps, the U.S. Bureau of Sport Fisheries and Wildlife, and the Michigan Department of Conservation, Congressman John D. Dingell negotiated an agreement that the Corps could continue construction of the Grassy Island Confined Disposal Facility (CDF).

In January 1960, Congressman Dingell introduced legislation to designate Grassy Island and surrounding shoals as a national wildlife refuge because wild celery (*Vallisneria spiralis*) was abundant and widely distributed near Grassy Island, and wild celery is the preferred food of diving ducks, such as Canvasbacks, Redheads, and Scaup. The area was known to attract thousands of diving ducks during their fall and spring migration. In July 1960, the Department of the Interior agreed that if it received jurisdiction over the Grassy Island area, it would not object to the Corps's continued use of a 72-acre CDF for dredge spoils from the Rouge River. The act to create Wyandotte NWR became law on August 3, 1961. The Refuge included Grassy Island and surrounding shoals out to a water depth of 6 feet and an area of about 300 acres extending downstream to the Mamajuda Light near Point Hennepin. The Refuge was administered by the Shiawassee National Wildlife Refuge near Saginaw, Michigan.

The Detroit River IWR was established by an Act of Congress, which became Public Law 107-91 on December 21, 2001. The authorized Refuge boundary in this Act included islands, coastal wetlands, marshes, shoals and riverfront lands along 18 miles of the Lower Detroit River. The establishing Act included Mud Island and Grassy Island, lands already managed by the Service as Wyandotte NWR. In May 2003, Public Law 108-23 extended the

authorized boundary of the Refuge south to the Ohio border. Please see Chapter 1 for more details on establishment of the Refuge.

General Habitat Description

Much of the lower Detroit River shorelines, island shoals, and the western Lake Erie shoreline were originally a marshy, low-lying area of emergent and submersed vegetation that might be classified today as a Great Lakes coastal marsh. On an 1815 map, such marshes were contiguous along both sides of the entire 32-mile length of the Detroit River. By 1982, shoreline development had reduced the marshes to less than 3 percent of their original area along the Michigan side of the river. Today, only remnants of these marshes, such as Humbug Marsh, portions of Stony Island, Gibraltar Bay at the southern end of Grosse Ile, and several coastal lagoons along Lake Erie remain in Michigan waters. These remnants contain stands of bottomland hardwoods, glacial lakeplain prairie, coastal plain pond communities, and a variety of wetland types. Such coastal marshes are used as spawning, nursery, feeding, migration and overwintering habitat by many of the 47 species of fish that spawn in the lower Detroit River, including northern pike, muskellunge, largemouth and smallmouth bass, walleye, and possibly lake sturgeon. More than 17 species of birds of prey, or raptors, use coastal marshes as feeding and resting habitat, including eagles, hawks, owls, and falcons. In addition, coastal marshes are used by 48 species of non-raptors that migrate through the Detroit River area each year, including waterfowl, loons, herons, egrets, terns, and neotropical migrant songbirds.

Comparison of Detroit River maps drawn in 1815 and 1982 reveals that:

- # More than 97 percent of wetlands in Michigan waters have disappeared under shoreline modifications.
- # Ninety percent of the remnant wetlands in the Detroit River are found downstream of Grassy Island.
- # About 40 percent of these remnant wetlands are in Humbug Marsh and on small, undeveloped islands forming the “Conservation Crescent” around the southern tip of Grosse Ile.
- # Because wetland habitats are essential to a high diversity of fish and wildlife species at various stages of their life cycle, such Great Lakes coastal marshes have been classified as globally unique and significant in biological diversity by The Nature Conservancy.

Wetlands

At least 20 species of submersed aquatic macrophytes occur in the Detroit River and Lake Erie marshes: wild celery (*Vallisneria americana*), water stargrass (*Heteranthera dubia*), waterweed (*Elodea canadensis*), Eurasian watermilfoil (*Myriophyllum spicatum*), bushy pondweed (*Najas flexilis*) and redhead grass (*Potamogeton richardsonii*) predominate in the vicinity of the river islands.

Shallow water habitat, gradually sloping off into deeper waters, exists on the west side of Grassy Island in a small 20-acre bay. Historically, wild celery was abundant and widely distributed near Grassy Island and in the Detroit River system. The extent of wild celery was measured in the 1950s, 1980s, and again in 1996-97. There was a 72 percent decline in wild celery from the 1950s to the 1980s. Now, wild celery has rebounded and is at or exceeds the levels of the 1950s. The increase in wild celery is attributed to increased water clarity in Lake St. Clair and the Detroit River. The increased water clarity is attributed primarily to filtration of the water by zebra mussels (Manny, 2000).

Wet Prairie

Natural habitats along the Detroit River and Western Basin of Lake Erie have been altered drastically (Figure 6 and Figure 7). Restoring native prairie plant communities, once abundant in the region, provide benefits on both a local and regional scale. Lakeplain wet prairie is listed with the Michigan Natural Features Inventory as S2 state ranking (imperiled in state because of rarity) and G2 on a global scale (imperiled globally because of rarity). A few local, small prairie restoration efforts have occurred in recent years. Native prairie remnants and restored sites are important as they can provide a native seed source for restoration efforts in other parts of the local region. Native seed sources currently are rare in this area due to limited sources of remnant prairies. Sometimes it is necessary to seek alternatives to using local seed sources.

Prairie communities provide quality breeding and migration habitat for grassland birds, waterfowl, and other migratory birds. Land conversion to native prairies will provide habitat for a diverse array of birds, mammals, reptiles, rare insects, and migratory birds. This habitat type consists of various grasses, sedges, and forbs that provide quality wildlife habitat and are aesthetically pleasing at the same time. Wet prairie grasslands in southeast Michigan range from mowed lawns to idle fields to grainfields. Before settlement, wet prairie grassland types were scattered throughout the coastline of the Refuge. The major management concern related to prairie grass restoration is the invasion of shrubs, trees, noxious weeds and phragmites into the grassland. Prescribed fire should be used to manage grasslands with a burning rotation of every 3 to 5 years. If burning is not an option, mowing should be the second alternative to grassland management. All mowing should be conducted after July 15 to avoid nesting birds and broods. According to a recent report by The Michigan Natural Features Inventory, less than 1 percent of Michigan's 158,000 acres of former lakeplain prairies remain today.

Grasslands support a variety of resident wildlife species. Grasslands within the authorized Refuge boundaries are important to Northern Bobwhite, Ring-necked Pheasants and waterfowl. Pheasants in particular also find native grasses such as switchgrass, Indiangrass, and the bluestems suitable for winter shelter because the grasses stand up to snow and provide good nesting cover. White-tailed deer use grasslands for food and cover, particularly during spring and summer. Cottontail rabbits raise their young and find food and security in grassland edges. Grasslands provide essential habitat for waterfowl, especially puddle ducks, during the nesting season. They are also home to mice, shrews, voles, some kinds of snakes, and a host of avian and ground predators including hawks, owls, raccoons, skunks, opossums, foxes, and coyotes.

Uplands and River Islands

Terrestrial plants on Grassy and Mud islands include giant reed grass (*Phragmites communis*), cattails (*Typha* spp.), as well as aspen, cottonwood, willow, wild cherry and box elder trees that provide habitat for some animals. Wildlife use of small ponds on Grassy Island has not been fully characterized.

The quality of existing habitats for production of fish and wildlife is low on Grassy Island due to the monotypic dominance of giant reed grass and exposure to dredged sediments. The quality of habitat on the shoals surrounding Grassy Island is medium due to contamination of river bottom sediments. The condition of historic fish spawning grounds on the shoals is unknown.

Figure 6: Historic Vegetation of the Lower Detroit River and Lake Erie Shoreline

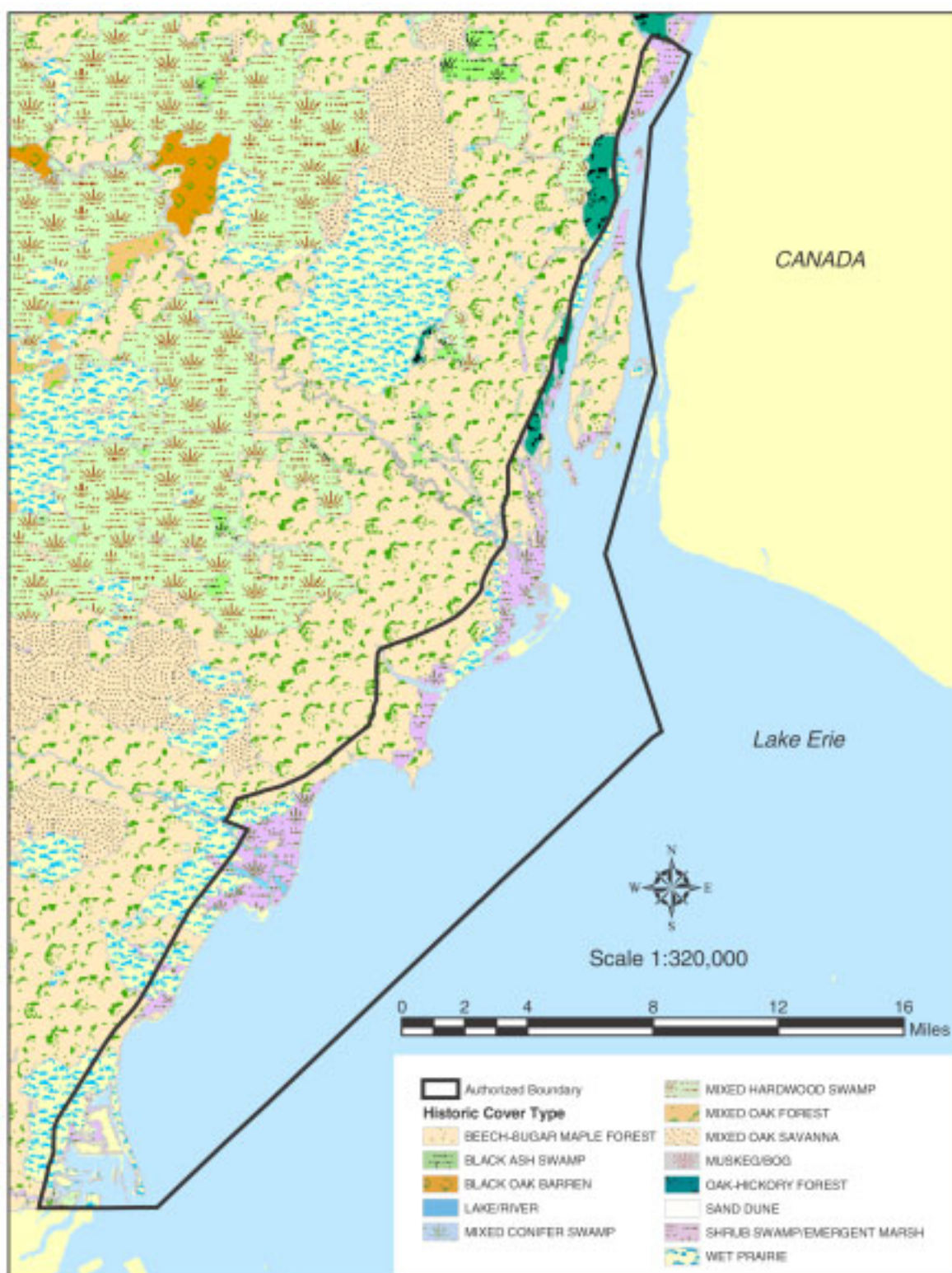
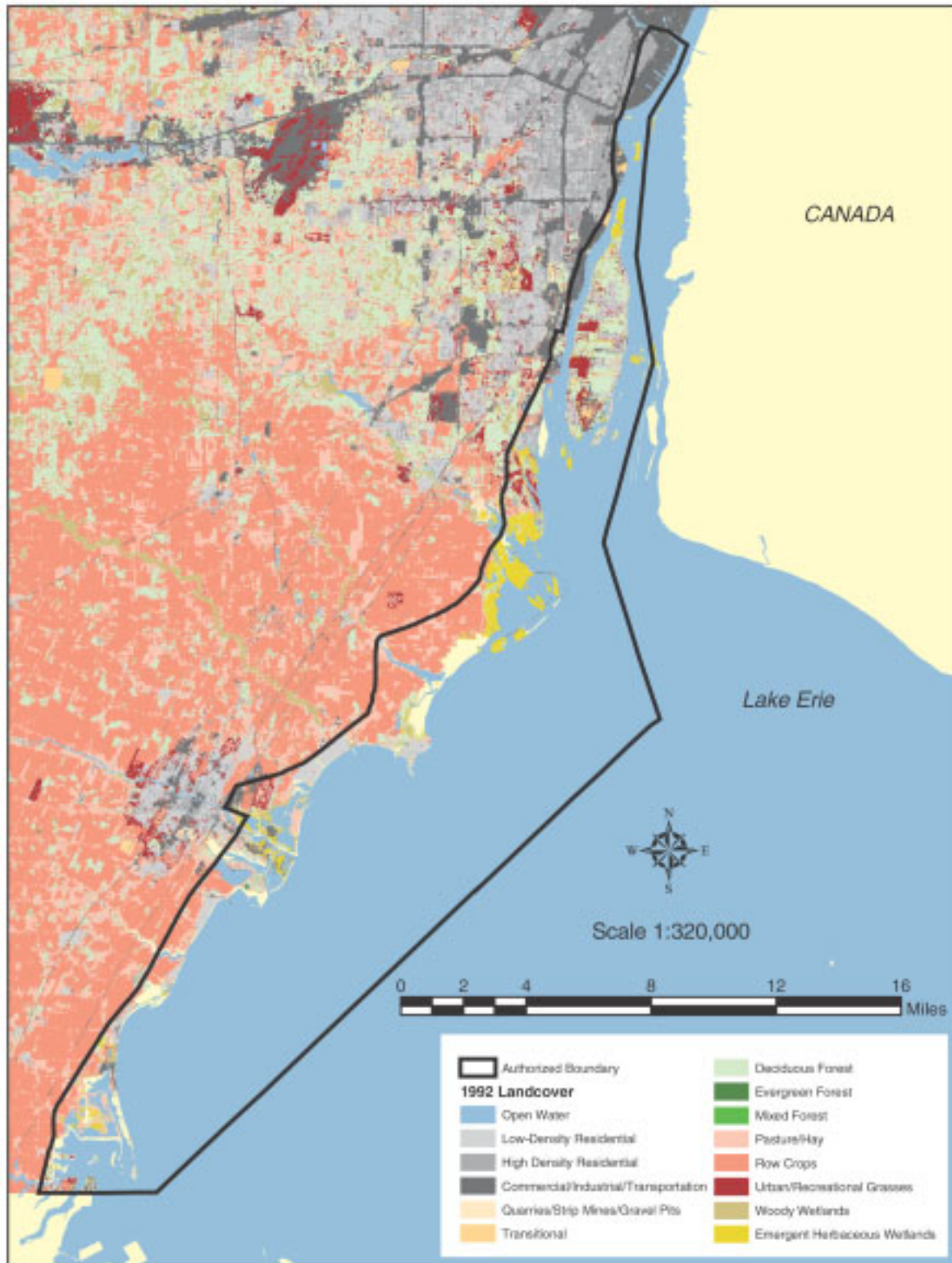


Figure 7: Landcover (1992) of the Lower Detroit River and Lake Erie Shoreline



Approximately 75 percent of Mud Island is forested with more than 20 years growth of deciduous hardwood trees, dominated by red maple, silver maple, white ash, cottonwood and willow. Its surrounding shoals are, on average, 2 feet in depth and support aquatic species such as wild celery.

Calf Island is an 11-acre, uninhabited island in the Trenton Channel of the Lower Detroit River that was added to the Refuge in 2002. Its upland habitat consists of bottomland hardwoods. It has a sheltered, shallow, emergent marsh on the northeast portion of the island. A long, narrow, shallow bar extends off the southeast end of the island and provides ideal habitat for water celery, an important food for waterfowl.

Fish and Wildlife

Waterfowl

The coastal marshes of western Lake Erie and lower Detroit River have provided habitat for the highest concentration of staging American Black Ducks in North America, with an annual average peak of 51,500 birds before American Black Duck numbers declined in the 1950s. The area contains extensive feeding and nesting habitats for waterfowl. The Pointe Mouillee State Game Area attracts and holds 20,000 ducks during peak migration in the fall (Robison, Pers. Comm.). More than 300,000 diving ducks stop each year to rest and feed on beds of wild celery in the Lower Detroit River during fall migration. The lower Detroit River is designated as an Important Bird Area that is globally significant as a site for congregating waterfowl. On average, more than 8,261 Canvasback and 7,000 Common Mergansers are recorded each year during the annual Christmas Bird Count centered on Rockwood, Michigan. More than 3 million waterfowl are estimated to migrate through the Great Lakes area annually. In addition, Canada Geese have increased statewide at an average rate of 14 percent per year since the 1970s and are now very common throughout the Refuge.

Extensive beds of aquatic vegetation, particularly wild celery, historically attracted large concentrations of divers, primarily canvasback and scaup. However, in the past 100 years discharges from industrial plants and municipal sewage effluent along with the effects of large, deep draft vessels have degraded the lower Detroit River ecosystem, thus resulting in the substantial decline of these preferred foods. Remnants of the once vast rafts of migratory waterfowl can still be found in the aquatic vegetative beds surrounding some of the islands in the Detroit River.

Table 1: November Waterfowl Survey Results for the Lower Detroit River and Northern Portion of Lake Erie (Kafcas and Robison, 2002)

Year	Canvasback	Scaup	Bufflehead	Merganser	Goldeneye	Redhead	Total
1995	11,150	800	-	275	-	1,500	13,725
1996	400	675	50	400	75	-	1,600
1997	11,250	14,450	20	50	50	400	26,220
1998	750	10,000	150	515	50	800	12,265
1999	600	16,200	20	560	20	100	17,500
2000	40	15,000	-	-	-	-	15,040
2001	-	17,020	20	-	100	-	17,140
2002	-	4,780	20	200	-	-	5,000

Table 2: Historic Aerial Count-estimates of Waterfowl on the Lower Detroit River from the Ambassador Bridge to lake Erie (Miller, 1961)¹

Year	Winter	Spring	Pre-season Fall	Mid-season Fall	Post-season Winter
1950	23,400	14,000	12,200	7,700	73,500
1951	28,000	21,900	5,300	56,000	63,500
1952	15,100	21,400	5,000	90,200	91,000
1953	45,000	41,000	4,400	30,000	95,000
1954	44,300	55,000	7,000	293,000	54,000
1955	48,400	70,100	4,500	217,000	24,500
1956	19,900	25,300	6,500	43,700	38,500
1957	51,300	41,600	4,850	17,500	41,050
1958	37,300	-	-	29,700	-
1959	86,400	-	-	7,550	-
1960	38,260	-	-	5,470	-
1961	10,300	-	-	-	-

1. Dashes indicate years when the census was discontinued.

During the November counts conducted by the Michigan DNR Wildlife Division, a large amount of waterfowl are seen in the area. In the fall, there appears to be more waterfowl activity in the south end of the River, south of Grosse Ile than in other parts of the Refuge. In the fall the birds may be moved from the area because of hunting pressure and other activity. However, there is a good deal of hunting activity and success at the Canard River Refuge, which is in Canada across the river from Grassy Island. In the winter, the waterfowl seem to spread out more widely along the Detroit River and Western Lake Erie. In the winter of 2003, large rafts of Canvasbacks were seen in the Detroit River on the American side and Canadian side. One raft of canvasbacks was estimated at 2,800 birds along Mud Island (Robison, January waterfowl count, 2003).

The shallow, open waters of the Detroit River are an important waterfowl wintering area. Thousands of Mallards, Black Ducks, Canada Geese and swans were observed resting and feeding in the nearshore waters of Grassy and Mud islands during a site visit in early February 2003 (Spencer, Pers. Comm.).

Other Bird Species

A wide variety of wading and shorebirds can be found within the Refuge area. The Lake Erie shoreline has been recognized as a Site of International Shorebird Importance. In 2000, 26,000 shorebird observations were made during the months of July, August and September at the Pointe Mouillee State Game Area by professional bird observers (Robison, Pers. Comm.). Shorebirds represent an especially important group of vertebrates that depend upon wetlands. Pointe Mouillee has been designated a Western Hemispheric Shorebird Reserve Network site.

There are several active Bald Eagle nests within the authorized Refuge boundary, including two active nests in Wayne County and five active nests in Monroe County. The Bald Eagle is listed on both the federal and state list of endangered species. In January 1999, 52 Bald Eagles were observed along the river and Lake Erie shoreline during Michigan DNR's annual waterfowl survey.

Peregrine Falcons can be found in and around the Refuge. The diet of the Peregrine Falcon includes a wide variety of small birds, including pigeons, seabirds, shorebirds and songbirds. The 2001 surveys found nine nesting pairs in Michigan, including five in the southeast region, one in Lansing and three in the Upper Peninsula.



Sharon Cummings

Ring-necked Pheasant, Northern Bobwhite Quail, Red-winged Blackbird, Canada Goose, Tundra and Trumpeter Swans, American Woodcock, Common Tern, Black-crowned Night Heron, Great Egret, Wood Duck, Mallard, Blue-winged Teal, Common Loon, and many species of songbirds can also be found in the region. A complete list of bird species observed in the area can be found in Appendix E.

Mammals

Several species of mammals are found within the Refuge ecosystem. Common species include muskrat, mink, raccoon, eastern cottontail, woodchuck, opossum, skunk, white-tailed deer, coyote, gray fox, fox squirrel, and several mole and mice species. A few years ago, a family of river otter was seen near the lower Detroit River. Beaver have recently returned to nearby Livingston, Oakland, and Washtenaw counties. Mammals are most abundant in and around wetland habitat due to the abundant food and cover that wetland habitats provide.

Threatened and Endangered Species

Several pairs of Bald Eagles, a federally-listed threatened species, nest and feed along the Detroit River and western Lake Erie basin. The Northern riffleshell, a federally-listed endangered mussel, has not been documented in the Detroit River but may occur on island shoals.

Several state-listed threatened species have been associated with the Detroit River ecosystem, including pugnose minnow, small-mouthed salamander, Osprey and Common Tern. The spotted turtle was recorded in the Michigan Natural Features Inventory in 1997. Additional state-listed species such as the lake sturgeon and Eastern fox snake are discussed in the following paragraphs.

Fish

The lower Detroit River and western end of Lake Erie support a diverse assemblage of fishes including over 60 species of resident and migratory fish (Appendix L). In addition to approximately 34 resident species in the Detroit River, the high diversity is enhanced by an additional 28 species that use the river as a migratory pathway between Lake Erie, Lake St. Clair, and Lake Huron, and stop in the river for spawning, feeding, and nursery grounds (Manny et al. 1988). The high diversity of fishes is partially attributable to the variety of

habitats: deep channels, shallow-water nearshore, and the land-water edge, including river shorelines, island shorelines, and coastal wetlands.

Although the current fish community is diverse, it has changed dramatically compared to the historic fish community. A number of native species have either disappeared or their numbers have been severely reduced. Examples include lake trout, sauger, blue pike, lake whitefish, lake herring, and lake sturgeon. Contributing factors to these losses include overfishing, habitat loss, and the introduction of exotic species.

Lake sturgeon once spawned on the rocky bottom in swift currents just northeast of Grassy Island, one of seven historic spawning areas in the Detroit River (Figure 8). This fish is listed as “threatened” by 19 of the 20 states in its original range, and by seven of the eight Great Lakes states, including Michigan. Recent, incidental catches of genetically unique, juvenile lake sturgeon in Lake Erie near the Detroit River suggest that lake sturgeons are reproducing again in the Detroit River. More than 10 million walleye, white bass, steelhead, and salmon migrate through the Detroit River each year and attract many anglers to the Refuge area.

Reptiles and Amphibians

Reptiles within the Refuge include turtles and snakes. Amphibians include frogs, toads, and salamanders. Reptiles and amphibians are important to study because they are sensitive to subtle environmental changes such as water quality or ozone depletion in the atmosphere that permits more ultraviolet light to reach the earth from the sun. As “environmental indicators,” reptiles and amphibians help us to monitor these and other changes that may eventually be harmful to us. The Eastern fox snake (*Elaphe vulpina gloydi* Conant) is listed on the state’s list of endangered



Frank Durbian

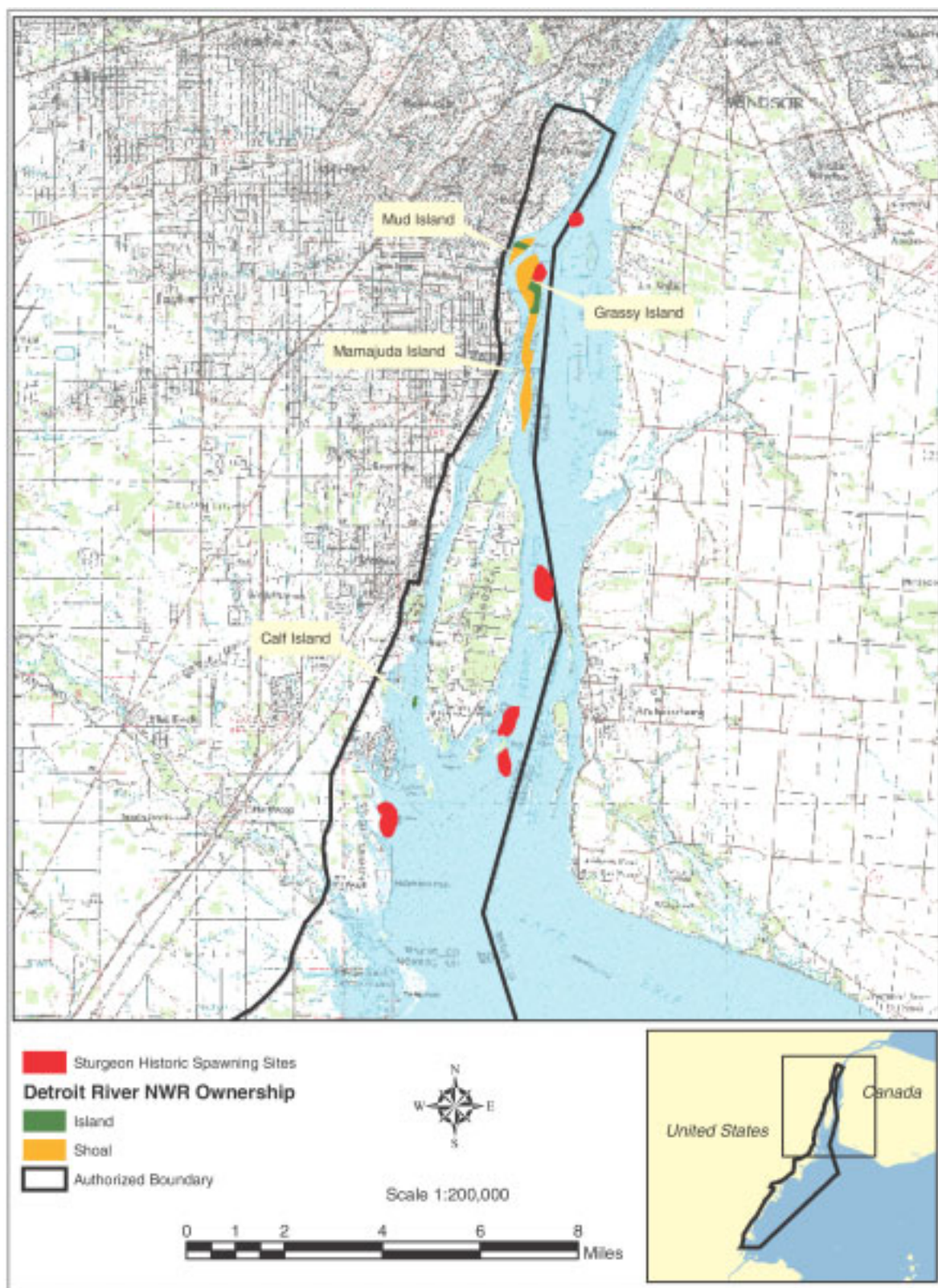
species. The eastern fox snake can be found throughout the region. Special management considerations should be considered for this species. Another state-listed threatened species found within the Detroit River environment is the spotted turtle (*Clemmys guttata*). Volunteer frog and toad surveys are conducted within the region. The data that is collected is submitted to the Michigan DNR Natural Heritage Division, which uses the data to monitor the frog and toad populations in the State of Michigan.

Environmental Contaminants

The Detroit River has experienced over a century of heavy contaminant discharges from industry and municipalities. The sources of contaminants vary and include: nonpoint sources such as stormwater runoff and air deposition, combined sewer overflows, municipal and industrial point sources, tributaries, sediments and upstream inputs (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) (UGLCCS 1988), but other contaminants also have been identified.

Many contaminants, such as PCBs and mercury, can bioaccumulate and biomagnify. Therefore wildlife, especially those that eat fish or fish-eating animals, such as Bald Eagles

Figure 8: Historic Spawning Sites for Lake Sturgeon in the Lower Detroit River



and mink, can contain high levels of these contaminants. Wildlife can be adversely affected by these contaminants if they are exposed to a high enough dose. Polynuclear aromatic hydrocarbons (PAHs) have been shown to be carcinogenic, mutagenic, or teratogenic to a wide variety of organisms, including fish and other aquatic life, amphibians, birds, and mammals (Eisler 1987a). In general, PAHs show little tendency to biomagnify in food chains, despite their high lipid solubility, probably because most PAHs are rapidly metabolized. Contaminants such as cadmium and mercury have been shown to adversely affect growth, reproduction, development, behavior, and learning of various wildlife species (Eisler 1985; Eisler 1987b). Additionally, these compounds are known to be teratogenic and carcinogenic. PCBs elicit a variety of biologic and toxic effects including death, birth defects, reproductive failure, liver damage, tumors, and a wasting syndrome (Eisler 1986).

Concern about contaminants in water and sediments has resulted in restrictions in the uses of the Detroit River. These restrictions include degraded fish populations, fish tumors or other deformities, bird or animal deformities or reproductive problems, and fish and wildlife consumption restrictions.

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 (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.



U.S. Fish & Wildlife Service

The importance of and distinct linkage among discharges, water quality and sediment quality is recognized as sediments act as a repository for discharged contaminants. Sediment surveys that can be compared on a river-wide basis were conducted in 1970, 1980, and 1991 (Hamdy and Post 1985). These surveys showed that concentrations of mercury and other heavy metals distinctly declined between 1970 and 1980. Between 1980 and 1991, however, little change in concentrations was exhibited. In some cases, increases were observed or the findings were mixed, depending on the contaminant and location. Concentrations of PCBs in sediments exhibited a slight decrease throughout the system between 1980 and 1991. In general, sediments in the U.S. sector of the river were considerably more contaminated than on the Canadian side.

The Detroit River has recovered from the extremely high levels of pollutants in sediment and water. There is little doubt that the environmental quality of the river improved considerably from the early 1950s when pollutants were released into the river with few or no abatement programs, to the middle 1980s when pollution control programs had been implemented.

In 1999 an extensive survey of the sediments of the Detroit River was conducted by the Great Lakes Institute for Environmental Research at the University of Windsor, with the financial support of the Sustainability Fund managed by Environment Canada. Unlike earlier surveys, which assessed environmental quality only in areas suspected of being polluted, the 1999 survey addressed the overall environmental quality of the river. This

river-wide study provided many insights about how the Detroit River functions as an ecological system.

The 1999 study revealed important facts about current mercury distribution in the Detroit River. 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.

The final example of chemicals in sediment is PAHs. This is a complex group of chemicals, many of which can be metabolized to produce very potent carcinogens. The PAHs in Detroit River sediment are associated with the development of tumors in fish such as the brown bullhead. Definite efforts have been made to control loadings of PCBs and mercury. Some concerns remain about PAH loadings, which may come from oils placed in sewer systems, released into the atmosphere by diesel trucks and other incomplete carbon combustion processes, or leaching from uncontrolled industrial or municipal coal yards along the shoreline not associated with controlled and permitted energy industry facilities.

Contaminants in Fish

A review of fish consumption guidelines shows that there has been little change in the level of contaminants found in tested fish (Ministry of the Environment, 1987-1999). This supports other data that indicates the Detroit River recovery has plateaued in recent years.

Many fish species move long distances in search of prey and spawning habitat. The majority of walleye in the Detroit River are known to move upstream from Lake Erie, through the river, and on to Lake St. Clair to feed and spawn. Mercury levels have decreased in Lake St. Clair walleye since the 1970s, although levels have been variable in recent years and the trend is less clear. The same is true for the western basin of Lake Erie, but the total mercury levels are higher in Lake St. Clair walleye. The trend for mercury levels in walleye and other fish is similar to the trends of mercury levels in Detroit River sediments; high in the 1970s, declining in the 1980s, and fluctuating in the 1990s. This supports the conclusion that sediments are a major source of contaminants, including mercury, and levels of contaminants in sediments appear to be dictating contaminant levels throughout the Detroit River system.

The State of Michigan has issued Fish Consumption Advisories for the Detroit River and Lake Erie for walleye, drum, carp, catfish, northern pike, redhorse suckers and yellow perch. Mercury is the primary contaminant of concern although PCBs and Dioxin can also accumulate in these fish. The Michigan Department of Community Health advises extra caution about eating Michigan fish for women of childbearing age and children under 15. Between 1977 and 1982, PCB levels declined in Lake Erie walleye but have shown no changes beyond 1982. Although low enough not to restrict consumption, PCB levels for many species remain above the guidelines to protect fish and wildlife.

Studies suggest that organic chemicals, including PCBs, pesticides, and PAHs, could be having toxic effects on bottom-dwelling fish, such as carp and channel catfish. Although PAHs metabolize quickly and are not found in fish flesh, they may still have an adverse effect on fish, e.g. tumors in bullheads.

Contaminants in Benthos

Bottom-dwelling organisms, also called Benthos, are a vital food source for many fish species. Benthos also serve as useful indicators of water and sediment quality. Over 300 species of benthic organisms have been recorded in the Detroit River. Predominant species

include worms, midge larvae, snails and clams, mayfly nymphs and caddisfly larvae (Manny et al. 1988). Net-spinning caddisflies, virtually absent from the river during 1930-1977, have been steadily increasing in numbers throughout the last 20 years. The recent presence and increase of mayflies also indicates an improvement in water quality. However, in some areas of the Detroit River, such as the Trenton Channel, benthic communities still indicate degraded water and sediment quality conditions. (Cibrowski 2001)

Contaminants in Wildlife

The long-term monitoring of Herring Gull eggs provides one of the most complete and consistent databases for assessing PCB levels and ecosystem trends within the Detroit River-western Lake Erie basin. Concentrations of PCBs in Herring Gull eggs collected from sites in the Detroit River and Western Lake Erie have exhibited a significant decline since the mid-1970s, but no significant change since 1996 (DRCCC 1999).

Herring Gulls feed on fish. Their primary food source is freshwater drum, a bottom dwelling species that in turn feeds on zebra mussels, which are known to accumulate high levels of contaminants. A decline in contaminant levels in Herring Gulls suggests that contaminant levels in freshwater drum and zebra mussels are also declining.

One study conducted on ducks in the Detroit River concluded that the Detroit River/western basin of Lake Erie corridor is a major source of contamination to migrating ducks, due to the abundance of highly contaminated zebra mussels which ducks eat (Mazak et al. 1997). The study made no conclusions regarding the effects of the contaminants on duck populations.

The Detroit River Remedial Action Plan

The International Joint Commission has identified 43 Areas of Concern throughout the Great Lakes Basin. These Areas exceed environmental standards and contain significant pollution from heavy metals and toxic chemicals, as well as bottom sediments that are heavily contaminated. The Detroit River has been named as a bi-national Area of Concern. In 1985, the Great Lakes Water Quality Board of the International Joint Commission called for Remedial Action Plans to initiate clean up of Areas of Concern. The U.S. Environmental Protection Agency and the Michigan Department of Environmental Quality were chosen as the lead agencies in a Remedial Action Plan (RAP) for the river.

The Remedial Action Plan, completed in 1996, states that the Detroit River will be restored for 14 beneficial water uses identified as being impaired. Some of these beneficial water uses include: drinking water consumption; taste and odor quality; fish and wildlife habitat; wetlands; and, degraded fish and wildlife populations. The Detroit River Remedial Action Plan Report identified the specific requirements necessary to control existing sources of pollution, eliminate environmental contamination, and restore the Detroit River to ecosystem health. The Remedial Action Plan was developed through a large stakeholder effort in three stages:



U.S. Fish & Wildlife Service

1. Stage 1 defined and outlined the nature of the pollution problems. It included a detailed definition of each beneficial use impairment and the geographic extent of these impairments. For example, the Detroit River Area of Concern was defined to extend from the mouth of the River at Peche Island to the end of Grosse Ile at the entrance to Lake Erie.
2. Stage 2 was an evaluation of both the improvements to be put into place as well as the alternative, additional measures to restore the beneficial uses of the Detroit River and define a schedule for their implementation. The industries, municipalities and agencies responsible for improvement measures were also identified.
3. Stage 3 is the ongoing process for evaluating the improvement measures that have been identified in Stage 2 as well as progress on implementing the Remedial Action Plan. This includes a description of surveillance and continuing monitoring techniques that will be used to track the effectiveness of the action plan; and, confirmation of the restoration of the beneficial uses.

The Detroit River IWR Comprehensive Conservation Plan will help to fulfill or augment a number of recommendations called for in the 1996 Report, including: No. 2, develop a habitat management plan for the Area of Concern; No. 7, provide more effective protection to the migratory birds and their habitat; and No. 16, improve communication among the public, local governments . . . to preserve and protect existing habitat in the Area of Concern.

Grassy Island Remediation

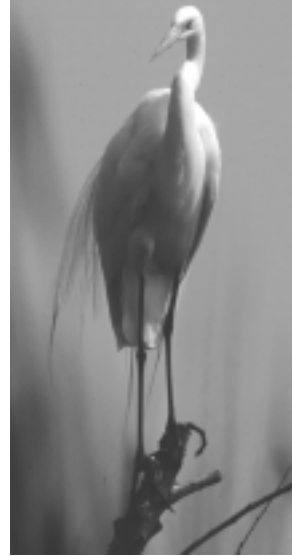
Grassy Island is a 72-acre island in the Detroit River, situated between the City of Wyandotte and Fighting Island, and north of Grosse Ile. In 1961, Congress declared Grassy Island and the surrounding shoals as Wyandotte National Wildlife Refuge. The U.S. Army Corps of Engineers (ACOE) used this island as a confined disposal facility (CDF) to deposit contaminated sediments dredged primarily from the Rouge River. The CDF consisted of two cells surrounded by dikes. Dredged material was hydraulically pumped as a slurry into the receiving cells and allowed to settle. The resulting water was discharged back into the river via an overflow weir. From the years 1961 to 1983, over three million cubic yards of dredged sediments were deposited into Grassy Island.

Because the Grassy Island CDF preceded Public Law 91-611 (1970), which initiated the Great Lakes-wide CDF program, it lacks the confinement technology employed in later CDF designs. This CDF was constructed without liners and caps and the sand and clay dikes were unprotected by riprap. The original dikes were raised in the 1960s and capacity was further expanded in 1971. The Detroit District of the ACOE operated and maintained the CDF until it was filled in 1982. In 1985 and 1986, the ACOE repaired and reinforced the dikes adjacent to the navigation channel with filter cloth and riprap to prevent their failure from riverine and navigational forces. Both cells remain uncapped and polluted sediments are exposed over much of the CDF.

In 1987 Beyer and Stafford surveyed nine CDFs throughout the Great Lakes, including the Grassy Island CDF. They found that soils within the vegetated portions of the Grassy Island CDF contained some of the highest levels of PCBs, mercury, and other heavy metals. They also found levels of chlordane, and eight PAH compounds that exceeded criteria for exposure by direct contact. Earthworms associated with this soil showed positive bioaccumulation of several of the heavy metals.

In 1987, the U.S. Fish and Wildlife Service's East Lansing Field Office began to identify and quantify contaminants in the sediments of two small ponds that were present. They also quantified contaminant residues in birds using all habitats on Grassy Island. They found PCB and DDT levels in the flesh of waterfowl and Woodcock on the island exceeded U.S. Food and Drug Administration Tolerance Levels.

In 1997, the U.S. Geological Survey's (USGS) Biological Resources Division investigated contamination of surface soils on Grassy Island and of wild celery tubers growing on shoals surrounding the island. In the same year the USGS's Water Resources Division and the U.S. Fish and Wildlife Service investigated groundwater movements around the island and contaminants in subterranean soils and water. These studies showed that contamination exists in the surface soils on the island, there is little contamination of the wild celery tubers, and there is a low level of contaminants in the sediments outside the CDF.



Sharon Cummings

As the Grassy Island CDF was constructed without an impermeable liner or cap, the Service is concerned that wildlife in direct contact with island are being exposed to contaminants, and that contaminants may be “leaking” into the Detroit River. The Service is currently moving forward on plans to more fully characterize the risks from the identified contaminants and evaluate the feasibility of several approaches to both remediate contaminant risks and enhance long-term benefits of the area for fish and wildlife.

With the designation of the Detroit River as an American Heritage River, the remediation of the contaminants found on Grassy Island could be used as a model to encourage others to remediate contaminated sites found throughout the Detroit River area, including Canada.

Cultural Resources

As part of its larger conservation mandate and ethic, the Service, through the Refuge Manager, applies the several historic preservation laws and regulations to ensure historic properties are identified and protected to the extent possible within established Refuge purposes and the Refuge System mission.

Cultural resources management is the responsibility of the Regional Director and is not delegated for the Section 106 process when historic properties could be affected by Service undertakings, for issuing archeological permits, and for Indian tribal involvement. The Regional Historic Preservation Officer (RHPO) advises the Regional Director about procedures, compliance, and implementation of the several cultural resources laws. The Refuge Manager assists the RHPO by providing early notification about Service undertakings that could affect historic properties. Also, assistance is provided by protecting archeological sites and historic properties on Service managed and administered lands, by monitoring archeological investigations by contractors and permittees, and by reporting violations.

The Refuge Manager will, with the assistance of the RHPO, develop a step-down plan for surveying lands to identify archeological resources and for developing a preservation program to meet the requirements of Section 14 of the Archaeological Resources Protection Act and Section 110(a)(2) of the National Historic Preservation Act.

Archeological investigations and collecting are performed only in the public interest by qualified archeologists or by persons recommended by the Governor working under an Archaeological Resources Protection Act permit issued by the Regional Director. The Refuge Manager must find this third-party use of Refuge land to be compatible. The requirements of the Archaeological Resources Protection Act apply to Service cultural resources contracts; the contract is the equivalent of a permit. In addition, the Refuge Manager also issues a special permit. Refuge personnel take steps to prevent unauthorized collecting by the public, contractors, and Refuge personnel; violators are cited or other appropriate action taken. Violations are reported to the RHPO.

Special Topics

Jurisdiction on Navigable Waterways

The designation of an authorized boundary for the Refuge did not supercede any water rights or obligations of the State of Michigan or riparian landowners.

The following section was provided by the Michigan DNR for general information purposes:

The Detroit River falls under the Inland Lakes and Streams Act, 1972 PA346. That means the bottomlands of the Detroit River are owned by Riparian owners. "Riparian rights," as defined in the act, means all the rights accruing to the owners of riparian property, including the following rights, subject to the public trust:

- # Access to the navigable waters.
- # Dockage to boatable waters, known as wharfage.
- # Use of water for general purposes, such as bathing and domestic use.
- # Title to natural accretions.

Lake Erie's jurisdiction falls under the Great Lakes Bottom Lands Act, 1955, PA 247. The bottomlands are owned by the State of Michigan. The Michigan Supreme Court has determined that title to the submerged lake bottomlands of the Great Lakes within the boundary of Michigan is held in trust by the State for the use and benefit of all the people. The State cannot dispose of the public rights in these lands such as the public rights of hunting, fishing, and navigation, but it may, under authority delegated by the State Legislature, dispose of proprietary interests such as leasehold interests. Michigan's Submerged Lands Program began in 1955 with the passage of the Great Lakes Submerged Lands Act. The Public Trust Doctrine gives the state authority to manage but also to protect the public's fundamental rights to use the property.

Michigan courts have determined that private uses of the bottomlands and waters, including the riparian rights of waterfront property owners, are subject to the public trust. In other words, if a proposed private use would adversely impact the public trust, the State of Michigan's regulatory authority requires that the proposal be modified or denied altogether in order to minimize those impacts.

Coast Guard Memorandum of Understanding

In 1964, the U.S. Coast Guard raised some questions about its rights and privileges on Grassy Island and Mamajuda Island to erect and maintain navigational aids. In a memorandum of understanding, the Service and the U.S. Coast Guard agreed that the Coast Guard has the right and privilege to operate, maintain, and relocate aids to navigation

on Grassy and Mamajuda islands, including the right of ingress and egress for servicing the aids (See Appendix F). The Coast Guard has been maintaining and replacing navigational aids on the Refuge throughout the years.

Wilderness Review

The Detroit River and Lake Erie shorelines have supported agricultural, industrial and residential uses for more than three centuries. However, as part of the CCP process, we reviewed lands within the legislative boundaries of the Refuge for wilderness suitability. No lands were found suitable for designation as Wilderness as defined in the Wilderness Act of 1964. The Refuge does not contain 5,000 contiguous roadless acres nor does it have any units of sufficient size to make their preservation practicable as Wilderness. In addition, lands to be acquired for the Refuge have been substantially affected by humans.

Chapter 4: Refuge Management

Current Refuge Programs: Where We Are Today

The Detroit River IWR is a new addition to the National Wildlife Refuge System. Producing this CCP is viewed as one of the first steps toward defining the scope of future Refuge work and the fiscal needs of the Refuge. However, the former Wyandotte NWR, which was established in 1961, has been managed by the staff at Shiawassee NWR for many years. The following paragraphs describe recent management activities related to the former Wyandotte NWR.



U.S. Fish & Wildlife Service

Remediation and restoration activities are currently the primary management actions at Grassy Island. Refuge lands are posted with boundary and identification signs. Public use on Grassy Island is prohibited due to contaminant concerns. Visits for scientific and educational purposes are allowed by permit only.

Refuge staff have traditionally visited the former Wyandotte NWR three or four times a year. The purpose of the visits is to be sure the signs are in place, to observe the general conditions on Grassy and Mud islands, to clean up litter and debris, and to aid partners in contamination studies. In fulfilling partnerships responsibilities, the Refuge manager also attends several meetings a year dealing with contaminant cleanup, conservation initiatives, and the American Heritage River Initiative.

The responsibilities of the Shiawassee staff have increased dramatically since the passage of the Detroit River Refuge legislation. In 2002, the acting Refuge manager made nearly weekly visits to the Refuge vicinity for discussions with partners and scoping for the CCP. Other Service programs have been called in to provide assistance with planning and land acquisition efforts. We expect the Service's role and staff commitment will continue to increase as new lands and programs are added to the Refuge.

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, 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 Detroit Remedial Action Plan, a multi-agency and community effort born out of the 1985 Great Lakes Water Quality Agreement, declares the Detroit River region as a bi-national Area of Concern. Please see Chapter 3 for more detail on this effort.

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 than 200 individuals from 21 communities and seven counties participated in the initial Greenway vision planning process.

Canadian Partnerships

The following section was provided by the Environmental Conservation Branch of Environment Canada, located in Burlington, Ontario. Environment Canada is a Canadian federal agency that has volunteered to be involved in development of a shared conservation vision for the Detroit River and actively participate in planning for the international wildlife refuge. This section also provides a glimpse into the ongoing conservation role of several Canadian government agencies and non-governmental organizations.



U.S. Fish & Wildlife Service

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.

- # 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. Subsequent to the workshop, discussions have been held with private and corporate landowners of ecologically significant lands along the Detroit River to promote the goals of the Conservation Vision and to discuss various options that are available to the landowner for future conservation/protection/rehabilitation of their properties.

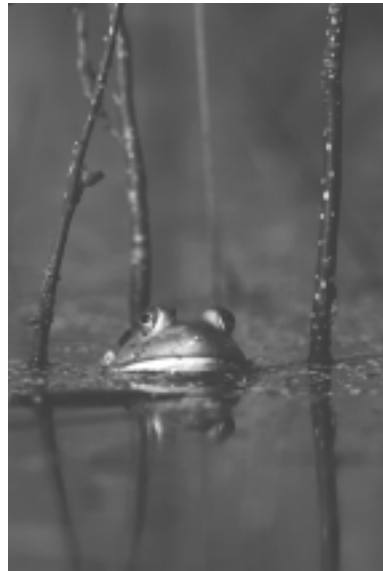
Ongoing discussions are under way with agencies/organizations with similar habitat conservation interests to promote the Refuge/Vision goals and Environment Canada's role in partnering to help establish a network of protected areas in the Detroit River. These include the Ontario Ministry of Natural Resources, Ducks Unlimited, and the Nature Conservancy of Canada to discuss potential habitat-related initiatives; ERCA with major interests in the area for ongoing conservation, acquisition, and habitat rehabilitation projects in Essex County; and the Canada South Land Trust, a newly formed organization promoting conservation and preservation of ecologically significant areas.

Environment Canada staff coordinated a multi-agency meeting to discuss the planning process for the Detroit River IWR so that Canadian agencies and stakeholders could provide input into the planning process for the Refuge. Environment Canada and the Service co-hosted an open house in Windsor to obtain Canadian public input for the Refuge planning process.

Environment Canada supports the concept of an international conservation area in the Detroit River by working closely with other governmental agencies, non-governmental organizations and interested private landowners to further the goals of the Refuge/Vision, while staff continue to work closely with the U.S. Fish and Wildlife Service by providing input to the development of the Refuge's comprehensive conservation plan.

Habitat Restoration and Management

Detroit River: Numerous efforts are under way along the Detroit River to restore and manage natural shorelines, riparian wetlands, and island habitats. Nearly the entire U.S. shoreline, with the exception of the Humbug Marsh, has been engineered with concrete bulkheads or armor rock to halt erosion. This type of armoring provides little or no habitats for aquatic plants, fish or wildlife. Recently, several sites have received treatments using more natural materials for bank stabilization. Examples of this “soft engineering” of shorelines can be found at some Trenton street ends, the Solutia site on the Trenton Channel and on BASF Corporation lands.



Sharon Cummings

Lake Erie Shoreline: The western Lake Erie shoreline is subject to erosion and flooding during periods of high lake water and storm events. Several barrier islands that once protected coastal marshes and beaches have been severely eroded in recent decades. Rock dikes and breakwater structures have been constructed at several communities and marinas. Some large structures have allowed for the restoration of coastal marshes and/or management of water impoundments. A large barrier reef-like structure at Pointe Mouillee has been constructed along the shoreline to recreate the protection afforded by eroded barrier islands. The Pointe Mouillee Confined Disposal Facility is a 3-mile-long structure constructed to contain dredgings from the Detroit River and the Lake Erie Shipping Channel. The lake water barriers created by the disposal facility permit the management of water levels and emergent vegetation on several impoundments of the Pointe Mouillee State Game Area.

Exotic Species Control

Invasive species of current concern within the approved boundary of the Refuge, in order of priority, are common reed (*Phragmites australis/communis*), purple loosestrife (*Lythrum salicaria*), and reed canary grass (*Phalaris canariensis*). Phragmites, purple loosestrife and reed canary grass have invaded wetland, prairie and upland habitats. Several management techniques have been used to reduce encroachment of these non-desirable plant species, including mowing, burning, water level manipulation, plowing, and chemical and biological controls.

Common reed is an aggressive nuisance plant that has infested many areas of southeast Michigan. If this plant goes unchecked it will threaten the biological diversity that was once provided by natural wetlands. An aggressive approach needs to be made to stop further encroachment of this invasive weed. Not only do phragmites shade out native plant species, but the dense rhizomes and shoot litter also prevent more desirable plants from establishing.

One biological control that has been successful against purple loosestrife has been the release of *Galerucella* beetles. Beetles have been released at Pointe Mouillee State Game Area, Celeron Island, Stony Island and Grosse Ile with good results in reducing purple loosestrife. These beetles are natural predators of purple loosestrife in their original habitats of Europe and Asia. In most cases, native species such as cattail, bulrushes, and nut

sedges come through and establish themselves after purple loosestrife stands are eradicated. Continuation and expansion of the beetle program will be important as the Detroit River IWR expands.

Private Lands Partnerships

Partners for Fish and Wildlife is a voluntary program that focuses on restoring and enhancing wetlands, grasslands, stream corridors and instream habitats on private lands to provide wildlife, fisheries, water quality and recreational benefits for private landowners. Through the Partners Program, the Service focuses on improving habitat for federal trust resources: migratory birds, federally-listed endangered or threatened species, and interjurisdictional fish. In Michigan, restoration of wetlands has been, and remains, the primary focus for the Partners Program. The program also includes restoration of grasslands, stream channels, riparian corridors, and specific habitats used by federally-listed endangered or threatened species. Since this program began in Michigan in 1988, more than 1,500 projects have been completed.

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.



U.S. Fish & Wildlife Service

Wetland restorations are generally focused where previous agricultural drainage provides an opportunity to restore hydrology, or put the wet back into altered wetlands. Restorations are designed to re-establish shallow water wetlands, those less than 3 feet deep, containing a mixture of open water and vegetated areas. The program does not create excavated farm ponds and does not alter existing natural, undisturbed wetlands.

Grasslands provide a buffer around wetland areas and nesting cover for some waterfowl and a number of

declining grassland birds, such as Bobolinks. The Partners Program is working with its partners in Michigan to promote the establishment of mixed stands of warm-season grasses and native wild flowers. Grasslands 20 to 40 acres in size and larger help provide adequate cover and food throughout the year for a variety of migratory birds, pheasants, and other wildlife.

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.

Farm Services Administration Conservation Easements: The Service assists the 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. Properties with recorded easements are then sold to the private sector. Easement areas managed by the Service become part of the National Wildlife Refuge System.

Currently 161 conservation easements in Michigan are managed by three national wildlife refuges. The 50 counties of southern Michigan have 133 easements totaling 5,213 acres, of which Ottawa NWR and Shiawassee NWR manage 18 and 115 tracts, respectively. Shiawassee NWR manages the most conservation easements in the Service's eight-state Great Lakes/Big Rivers Region. There are currently 158 landowners on these 115 tracts that need to be contacted annually.

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. At that time, a portion of the current conservation easement responsibilities of Shiawassee and Ottawa NWRs may be transferred to the Detroit River IWR. In addition, the Refuge may become involved in the acquisition and management of Waterfowl Production Areas in southeast Michigan.

Waterfowl Production Areas: Waterfowl Production Areas (WPAs) conserve wetlands and grasslands critical to waterfowl and other wildlife. These public lands, managed by the U.S. Fish and Wildlife Service, are part of the National Wildlife Refuge System. The WPA Program was authorized by Congress in 1958 to safeguard natural wetlands that were rapidly being destroyed by agriculture drainage, housing developments and other commercial land use practices.

In southern Michigan there are currently three WPAs: the 160-acre Schlee WPA in Jackson County, the 77-acre Kinney WPA in Van Buren County, and the 95-acre Schoonover WPA in Lenawee County. All three areas are managed as a mixture of wetlands and grasslands to provide quality nesting and brood-rearing habitat for waterfowl and a variety of migratory songbirds. All of the WPAs are open for public use, including hunting and other wildlife-dependent activities such as wildlife observation, photography, and environmental education.

Currently, the Service and Michigan DNR are proposing to reinstate the 1980 WPA Program and expand the current state Wetland Management District from 14 counties to 48 counties across southern Michigan.

Lake Sturgeon Research

Overfishing and habitat destruction in the early 1900s devastated lake sturgeon (*Acipenser fulvescens*) populations in the Great Lakes. Historically, the Detroit River

supported one of the largest lake sturgeon populations in the Great Lakes; however, little is known about the current population or its habitat use. During 1998-2001, researchers with the Service, the U.S. Geological Survey and Central Michigan University conducted a study to determine if lake sturgeon spawn in the Detroit River. The research was funded by the U.S. Environmental Protection Agency, the Ohio Division of Wildlife, and DTE Energy Co.



USFWS

In each year of the study ultrasonic transmitters were surgically implanted in 10 adult fish to track their movements, evaluate habitat use, and identify possible spawning sites. Using telemetry and egg mats to verify spawning activity, they located and verified one spawning site in the Detroit River. Telemetry data suggested that several other possible spawning sites also may exist, however the researchers were not able to verify spawning activity at these sites.

This study confirmed spawning by lake sturgeon in the Detroit River for the first time in several decades. By locating previously unidentified active spawning sites, fisheries managers can try to conserve these areas. Additionally, there has been recent interest in creating artificial lake sturgeon spawning habitat in the Detroit River and other systems. This study gives further evidence that lake sturgeon will use man-made substrates for spawning, and will provide fisheries managers with additional data to aid in the construction of new artificial spawning sites.

Visitor Services

The Detroit River, islands, and the limited amount of shoreline in public ownership, are used heavily for recreational purposes by local residents and visitors to the region. In the lower river, the amount of public land is limited to a few community parks, such as Elizabeth Park, Grosse Ile Land Conservancy sites, and islands such as Stony and Celeron. The western Lake Erie shoreline includes the Pointe Mouillee and Erie SGAs, Lake Erie MetroPark, and Sterling State Park. The types of recreational uses allowed vary at each site and more information can be obtained from the Michigan DNR and local sources. The following is a description of the public use history of the former Wyandotte NWR.

The demands for recreational use on the former Wyandotte NWR have been high. There have been proposals to install an Olympic Rowing Course (1963) and a city-sponsored (Wyandotte) recreational area (1963-1999) on the Refuge. Due to the contaminant issues on Grassy Island affecting habitat and wildlife, and the potential for contaminants to affect human beings, recreation on the island is considered unsafe. This policy may be revisited in the future if proposed remediation measures are successful and island soils are considered safe.

Until 1973, Wyandotte NWR was closed to boating, fishing and hunting. The original intent for the Refuge was to provide a sanctuary for waterfowl. The sanctuary was to protect the wild celery beds surrounding the islands from propeller damage and provide a resting and feeding area for waterfowl, which otherwise would be moved out of the celery beds through hunting pressure. Service staff would place buoys out to the 6-foot contour line of the Refuge boundary to warn boaters, anglers, and hunters that the area was off limits to recreational use.

In 1973, the Service decided to discontinue the placement of buoys. Maintenance was a leading factor in this decision. The buoys were put out from September to late November, and many were moved by ice and ultimately lost. The cost of replacing buoys and the staff time needed to place them was deemed to be greater than the benefit received. The Service received complaints from waterfowl hunters that the buoys were removed and waterfowl weren't provided the protection that the Refuge was established for, but the Service felt the maintenance of the buoys was too expensive to fund. The Service also felt that because Grassy Island and its shoals were annexed by the City of Wyandotte and the City had an ordinance prohibiting hunting, the no hunting ordinance could be enforced by the City. The

City, however, has not routinely enforced the ordinance. Hunting occurs in the sheltered bay on the west side of the island. Hunting may be causing some disturbance to the wildlife and habitat.

Hunting

Historically, the Detroit River and adjacent Lake Erie marshes were widely renowned as premier waterfowl hunting areas. Waterfowl hunting is still a popular activity on the Lower Detroit River and at some spots along the shoreline of Lake Erie. Hunting success can often be high due to the impressive fall flights of migrating ducks, especially diving ducks. Public hunting areas along the shore are limited to a few locations such as the Pointe Mouillee State Game Area and portions of Lake Erie MetroParks. The most popular type of waterfowl hunting is from boats using numerous decoys to attract diving ducks on the open water. Current state law allows duck and goose hunting along the Detroit River, as long as the hunter is standing in the water, is pointing his or her gun away from the shoreline and is at least 450 feet from an occupied building.

Upland game hunting within the authorized Refuge boundary is limited by local ordinances and the amount of undeveloped lands and public hunting areas. The Refuge portion in southern Monroe County contains the most private croplands, open fields and woodlots where hunting for deer, wild turkeys, rabbits and other upland game is possible.

Fishing

The lower Detroit River and western Lake Erie support important sport fisheries. Based on creel survey data for the Detroit River during April through November of 1983 and 1984, boat anglers averaged 681,602 hours and shore anglers averaged another 714,957 hours. Boat anglers harvested an average of 915,149 fish annually and shore anglers averaged 502,690 fish annually during 1983 and 1984 (Haas et al. 1985). White bass was the most abundant fish harvested, followed by walleye, yellow perch, rockbass, white perch, and freshwater drum. Within the Detroit River IWR, approximately 73 percent of the boat effort, 36 percent of the shore effort, and 70 percent of the total catch, came from the lower half of the Detroit River.

A more recent creel survey in 2000 focused on the spring walleye fishery. From mid-May to mid-June, boat anglers fishing in Michigan waters of the Detroit River fished an estimated 344,741 angler hours and harvested 97,292 walleye, with almost 80 percent of the angler effort and walleye harvest taking place in waters within the Refuge boundary.

A creel survey was most recently conducted on the Detroit River from March to October 2002 and results again documented the importance of the sport fishery. Anglers fished 874,186 angler hours and harvested 434,313 fish. White bass accounted for one-half of the fish harvested and walleye just over one-third of the harvest, followed by yellow perch, rock bass, smallmouth bass, and largemouth bass. The majority of the fishery was in the lower river (within the Refuge boundary).

Although the creel surveys document the large size of the fishery on the Detroit River, the estimates of angler effort and harvest for all three survey periods is considered conservative. There is an established night fishery on the Detroit River that is not represented in the creel survey data. Additionally, the two more recent surveys did not attempt to evaluate the shore fishery, which accounted for one-half of the total fishing effort in the 1983-84 survey. Finally, these surveys did not attempt to evaluate anglers that launched from Michigan ports, but fished the Canadian side of the Detroit River.

The sport fishery in Michigan waters of Lake Erie is also a very important fishery. Anglers fished 490,807 angler hours from April through October 2001 and harvested 378,700 fish. In order of abundance, the catch included yellow perch, walleye, white bass, channel catfish, white perch, freshwater drum, smallmouth bass, largemouth bass, northern pike, rockbass, and bluegill. In addition to sport fishing, there is an established charter boat fishery on both the Detroit River and Lake Erie where captains take anglers on fishing trips for hire. In 2001, over 10,000 anglers fished Michigan waters of Lake Erie on charter boats, harvesting 44,324 walleye and 29,483 yellow perch.

The magnitude of the sport fishery on the lower Detroit River and western Lake Erie is large. Based on creel survey results, the shore angling and boat angling effort in the Detroit River IWR waters accounts for 15 percent annually of all recreational fishing effort in Michigan's Great Lakes waters.

Another form of fishing in the authorized Refuge boundary is tournament fishing. Due to the great sport fish populations of popular gamefish like smallmouth bass and walleye, coupled with the increased frequency of fishing tournaments, the lower Detroit River and western Lake Erie are becoming popular tournament locations. In recent years, two national walleye tournament tours have occurred on the Detroit River, as well as many local and regional walleye and bass tournaments.

There is one active commercial fisherman (two licensed) operating in the shoals and waters of Grassy Island. Catch is composed primarily of carp (75,000 pounds in 2001).

Law Enforcement

In order to effectively safeguard the biological and cultural integrity of Refuge resources, the safety of visitors, and the health and safety of the Refuge staff, the enforcement of federal and state laws are an essential part of Refuge operation.

The Refuge currently does not have any staff conducting law enforcement duties on Refuge properties. Law enforcement support has come from Shiawassee NWR, which has one full-time and one dual-function officer, and Service special agents. Support has been limited to two law enforcement visits to the Refuge during the waterfowl hunting season and occasional visits throughout the remainder of the year. When Refuge staffing is funded, the Refuge will be seeking one full-time officer and the associated equipment to build a capable law enforcement program. A cooperative relationship with state conservation officers, county sheriff departments, Michigan State Police, U.S. Coast Guard, and U.S. Border Patrol is actively being constructed by the Shiawassee NWR law enforcement program.

The Service is currently seeking concurrent legislative jurisdiction from the State of Michigan for lands and water administered by the Service within the State of Michigan. The reservation by the United States of concurrent jurisdiction will assist in the enforcement of state criminal laws by the United States under the Assimilative Crimes Act, 18 U.S.C. § 13. Public activities on the Refuge will be governed according to Title 50, Code of Federal Regulations, Subchapter C, The National Wildlife Refuge System, and Refuge Public Use Regulations, 2003. The Refuge Public Use Regulations, 2003, were adopted to supplement Title 50 CFR in reference to public use on the Refuge. The regulations follow:

Boating

Grassy Island is closed to boating. Overnight mooring of watercraft is prohibited at all areas of the Refuge. Boats left unattended or moored in violation will be impounded at the owner's expense.

<i>Camping</i>	All areas of the Refuge are closed to camping, except by special use permit.
<i>Collecting</i>	All plants, animals, minerals, and objects of antiquity are protected. Disturbance or collection is prohibited, except by special use permit.
<i>Firearms</i>	Carrying, possessing, or discharging firearms or any other weapons on the Refuge is prohibited, except by licensed hunters engaged in authorized activities during established seasons, in accordance with federal, state, and local regulations.
<i>Fires</i>	Fires are not allowed on the Refuge at any time.
<i>Fireworks</i>	Possession or use of fireworks or explosives is not allowed on the Refuge.
<i>Fishing</i>	Fishing is allowed on designated areas of the Refuge in accordance with federal and state regulations. Bank fishing is not allowed at Grassy Island, however the surrounding area can be used for off-shore fishing only.
<i>Group Events</i>	A Refuge permit is required to hold public meetings, assemblies, demonstrations, parties, organized group events, and other public gatherings, whether or not an entrance fee is charged.
<i>Hunting</i>	Waterfowl hunting is allowed on designated areas of the Refuge in accordance with federal and state regulations. Only portable blinds that are removed on a daily basis are allowed.
<i>Pets</i>	Pets are prohibited on Refuge lands.
<i>Vehicles</i>	All off-road vehicles are prohibited, including snowmobiles and wheeled or tracked all-terrain vehicles, on or across Refuge lands at anytime, except on designated routes of travel, or on the ice over navigable waters accessed from outside the Refuge. Vehicles may not obstruct or impede any road, trail, fire lane, boat ramp, access gate, or other facilities. Parking in a manner to create a safety hazard, or endanger any person, property, or environmental feature is prohibited. Vehicles left parked in violation may be impounded at the owner's expense.
<i>Spotlighting</i>	Spotlighting wildlife is prohibited on the Refuge.

Future Management Direction: Where We Want To Go Tomorrow



U.S. Fish & Wildlife Service

The Service and our partners recognize that we 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. Can we make a significant difference in this ecosystem? Will our efforts be worthwhile? We think the answer is

“yes” to these questions. At a minimum, we need to work together with partners to conserve the last remnants of coastal wetlands and undeveloped islands. But beyond the minimum, we expect to restructure areas to benefit wildlife and the aquatic environment. We do not yet have a plan for remediating and restoring Grassy Island. The Service will review the type and extent of contaminants present on Grassy Island, which will dictate our eventual response. A range of remediation/restoration alternatives will be examined to determine what will best meet short- and long-term goals in a cost-effective manner. However, the final remediation/restoration plan will be protective of human health and the environment.

Perhaps someday Grassy Island will be safe for wildlife-dependent public use such as hunting, fishing, wildlife observation, photography, interpretation, and environmental education.

For existing Refuge lands and waters, and lands that could be added in the coming years, we intend to learn about the waterfowl use of the area. We know that the Lower Detroit River is important for waterfowl, but we do not know 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 us to judge how to allocate our money and time among the lands that we manage.

We think 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. We intend to amend the Refuge regulations to permit fishing from boats in the Detroit River near existing Refuge islands.

We intend to participate as partners in efforts to monitor and restore the lake sturgeon spawning area within the Refuge. Our intent 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, we will 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, we will assess and conserve the important lands in the Detroit River corridor and Western Lake Erie Basin.

Climate Change Impacts

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies under its direction that have land management responsibilities to consider potential climate change impacts as part of long-range planning endeavors.

In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's "Carbon Sequestration Research and Development" (U.S. DOE, 1999) defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts – grasslands, forests, wetlands, tundra, perpetual ice and desert – are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric carbon monoxide. The Department of Energy report's conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.



U.S. Fish & Wildlife Service

Preserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this comprehensive conservation plan would conserve or restore land and water, and would thus enhance carbon sequestration. This in turn contributes positively to efforts to mitigate human-induced global climate changes.

Refuge Goals, Objectives and Strategies

Introduction

This section contains the primary strategies that will define the management direction for the Refuge for the next 15 years. This direction is based on the Refuge System mission, the National Wildlife Refuge System Improvement Act of 1997, the purposes for which the Refuge was established, goals defined for the Great Lakes/Big Rivers Region, as well as agency policies and directives. The purposes for the Detroit River IWR and other directives were presented in Chapter 1.

The goals that follow are general statements of what we want to accomplish in the next 15 years. The objectives are specific statements of what will be accomplished to help achieve a goal. Objectives describe who, what, when, where and why of proposed accomplishments. Objectives are designed to be specific, measurable and time-fixed. Strategies listed under each objective specify the activities that will be pursued to realize an objective. The strategies may be refined or amended as specific tasks are completed or new research and information come to light.

A Vision for the Refuge

“The Detroit River International Wildlife Refuge, including the Detroit River and Western Lake Erie Basin, will be a conservation region where a clean environment fosters the health and diversity of wildlife, fish, and plant resources through protection, creation of new habitats, management, and restoration of natural communities and habitats on public and private lands. Through effective management and partnering, the Refuge will provide outstanding opportunities for quality of life benefits such as hunting, fishing, wildlife observation and environmental education, as well as ecological, economic, and cultural benefits, for present and future generations.”

In the numbering scheme that follows, the first number represents the number of the goal. The second number represents an objective within that goal. The third number represents a strategy within an objective. Thus, 3.2.1 represents the first strategy for the second objective within the third goal. This numbering scheme is used to index Refuge Operating Needs Projects in Appendix C and personnel needs in Chapter 5.

Goal 1. Partnerships

Establish functional partnerships involving communities, industries, governments, citizens, non-profit organizations and others to manage and promote the Refuge consistent with the plan's vision statement and the Act that created the Refuge. Provide an institutional framework to develop effective private or public partnerships for the purpose of sustainability.

1.1 Objective: Annually, for a period of 5 years, identify and contact 20 potential partners to offer direct participation in Refuge programs. Partners will include local area schools, conservation and business organizations, and local governments.

1.2 Objective: Participate in a working group, representing all partners, to coordinate, advise and integrate all environmental project proposals within the authorized boundary of the Refuge.

Strategies:

1.2.1 Task groups will be designated by the main working group. Task groups will include NGOs, business leaders, resource users, and recreational users.

1.2.2 In 1 year, task groups will formulate their strategies and recommendations for habitat conservation and other programs¹.

1.3 Objective: Develop a Friends of Detroit River IWR group and establish a volunteer program within the first year a permanent Refuge manager is hired.

Strategies:

1.3.1 Volunteers will assist in environmental education and outreach.

1. Working group recommendations are subject to Compatibility Determination by Refuge Manager.

Discussion: Volunteer Contributions: At the present time, there is no official volunteer program for the Refuge. Several local organizations have stepped up to help with various activities associated with starting the new Refuge, including the Detroit Audubon Society providing bird data to interim Refuge biologists.

There is a great potential for an active pool of volunteers once a dedicated staff person, especially a public use specialist, is assigned to the Refuge. The goal of any Refuge volunteer program is to have staff and volunteers working side-by-side in the most efficient manner to accomplish the goals and objectives of the Refuge. Volunteers may be called upon to help with all aspects of the Refuge's public use program including assisting with the environmental education and interpretation programs for both children and adults. With easy access to the river and its fishery, skilled volunteers may help with children's fishing clinics and fishing contests. An educational waterfowl hunting program for children could also enlist the help of volunteers trained in the identification of waterfowl, the safe use of firearms and hunting ethics. Volunteer bird and wildlife experts could lead guided wildlife hikes or cruises to help visitors identify and appreciate the local wildlife within the Refuge. Volunteer workers are not limited to just the public use arena. They may also help with habitat management activities, controlling exotic species, wildlife surveys and more.

Goal 2. Wildlife-dependent Uses

The Refuge will facilitate and promote hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation as wildlife-dependent uses.

2.1 Objective: Provide waterfowl hunting opportunities on Refuge lands and waters, subject to state and local regulations and public safety concerns, that meet the definition of quality in the FWS Manual.

Strategy:

2.1.1 Issue a compatibility determination on whether to open waters surrounding Grassy Island for waterfowl hunting within 2 years of plan approval.

Discussion: Quality Hunt Definition, FWS Manual Part 605 FW 2.6:

B. Quality hunting experience. A quality hunting experience is one that:

- (1) Maximizes safety for hunters and other visitors;
- (2) Encourages the highest standards of ethical behavior in taking or attempting to take wildlife;
- (3) Is available to a broad spectrum of the hunting public;
- (4) Contributes positively to or has no adverse effect on population management of resident or migratory species;
- (5) Reflects positively on the individual refuge, the System, and the Service;
- (6) Provides hunters uncrowded conditions by minimizing conflicts and competition among hunters;

- (7) Provides reasonable challenges and opportunities for taking targeted species under the described harvest objective established by the hunting program. It also minimizes the reliance on motorized vehicles and technology designed to increase the advantage of the hunter over wildlife;
- (8) Minimizes habitat impacts;
- (9) Creates minimal conflict with other priority wildlife-dependent recreational uses or Refuge operations; and
- (10) Incorporates a message of stewardship and conservation in hunting opportunities.

2.2 Objective: Allow fishing and hunting to the maximum extent, except where contaminant exposure, safety or sensitive species needs prohibit such uses.

Strategies:

2.2.1 Develop a leaflet identifying access locations for public hunting and fishing areas in the authorized Refuge boundary.

2.2.2 Adequately post boundaries of Refuge-owned lands.

2.3 Objective: Annually, provide on-site environmental education and interpretation programs for 1,000 participants to increase the community's understanding and appreciation of the Refuge.

Strategies:

2.3.1 The annual visitation target will be reviewed and likely increased as partnerships and Refuge staffing grows.

2.3.2 Assist Wayne County in development of an administrative/visitor facility at the former Daimler/Chrysler site in Trenton.

Discussion: Visitor Center and Public Use Facilities

The Detroit River IWR is unique within the National Wildlife Refuge System in that a majority of the land base within its boundaries will not be owned by the FWS. Rather private industry, local and state governments, and private individuals own most of the land. This creates a need to form partnerships with these other organizations to incorporate their existing public use facilities to help further the mission of the Refuge. Through this approach a network of shared facilities can line both sides of the Detroit River.

The former Daimler/Chrysler tract, now owned by Wayne County, is the proposed site of a future headquarters and visitor center. Wayne County, or another appropriate agency, would own the structures and lease space to a number of organizations, including the Service. The facilities would incorporate a "green" or environment-friendly design that reflects the character of the River. The visitor center could include space for:

- # Two teaching classrooms, each capable of holding an average class size of 30 students, including areas for wet labs for studying river life.
- # A theater with state-of-the art audio/visual equipment and lighting capable of seating 150 people.

- # User-friendly, interactive displays for both adults and children featuring various topics, including the history, ecology and other resources of the River.
- # Restroom facilities.
- # A centrally located contact point where visitors can speak to a staff person to get more information.
- # Adequate retail space for a bookstore.
- # Plenty of storage space for storing environmental education equipment, interpretation materials, chairs and tables.

Other public use facilities could include trails and boardwalks accessible to disabled users, interpretive signage, observation decks with spotting scopes, wildlife viewing blinds, photography blinds, fishing platforms, outdoor vault toilets along the trails, benches, and an outdoor classroom pavilion.

2.4 Objective: Annually, provide on-site wildlife observation and photography opportunities for 1,000 visitors to increase public appreciation for the ecological value of the Detroit River and Lake Erie.

Strategy:

2.4.1 Provide trails, observation platforms, and photography blinds of the new visitor facility.



Sharon Cummings

Goal 3. Public Environmental Awareness

Visitors and local citizens demonstrate a strong conservation ethic that supports the Refuge and broad-based environmental awareness.

3.1 Objective: Within 2 years of CCP approval, develop and implement an outreach program focusing on the Refuge and its role in the Great Lakes ecosystem that will reach 50 percent of the residents of southeast Michigan.

Strategies:

- 3.1.1 Develop a general brochure on the Refuge.
- 3.1.2 Include outreach to Essex County, Ontario, residents through appropriate Canadian partner organizations.
- 3.1.3 Host an annual "Refuge Days" street fair involving all downriver communities.
- 3.1.4 Print quarterly newsletter, use videos and local cable TV programs.
- 3.1.5 Develop school curriculum focused on the Refuge (include same in MEAP test), mail leaflets to educators and school systems.

- 3.16 Frequently post upcoming education opportunities on the Refuge website.
- 3.1.7 Conduct workshops for local teachers, realtors, townships, and county or city planning commissions.
- 3.1.8 Publish a birding trail map-highlighting key viewing areas within the Refuge.
- 3.1.9 Develop fishery displays including aquaria with native species to highlight the “underwater resources” of the Refuge.
- 3.1.10 Develop photo blinds in various locations and encourage photo or video submissions to local media to promote the Refuge.

3.2 Objective: Within 5 years of plan approval, 50 percent of visitors will be able to explain a key environmental theme for the Refuge. Topics may include wetland ecology, human impact on the landscape, migratory bird corridors, habitat restoration, etc.

Strategy:

- 3.2.1 Maintain interpretive displays and programs at the visitor center.
- 3.2.2 Measure success through periodic exit surveys.

3.3 Objective: Within 5 years of plan approval, 50 percent of neighboring communities and businesses will express support for the Refuge through active promotion of Refuge facilities and events.

Strategies:

- 3.3.1 Develop methods for the public to show support (street banners, posters, window decals, etc.).
- 3.3.2 Working group to develop measures to judge which businesses or organizations should be publicly recognized.

Goal 4. Watershed Development:

Future development that occurs within surrounding watersheds that may impact the Refuge is well planned, environmentally sustainable, and reflects known Best Management Practices.

4.1 Objective: Within 1 year of plan approval, make the local, state, and federal regulatory (permitting) agencies aware of the Refuge vision and goals.

Strategy:

- 4.1.1 Distribute Refuge brochures to regional and state headquarters of each agency.

4.2 Objective: Within 1 year of plan approval, Refuge staff and partners are representing Refuge interests as participants in the Southeast Michigan Council of Governments (SEMCOG) and other regional planning boards.

- 4.3 Objective:** By 2010, a formalized clearinghouse will be in place to provide streamlined review of all development proposed within the approved boundary. Service staff and the working group will recommend a process for this group².

Goal 5. Refuge Outreach

People living or working within the Refuge watersheds will understand and appreciate the importance and ecological value of the Detroit River and Western Lake Erie, and their contributing watersheds, to fish and wildlife and to human quality of life.

- 5.1 Objective:** Within 2 years of plan approval, all plan/planning commissions, township boards, city governments, and major landowners, will have been informed as to the importance of the Refuge and its associated waterway connectors as a migratory bird corridor and the importance of fish habitat to the Detroit River watershed.

Strategy:

- 5.1.1** At least one interpretive display, developed through partnership efforts, will be placed in a public place of each neighboring township or city showcasing goals/objectives/vision of the Refuge.

- 5.2 Objective:** By 2008, 50 percent of local real estate agents and corporate relocation departments will include information about the Refuge in material promoting the area.

Strategy:

- 5.2.1** Distribute brochures and/or e-mail information to each agency.

Goal 6. Heritage Values:

The hunting and fishing heritage, cultural resources and cultural history of the Refuge are valued and preserved, and connect Refuge staff, visitors, and the community to the area's past.

- 6.1 Objective:** Within 2 years after construction of the proposed visitor facility, 50 percent of visitors will be aware of key heritage values of the area (i.e., river transportation, hunting and fishing).

Strategies:

- 6.1.1** Refuge visitor center displays, promotional, and educational materials incorporate a section on heritage values.
- 6.1.2** Ensure staff and volunteer training highlights these values.
- 6.1.3** Link heritage information to other educational information available in the area.

- 6.2 Objective:** Archeological and cultural values will be described, identified, and taken into consideration by a trained cultural resource professional prior to implementing all undertakings on the Refuge.

² The clearinghouse could be a group within SEMCOG that will review for representative agency and Refuge interests. Review will assure Best Management Practices and environmental sustainability.

Strategies:

- 6.2.1 Notify the Regional Historic Preservation Officer early in project planning or upon receipt of a request for permitted activities. The intent of this statement is to cover Section 106 of the National Historic Preservation Act and Section 7(e)(2) of the National Wildlife Refuge Improvement Act.
- 6.2.2 Develop a step-down plan for surveying lands to identify archeological resources and for developing a preservation program. The intent of this statement is to meet the requirements of Section 14 of the Archaeological Resources Protection Act and Section 110(a)(2) of the National Historic Preservation Act.

Goal 7. Healthy Fish & Wildlife Communities:

Fish and wildlife communities are healthy, diverse and self-sustaining.

- 7.1 Objective:** By 2015, protect 40 percent of remaining coastal wetland and island habitat on public and private lands through fee, easements, and cooperative agreements.

Strategy:

- 7.1.1 The Humbug Marsh Complex, Hennepin Marsh Ecosystem, and the islands within the “Conservation Crescent” will receive a high priority for permanent conservation measures.

Discussion:

Conserving the remaining sensitive wildlife habitats of the Detroit River ecosystem is a high priority for many regional conservation groups and river area residents. The Refuge, working in partnership with many, will seek to secure funding to conserve these areas through fee acquisition, easements, or other permanent measures. Land values are high for waterfront property in this densely populated region and may prove a challenge for future fundraising efforts. In addition, environmental contamination and future liability may preclude the Service's ability to acquire land interests.

Appendix K of this CCP, Habitat Conservation Options, contains a discussion of the variety of options currently available for conserving remnant fish and wildlife habitats. Figure 9 and Figure 10 present the highest priority shoreline and island properties in need of conservation and/or future inclusion in the Refuge. The Service's highest priority lands for conservation and/or restoration, and inclusion in the Refuge land inventory, are identified as Priority 1 (9,300 acres). These include the largest remaining wetlands in private ownership on the U.S. side of the river and select coastal and island properties. These are parcels where the Service could purchase fee title or conservation easements if funds, and willing sellers, are available. Lands that could be restored and managed under private ownership through cooperative agreements or partnerships are the second highest priority, or Priority 2 (2,700 acres).

- 7.2 Objective:** Establish partnerships to identify and monitor populations of federally listed and state-listed endangered and threatened species within the approved Refuge boundary and work to prevent the listing of additional species.

Figure 9: Conservation Priority Lands Within the Lower Detroit River, Michigan

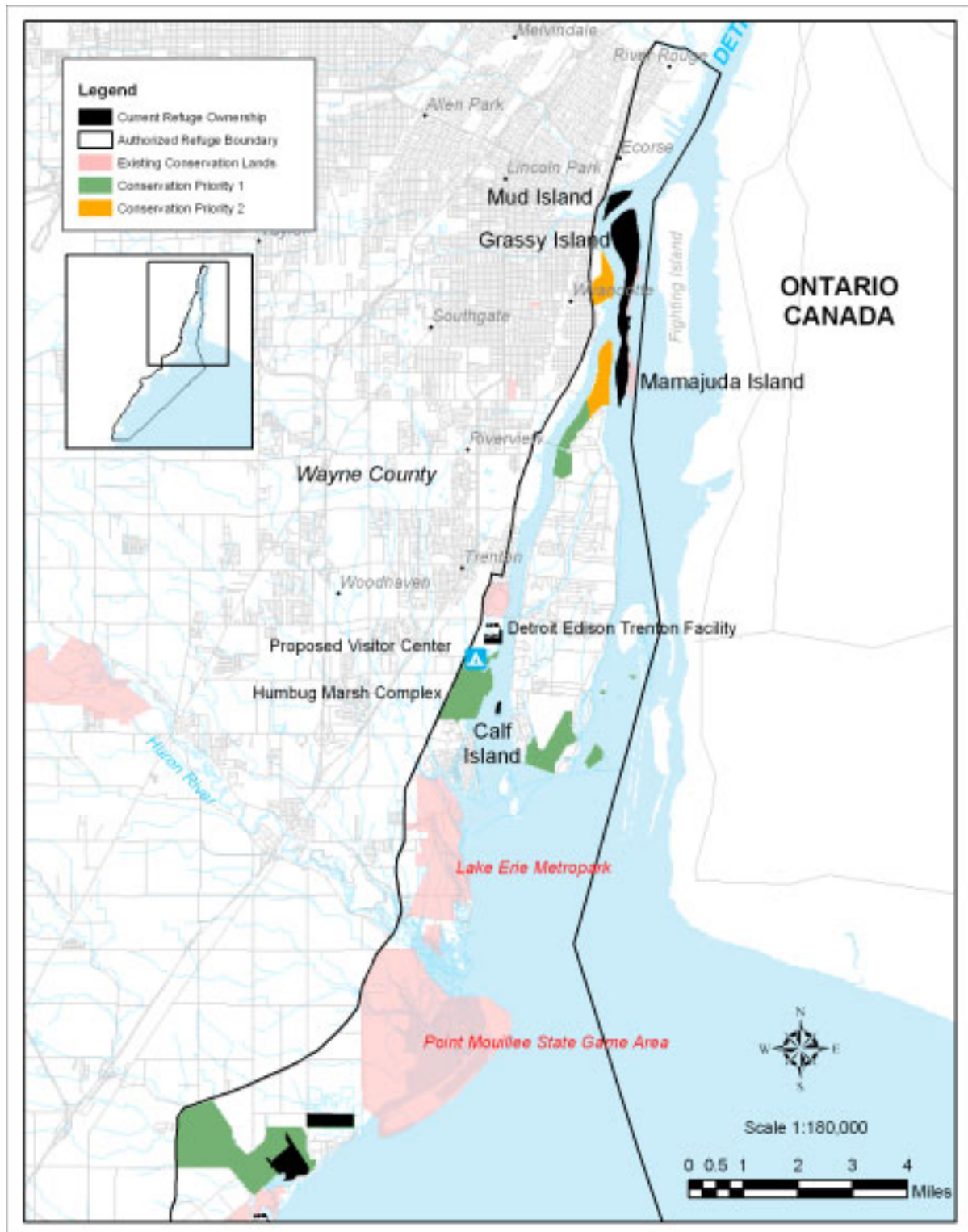
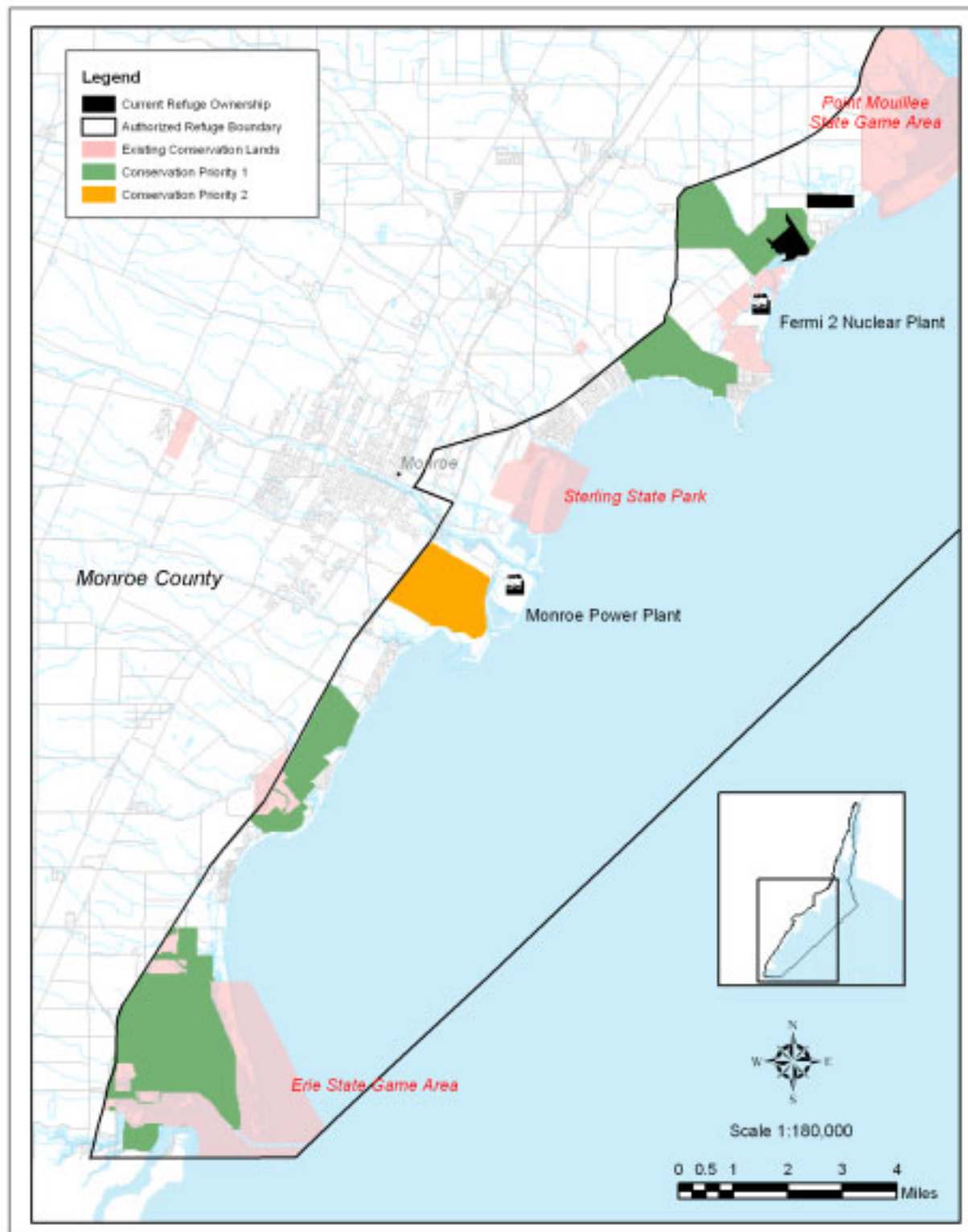


Figure 10: Conservation Priority Lands Along the Western Lake Erie Shoreline



Strategy:

- 7.2.1 Conduct standard surveys of wildlife use and habitat diversity of the lower Detroit River and Lake Erie shoreline to obtain accurate documentation of flora and fauna in the area of the Refuge.

7.3 Objective: By 2007, quantify the importance of habitats within the Refuge authorized boundary to migratory waterfowl with an emphasis on Regional Resource Conservation Priority Species such as Canvasback, Black Duck, Mallard and Blue-winged Teal.

Discussion:

Waterfowl use of the Refuge is certainly influenced by the availability of food and human disturbance levels. We intend to measure how much food is available to waterfowl and whether the most critical habitats are subject to disturbance by hunters, boaters and other recreational users. Measurement of waterfowl use and food will allow us to determine the relative importance of Refuge and wetland habitats to waterfowl in the context of the Lower Detroit River and Western Lake Erie Basin.

Strategies:

- 7.3.1 In cooperation with Michigan DNR and using volunteers, conduct weekly waterfowl counts from mid-November through March for at least 3 years.
- 7.3.2 Request that special note be made of Service-owned parcels during the State's waterfowl count.
- 7.3.3 If technically feasible, install an observation camera linked to a recorder and the Internet to regularly observe duck numbers and disturbance.
- 7.3.4 In partnership with universities and other governmental agencies, annually measure the abundance of wild celery and zebra mussels within the Refuge during the years of the waterfowl counts.
- 7.3.5 Distribute information about the prohibition of hunting in sanctuary areas in press releases, notices at launch facilities, and flyers at sporting goods stores.

7.4 Objective: Participate in the restoration of lake sturgeon spawning beds and riparian and shallow wetland habitats to benefit fish in the Detroit River and Lake Erie within 3 years of acquiring a permanent staff for the Refuge.

Discussion:

We expect the Service's Fishery Resources Office to take the lead within this objective. Our role will be to support and facilitate their activities. In order to provide support, we plan to devote a portion of the time of a part-time biological technician with fisheries experience to duties at the Refuge. The biological technician may also have duties at other Michigan and Ohio national wildlife refuges.

Strategy:

7.4.1 Hire a biological technician with fisheries experience to work part-time.

7.5 Objective: Working with others, identify and prioritize additional areas best suited for restoration through partnership efforts (e.g. coastal wetlands, lakeplain prairies, forested wetlands, oak openings, and riparian buffers).

Strategies:

7.5.1 Review and consider linkage to remaining open space areas (Manny, USGS map).

7.5.2 Conduct Geographic Area Program (GAP) or similar analysis.

7.5.3 Restore native plant species identified as appropriate for the Refuge. Develop a native seed inventory and sources.

7.6 Objective: Work cooperatively with all local governmental jurisdictions to advocate zoning and comprehensive land use planning that promotes no net loss and protection of existing habitat (see Figures 9 and 10).

Strategy:

7.6.1 Refuge staff will attend scheduled planning and zoning meetings that have agenda items of concern to Refuge resources.

Goal 8. Reduced Toxic Substances

Reduce levels of toxic substances to a threshold that does not threaten or harm or adversely affect wildlife, fish or human health.

8.1 Objective: Within 1 year of plan approval, establish partnerships with state, federal, local agencies, nonprofits and industrial partners to facilitate solutions to contamination sources and liability issues based on intended future restoration and use.

Strategy:

8.1.1 Future Refuge staff and Service contaminant specialists would select participants and coordinate with them.

8.2 Objective: Within 2 years of identifying land parcels in priority order, and with the landowner's permission, complete a Level I environmental contaminants review on priority parcels.

Strategy:

8.2.1 Liability issues will be decided based upon DEQ/EPA criteria to protect human health and the environment for the intended future use.

8.2.2 Future value to natural resources and restoration potential of parcels may be developed by evaluating ecological risks and benefits as well as estimating restoration costs.

8.3 Objective: Provide a clean, safe habitat for wildlife and people within EPA standards on Grassy Island by 2009.

Strategy:

8.3.1 Conduct a Remedial Investigation and Feasibility Study for a remediation/restoration plan through contract, cooperative agreement, or similar device with plan completion by 2007.

8.3.2 Ensure that the remediation/restoration plan includes (1) a detailed landscape plan that will specify desirable habitats and (2) a public use plan that will specify how public use, if feasible, will be facilitated.

Discussion: As the technical details of remediation, restoration, and public use are closely interdependent, it is not realistic at this time to specify what habitats are possible and what species these habitats will benefit. The remediation/restoration plan will necessarily be developed through an extensive design and evaluation cycle. Ideally, the island habitat will be designed to benefit species on the Region 3 Resource Conservation Priority list.

8.3.3 Coordinate with EPA and State of Michigan on the remediation and restoration of Grassy Island and immediately surrounding area and also conservation of existing habitat.

8.4 Objective: Within 6 months of plan approval; identify mechanisms for addressing contaminant issues that may apply to less-than-fee ownership situations (easements, leases, coop. agreements).

8.5 Objective: Monitor air quality within the Refuge directly, or through partnership effort, and present data to responsible entities.

Goal 9. Sustainable Economic Development

Economic development and redevelopment is environmentally sustainable, well planned, and aesthetically pleasing.

9.1 Objective: Within 3 years of plan approval; encourage work with landowners, the business community and all local governments within the Refuge boundaries to implement a voluntary certification for developments that are environmentally sustainable, well planned and aesthetically pleasing.

Strategies:

9.1.1 Look at other organizations' certification processes, e.g. Wildlife Habitat Council and National Wildlife Federation.

9.1.2 Within 1 year of developing the certification, meet with landowners, business and industry to inform them of the certification and encourage their participation and application.

Goal 10. Beneficial Water Uses:

Restore beneficial uses of water resources in the Refuge.

10.1 Objective: By 2010, the Detroit River is removed from listing as an Area of Concern under the International Joint Commission's Great Lakes Water Quality Agreement Protocol.

Strategy:

10.1.1 The Refuge will be an active partner in the Detroit River Remedial Action Plan and Lake Erie Lakewide Area Management Plan.

Goal 11. Conflicting Use Resolution:

Lands and waters within the Refuge are responsibly managed to resolve potentially conflicting uses.

11.1 Objective: Within 5 years of plan approval, establish a Refuge program for environmental education and interpretation that emphasizes the need for compatible uses on Refuge lands and waters.

Strategy:

11.1.1 Message will emphasize how to reduce disturbance of resting and feeding migratory waterfowl, waterbirds that nest in colonies, and other species that can be sensitive to human activity.

Discussion: Management of national wildlife refuges requires a delicate balance among the various partners who use the Refuge. The mission of the National Wildlife Refuge System is to conserve, manage, and, when appropriate, restore the fish, wildlife, and plant resources and their habitats. Recreational uses that are wildlife-dependent and compatible with the refuge purpose are considered an appropriate way of enhancing appreciation for fish and wildlife. However, what constitutes compatible human activity is not always clear, and people's expectations of refuge activities vary considerably. Industry along the Detroit River is a vital part of the nation's economy, however in some cases there is a potential for adverse effects such as contaminant spills, illegal discharges, air, water and noise pollution, as well as habitat loss. Current levels of toxic substances in the soil and water must be reduced to a level that is no longer a threat to wildlife, fish, or humans. Other examples of conflicts include river bottom dredging and habitat destruction/wildlife displacement, landfill operations in proximity to wetlands, and power boating in critical habitat areas such as submergent wild celery (*Valisneria*) beds.

The legal jurisdiction of the Detroit River IWR is limited to lands in which the Service owns a real estate interest. Most of the existing and potential conflicting uses occur on lands and waters governed by local and state regulations. However, the Refuge staff will work with other government agencies to resolve conflicting uses that may harm fish, wildlife and plant resources.

The Refuge will seek to facilitate and promote hunting, fishing, wildlife observation, wildlife photography, environmental education, and environmental interpretation. At the same time, the Refuge will be involved with future development within the Refuge's watersheds to ensure that it is well-planned, environmentally sustainable, and aesthetically pleasing.

Chapter 5: Plan Implementation

Future Staffing Requirements

The Detroit River IWR currently has one employee, the Refuge Manager. The staff of the Shiawassee NWR provided management support for the former Wyandotte NWR since shortly after Refuge establishment in 1961. Since passage of the Detroit River legislation, managers from Shiawassee NWR and the Ottawa NWR in northern Ohio have served as acting Refuge managers. The staffs of Shiawassee and Ottawa national wildlife refuges consist of about 10 positions each: Refuge manager, Refuge operations specialists, an administrative technician, a wildlife biologist, a biological science technician, park rangers, and maintenance workers.

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. The budget proposal includes hiring five essential staff members, leasing office space, and purchasing vehicles and small boats. This request must compete with other national budget priorities and start-up funding is not assured in any given year. The following chart depicts a potential Refuge staff that could be in place by the expiration of this plan in 2018. This organization chart is similar to that of other national wildlife refuges in the Midwest.



U.S. Fish & Wildlife Service

Figure 11: Detroit River International Wildlife Refuge Organizational Chart, 2018



Funding

Funding for operations on the Detroit River IWR, or the former Wyandotte NWR, has not been specifically identified in past budgets. Rather, the operation and maintenance support has been drawn from the budget of Shiawassee NWR.

In 2002, the acting Refuge manager detailed from Shiawassee NWR worked nearly full-time on issues related to the Detroit River while retaining some responsibilities at his primary station. The Service hired a Refuge manager for the Detroit River IWR in 2004.

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.

Refuge Operating Needs

The following paragraphs provide a brief description of some priority Refuge projects identified for possible funding in the Service's Refuge Operating Needs System.

Conduct Biological Survey of Wildlife and Fish Use and Habitat Diversity: Standard surveys of fish and wildlife use and habitat diversity of the lower Detroit River area are needed to obtain accurate documentation of flora and fauna in the area of the Refuge. Documentation based on various surveys will assist in habitat improvement planning to enhance wildlife use and diversity. This documentation will also be incorporated into various outreach materials to provide environmental education to the public. Surveys will be coordinated with Michigan DNR personnel, U.S. Geological Survey biologists, Service fisheries biologists, and local environmental organizations.



U.S. Fish & Wildlife Service

Establish Partnerships with Canada, other Agencies, Governments, and NGOs: 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. Interaction with these parties will be required to share information, resolve problems,

develop cooperative efforts, and manage species and habitats. Coordination will involve research activities, routine surveys, and public outreach and education. These efforts will require attendance at various meetings and conferences both in the U.S. and Canada.

Develop Interpretive Displays, Kiosks, and Brochures: The newly established Refuge will provide outreach to the public through the use of interpretive kiosks, Refuge brochures, and displays for use at events, in schools, at conferences, etc. The information will focus on the Refuge, the lower Detroit River ecosystem, partnerships, recreational opportunities, and area history. The brochures will include a map of the lower Detroit River showing islands, marshes, and shorelines on the Canadian shore as well as the U.S. portions of the Refuge.

Install Entrance Signs and Post Boundary Signs: Place boundary signs on islands and shorelines of lands within the Refuge. Entrance signs will be placed at access points to Refuge lands, such as at boat landings and parking lots that access the Refuge or nearby parks. In partnership with Canada, standardized signs should be developed for use throughout the Refuge area, including Canadian and U.S. shorelines. Signs should have a designation to indicate Canadian or U.S. portions of the Refuge. These signs will increase public awareness of the Refuge and National Wildlife Refuge System, and generate support for conservation of the habitats of the Refuge.

Partnership Opportunities

Successful partnerships will be the key element for the future of the Refuge. We will actively seek to develop partnerships 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, 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.



Glaucous Gull. USFWS

Please see Chapter 4 for more discussion of future partnership opportunities with local organizations as well as options for working with Canadian partners.

Step-down Management Plans

The CCP will serve as the primary guiding document for the future of the Detroit River IWR. However, several supplemental or step-down plans will be necessary within a few years to provide specific and technical guidance on Refuge operations. A habitat management practices plan and public use plan will be drafted as part of the Remedial Investigation/Feasibility Study for Grassy Island. An inventory and monitoring of habitat and populations plan will be written to detail the monitoring specified in objectives 7.1 and 7.2. A visitor services plan will be prepared prior to the opening of a visitor center or other major public facilities. In addition, a cultural resources step-down plan will be written to support Objective 6.2.

Monitoring and Evaluation

Monitoring is critical to successful implementation of this plan. Monitoring is necessary to evaluate the progress toward objectives and to determine if conditions are changing.

Accomplishment of the objectives described in this CCP will be evaluated as part of normal Service procedures of station visits and supervisory evaluations. The public will be informed about the activities of the Refuge staff through periodic newsletters that will be mailed to all persons on the Refuge mailing list and published on the Refuge's website. The availability of newsletters or progress reports will be announced through news releases to the media.

Plan Amendment and Revision

This CCP and its objectives will be examined at least every 5 years to determine if any modifications are necessary to meet changing conditions. Public notice, and an opportunity for public comment, will be provided if circumstances require any substantial modification of the CCP.

Appendices

Appendix A: Draft Environmental Assessment	69
Appendix B: Glossary	105
Appendix C: Priority Refuge Operating Needs	111
Appendix D: Compatibility Determinations	115
Appendix E: Bird Species List	117
Appendix F: Compliance Requirements and Authorizing Legislation	129
Appendix G: Bibliography	141
Appendix H: Mailing List	147
Appendix I: List of Preparers	151
Appendix J: The Upper Detroit River: A Report to Congress	155
Appendix K: Habitat Conservation Options	161
Appendix L: Species List	167
Appendix M: Summary and Disposition of Public Comments Received on the Draft CCP	183

Appendix A: Environmental Assessment

Finding of No Significant Impact

Environmental Assessment and Comprehensive Conservation Plan for the Detroit River International Wildlife Refuge, Michigan

An Environmental Assessment has been prepared to identify management strategies to meet the conservation goals of the Detroit River International Wildlife Refuge (Refuge). The Environmental Assessment examined the environmental consequences that each management alternative could have on the quality of the physical, biological, and human environment, as required by the National Environmental Policy Act of 1969 (NEPA). The Environmental Assessment presented and evaluated three alternatives for managing fish, wildlife and plant habitats, as well as visitor services, on the Refuge over the course of the next 15 years:

Alternative 1 - The Current Situation (No Action)

The Current Direction alternative would move development of the Refuge along the path taken during the first year since establishment (calendar year 2002). This "No Action" alternative, required by the National Environmental Policy Act, does not imply that no pro-active measures will be taken on behalf of the Refuge. Habitat restoration and management would continue primarily through cooperative efforts. Land acquisition, especially of river island and coastal wetland habitats, would continue through donations, partnerships and special grants. Cooperative management agreements would be arranged with the owners of industrial properties along the river. Identification and/or cleanup of environmental contaminants would continue on existing refuge lands or lands actively considered for acquisition.

Alternative 2 - Leading through Partnerships (Preferred Action)

Under this alternative, the Refuge would seek to serve as a focal point for the many ongoing conservation efforts on the Detroit River and surrounding watersheds. The Service would continue direct habitat conservation efforts but with an emphasis on cooperative management instead of fee ownership. The refuge land base would grow primarily through management agreements with private industry and government agencies. Land acquisition, especially of river island and coastal wetland habitats, would continue through donations, partnerships and special grants. Developing effective partnerships for habitat conservation and environmental education would be the primary focus of the refuge staff.

Alternative 3 - Habitat Emphasis

Alternative 3 would focus on the accelerated need to conserve the last remnants of intact fish and wildlife habitats along the Detroit River and Lake Erie shoreline. This alternative would place a stronger emphasis on existing habitats than on restoration projects and environmental education programs. The Service would seek land acquisition funding through traditional sources such as congressional appropriations and the Migratory Bird Conservation Fund. In addition, the refuge staff and partners would invest the time necessary to pursue grants and private funding sources for land acquisition.

The alternative selected for implementation is *Alternative 2*. The strategies presented in the Comprehensive Conservation Plan (CCP) were developed as a direct result of the selection of this alternative.

For reasons presented above and below, and based on an evaluation of the information contained in the Environmental Assessment, we have determined that the action of adopting Alternative 2 as the management alternative for the Refuge is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102 (2)(c) of the National Environmental Policy Act of 1969.

Additional Reasons:

1. Future management actions will have a neutral or positive impact on the local economy.
2. This action will not have an adverse impact on threatened or endangered species.

Supporting References:

Environmental Assessment
Comprehensive Conservation Plan

ACTING
DIRECTOR


Regional Director

4/27/05
Date

Contents

Abstract.....	75
I. Purpose and Need for the Proposed Action	77
Decision Framework	77
Description of the Proposed Action	77
Authority, Legal Compliance and Compatibility	78
Scoping of the Issues	79
Issues and Concerns	79
Refuge Vision Statement	79
Refuge Goals	79
II. Description of Alternatives	81
Formulation of Alternatives	81
Alternative A: The Current Situation (No Action)	82
Alternative B: Leading through Partnerships (Preferred Action)	82
Alternative C: Habitat Emphasis	82
Alternatives Considered but Not Further Developed	83
III. Affected Environment	93
Threatened and Endangered Species	93
Cultural Resources	94
IV. Environmental Consequences	95
Issues Common to All Alternatives	95
Summary of Effects by Alternative	96
Alternative 1: The Current Situation (No Action)	97
Alternative 2: Leading through Partnerships (Preferred Action)	97
Alternative 3: Habitat Emphasis	101
Cumulative Impact Analysis	101
Migratory Birds	101
Coastal Wetlands.....	102
Habitat Restoration.....	102
V. List of Preparers	103
VI. Consultation and Coordination with the Public and Others	103
VII. References and Literature Cited	103
Table 1: Detroit River IWR Objectives and Strategies by Alternative.....	85-92
Table 2: Summary of Environmental Consequences for Management Alternatives for Detroit River IWR.....	99-101

Appendix A: Environmental Assessment

Environmental Assessment for the Detroit River International Wildlife Refuge

Comprehensive Conservation Plan

Abstract

The U.S. Fish and Wildlife Service (Service) is proposing implementation of a Comprehensive Conservation Plan (CCP) for the Detroit River International Wildlife Refuge in Wayne and Monroe Counties of Michigan. This Environmental Assessment considers the biological, environmental, and socioeconomic effects that implementing the CCP will have on the most significant issues and concerns identified during the planning process.

The purpose of the Plan is to:

- # Provide a clear statement of direction for future management of the Refuge.
- # Give Refuge neighbors, visitors, and the general public an understanding of the Service's management actions on and around the Refuge.
- # Ensure that the Refuge's management actions and programs are consistent with the mandates of the National Wildlife Refuge System.
- # Ensure that Refuge management is consistent with Federal, state and county plans.
- # Establish continuity in Refuge management.
- # Provide a basis for the development of budget requests for the Refuge's operation, maintenance, and capital improvement needs.

I. Purpose and Need for the Proposed Action

Purpose: The comprehensive conservation plan (CCP) will specify a specific course of action for management of Detroit River International Wildlife Refuge (IWR) over the next 15 years. The plan further outlines the steps that will be taken to protect, conserve and restore fish and wildlife habitats within the authorized Refuge boundary.

Need: The Detroit River IWR is a new addition to the Refuge System. Currently, the staff at Shiawassee National Wildlife Refuge (NWR), located in Saginaw, Michigan, has the responsibility of managing the Refuge for specific purposes outlined in law and to fulfill the mission of the National Wildlife Refuge System. A CCP for the Wyandotte NWR portion of the Refuge was completed in 2001. However, basic information necessary for effective management is lacking on the biological resources, remnant habitats, and environmental contamination within the new international wildlife refuge. A CCP is needed to address current management issues and propose a plan of action that the Service and its partners can use to achieve the future vision for the Refuge. In addition, the National Wildlife Refuge System Improvement Act of 1997 mandates that all national wildlife refuges will be managed in accordance with an approved CCP.

The critical needs for completing a CCP are:

- # Conserve remaining coastal wetland and island habitats of the lower Detroit River and western Lake Erie;
- # Restore degraded coastal habitats to benefit migratory birds;
- # Establish partnerships to and promote environmental education to increase public awareness of the Detroit River ecosystem and spur actions that lead to improved water and coastal habitat quality for wildlife, fish and plants.

Decision Framework

The Regional Director for the Great Lakes-Big Rivers Region of the U. S. Fish and Wildlife Service will use the Environmental Assessment (EA) to select one of three alternatives and determine whether the alternative selected will have significant environmental impacts requiring preparation of an environmental impact statement. Specifically, analysis and findings described in the CCP and in this EA will help the Regional Director decide whether to continue with current management at the Refuge (No Action) or whether to adopt the actions described in the Detroit River IWR Comprehensive Conservation Plan.

We recommend that the reader refer to the CCP for additional background information when reviewing this EA.

Description of the Proposed Action

The proposed action is to adopt and implement the Comprehensive Conservation Plan for Detroit River IWR. The CCP will serve as a management tool to be used by Refuge staff and partners in guiding the habitat management and public use activities on the Refuge. The document will guide management decisions and activities on the Refuge over the next 15 years. Staff from various programs of the Service, Michigan Department of Natural Resources (DNR), and many interested citizens contributed to the development of this plan.

Authority, Legal Compliance, and Compatibility

The Detroit River IWR was established by an Act of Congress that was signed into law by the President on December 21, 2001 (Public Law 107-91). The original authorized Refuge boundary included islands, coastal wetlands, marshes, shoals and riverfront lands along 18 miles of the lower Detroit River. The establishing Act included Mud Island and Grassy Island, lands already managed by the Service as Wyandotte NWR (394 acres). Section 4 of the Act states the following purposes for the new Detroit River IWR:

- # To protect the remaining high-quality fish and wildlife habitats of the Detroit River before they are lost to further development and to restore and enhance degraded wildlife habitats associated with the Detroit River.
- # To assist in international efforts to conserve, enhance, and restore the native aquatic and terrestrial community characteristics of the Detroit River (including associated fish, wildlife, and plant species) both in the United States and Canada.
- # To facilitate partnerships among the United States Fish and Wildlife Service, Canadian national and provincial authorities, State and local governments, local communities in the United States and in Canada, conservation organizations, and other non-Federal entities to promote public awareness of the resources of the Detroit River.

On May 19, 2003, Public Law 108-23, the Ottawa NWR Complex Expansion and Detroit River IWR Expansion Act, was signed by the President. The Act extends the authorized boundary of the Refuge along the Lake Erie coastline west to I-75 and south to the Ohio/Michigan border. The expansion area encompasses more than 7,500 acres, numerous coastal marshes and sensitive wetlands, as well as marinas and developed coastlines.

The former Wyandotte NWR was established by Public Law 87-119 on August 3, 1961 ... “to be maintained as a refuge and breeding place for migratory birds and other wildlife...”. Mud Island was added to Wyandotte NWR in January 2001 using the authority to accept donations of real property contained in the Fish and Wildlife Act of 1956 (16 U.S.C. 742f).

Authorities delegated by Congress, Federal regulations/guidelines, and executive orders guide the operation and the management of the Refuge and provide the framework for the Fish and Wildlife Service's proposed action. See Appendix F of the CCP for a summary of these laws and orders.

The National Wildlife Refuge System Improvement Act of 1997 determined that the National Wildlife Refuge System was created to conserve fish, wildlife, and plants and their habitats and this conservation mission has been facilitated by providing Americans with opportunities to participate in compatible wildlife-dependent uses. All recreational and secondary uses of the Detroit River IWR must be compatible with the purposes for which the Refuge was established. The term “compatible use” means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.

The refuge manager must complete a compatibility determination prior to allowing such uses of refuge lands. Draft compatibility determinations were published for public review as part of the draft CCP. Appendix D of the CCP contains a list of compatibility determinations for existing or proposed uses on Refuge lands.

Scoping of the Issues

Scoping is the process of identifying opportunities and issues related to a proposed action. The Fish and Wildlife Service publicly announced that it was preparing a plan for the Detroit River IWR in June 2002. Several public issue-scoping events were held in local communities in the U.S. and Canada. See Chapter 2 of the CCP for details on the public scoping activity conducted for this plan.

Issues and Concerns

Through scoping, the Service identified issues and concerns related to management of the Refuge. These issues have been considered in the NEPA decision-making process and many have been developed into implementation strategies in the CCP.

This EA informs the public of the impact the proposed action will have on each of seven major issue categories. The CCP planning team selected these issue categories after organizing all of the issues/concerns/opportunities received during the public scoping process. All of these issues are discussed in the CCP and many of the goals and strategies contained in the CCP relate to one or more of the issue categories. The issues categories include Habitat Restoration, Management and Creation, Land Conservation, Contamination/Pollution, Functional Partnerships, Environmental Education, the Future of Hunting and Fishing, and Secondary Public Uses.

Refuge Vision Statement

The following vision statement was adapted from the publication “A Conservation Vision for the Lower Detroit River Ecosystem,” published by the Metropolitan Affairs Coalition (MAC) in 2001. The MAC vision statement was the product of a bi-national collaboration of local governments, businesses, and organizations. The CCP planning team, along with the CCP workshop participants, wanted to recognize this broad vision for the Detroit River. We reviewed the existing vision statement and revised it to be more specific to the Detroit River IWR:

“The Detroit River International Wildlife Refuge, including the Detroit River and Western Lake Erie Basin, will be a conservation region where a clean environment fosters the health and diversity of wildlife, fish, and plant resources through protection, creation of new habitats, management, and restoration of natural communities and habitats on public and private lands. Through effective management and partnering, the Refuge will provide outstanding opportunities for ‘quality of life’ benefits such as hunting, fishing, wildlife observation and environmental education, as well as ecological, economic, and cultural benefits, for present and future generations.”

Refuge Goals

The management alternatives presented in this environmental assessment will be measured and evaluated by their ability to meet the goals of the Refuge and address common issues. Eleven goals have been written for the Detroit River IWR. These goals were adopted, in part, from the MAC Conservation Vision document and goals of other national wildlife refuges in the Midwest. The Vision document listed a number of “supporting elements” that easily become goal statements for the new Refuge:

- # Establish functional partnerships involving communities, industries, governments, citizens, non-profit organizations and others to manage and promote the Refuge consistent with the plan’s vision statement and the Act

which created the Refuge. Provide an institutional framework to develop effective private or public partnerships for the purpose of sustainability.

- # The Refuge will facilitate and promote hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation as wildlife dependent recreational uses.
- # Visitors and local citizens demonstrate a strong conservation ethic that supports the Refuge and broad based environmental awareness.
- # Future development that occurs within surrounding watersheds that may impact the Refuge is well planned, environmentally sustainable, and reflects known best management practices.
- # People living or working within the Refuge watersheds will understand and appreciate the importance and ecological value of the Detroit River and Western Lake Erie, and their contributing watersheds, to fish and wildlife and to human quality of life.
- # The hunting and fishing heritage, cultural resources and cultural history of the Refuge are valued and preserved, and connect Refuge staff, visitors, and the community to the area's past.
- # Fish and wildlife communities are healthy, diverse and self-sustaining.
- # Reduce levels of toxic substances to a threshold that does not threaten or harm or adversely affect wildlife, fish or human health.
- # Economic development and redevelopment is environmentally sustainable, well planned, and aesthetically pleasing.
- # Restore beneficial uses of water resources in the Refuge.
- # Lands and waters within the Refuge are responsibly managed to resolve potentially conflicting uses.

II. Description of Alternatives

This section describes three alternatives considered by the CCP planning team and detailed in this Environmental Assessment.

Formulation of Alternatives

The CCP planning team developed three alternative management scenarios based on issues, concerns and opportunities presented during the public and internal scoping process. The issues that are discussed came from individuals, cooperating agencies, conservation organizations and Service staff.

Each of the management alternatives is designed to fit within the scope of operations of similar-sized refuges elsewhere in the Midwest. The alternatives were formulated under the assumption that staffing and budgets would grow slowly throughout the life of the plan. The Midwest Region of the U.S. Fish and Wildlife Service has requested additional funding from Congress to establish a Refuge office, including staff and equipment, in the vicinity of the Refuge boundary. The budget proposal includes hiring five essential staff members, leasing office space, and purchasing vehicles and small boats. This request must compete with other national budget priorities and start-up funding is not assured in any given year. However, for planning purposes, each of the three alternatives was developed under the assumption that funding will be forthcoming soon after the CCP is approved.

If an alternative calls for one program to increase significantly in size or scope, other Refuge programs would need to be reduced. However, we did provide for the possibility of additional private resources such as volunteers, grant funds, and partnerships to augment programs of the Refuge.

The three management alternatives were developed to address most of the issues, concerns and opportunities identified during the CCP planning process. Specific impacts of implementing each alternative will be examined in seven broad issue categories:

Habitat Restoration, Management and Creation: What level of habitat restoration and maintenance is appropriate given funding constraints and desired future conditions?

Land Conservation: What are the key areas within the Refuge boundary that may require protection? Many people have suggested reviewing the remaining natural islands and coastal wetlands in the area for conservation within the Refuge System.

Contamination/Pollution: How can we reduce the level of environmental contamination within the river ecosystem? Contamination issues also create unique management decisions, including whether recreational use should be prohibited on some existing Refuge lands.

Functional Partnerships: How to establish functional partnerships between a variety of interests including governments, non-profit groups and businesses?

Environmental Education: How to encourage support within the vast human population in southeast Michigan and provide education on the importance of habitat, and management of fish and wildlife populations within the Refuge?

Future of Hunting and Fishing: How to provide hunting and fishing within the Refuge without impacting critical needs of fish and wildlife?

Secondary Public Uses: How to manage lands and waters within the Refuge to resolve conflicts between wildlife habitat and conflicting recreational uses?

Alternative 1 – Current Direction

The Current Direction alternative would move development of the Refuge along the path taken during the first year since establishment (calendar year 2002). This “No Action” alternative, required by the National Environmental Policy Act, does not imply that no proactive measures will be taken on behalf of the Refuge. Habitat restoration and management would continue primarily through cooperative efforts. Land acquisition, especially of river island and coastal wetland habitats, would continue through donations, partnerships and special grants. Cooperative management agreements would be arranged with the owners of industrial properties along the river. Private landowners will continue to retain all rights to manage public access on their lands. Identification and/or cleanup of environmental contaminants would continue on existing Refuge lands or lands actively considered for acquisition.

New partnerships would be developed as the Refuge staff and resources continue to grow. The theme for environmental education would focus on the need for conserving migratory bird and fish habitats as well as the river ecosystem. Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge lands where it is safe and appropriate. Additional recreational uses would be limited due to the small size of Refuge land holdings and potential conflicts with wildlife-dependent priority uses.

Alternative 2 – Leading through Partnerships (Preferred Action)

Under this alternative, the Refuge would seek to serve as a focal point for the many ongoing conservation efforts on the Detroit River and surrounding watersheds. The Service would continue direct habitat conservation efforts but with an emphasis on cooperative management instead of fee ownership. The Refuge land base would grow primarily through management agreements with private industry and government agencies. Land acquisition, especially of river island and coastal wetland habitats, would continue through donations, partnerships and special grants, as well as traditional sources such as congressional appropriations and the Migratory Bird Conservation Fund.

Identification and/or cleanup of environmental contaminants would continue on existing Refuge lands or lands actively considered for acquisition. However, contaminant issues on private lands managed under agreement would be addressed only to the point where wildlife and human safety are a concern and the U.S. Fish and Wildlife Service does not become liable for costly cleanup measures.

Developing effective partnerships for habitat conservation and environmental education would be the primary focus of the Refuge staff. A major theme for environmental education would be the need for citizens to work together to enhance the Detroit River and Lake Erie ecosystems. Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge-owned lands where it is safe and appropriate. Private landowners would continue to retain all rights to manage public access on their lands. Additional recreational uses would be limited due to the small size of Refuge land holdings and potential conflicts with wildlife-dependent priority uses.

Alternative 3 – Habitat Emphasis

Alternative 3 would focus on the accelerated need to conserve the last remnants of intact fish and wildlife habitats along the Detroit River and Lake Erie shoreline. This alternative would place a stronger emphasis on conserving existing habitats than on restoration projects and environmental education programs. The Service would seek land acquisition

funding through traditional sources such as congressional appropriations and the Migratory Bird Conservation Fund. In addition, Refuge staff and partners would invest the time necessary to pursue grants and private funding sources for land acquisition.

Identification and/or clean-up of environmental contaminants would continue on existing Refuge lands or lands actively considered for acquisition. However, contaminant issues on private lands managed under agreement would be addressed only to the point where wildlife and human safety are a concern and the U.S. Fish and Wildlife Service does not become liable for costly cleanup measures.

Developing effective partnerships for habitat conservation would be the primary focus of the Refuge staff. A major theme for environmental education would be the need for citizens to work together to conserve the remaining open space along the Detroit River and Lake Erie. Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge-owned lands where it is safe and appropriate. Private landowners would continue to retain all rights to manage public access on their lands. Additional recreational uses, where deemed compatible with the purposes of the Refuge, would be considered on a case-by-case basis on Refuge land holdings.

Alternatives Considered But Not Recommended for Further Study

An additional alternative was considered but eliminated from further study. This alternative was originally proposed during development of the CCP for Wyandotte NWR. The proposal called for reconstruction of Grassy Island and other islands currently within the Refuge and enhancement of the associated marshes through major engineering projects. We concluded that such construction projects would not be feasible for the Service due to funding, jurisdiction and other constraints. It would be necessary to complete a major environmental and engineering study prior to implementing reconstructions. We concluded that the costs of studies and construction would not be justified for the expected, but limited, wildlife benefits.

Table 1: Detroit River IWR Objectives and Strategies by Alternative

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 1: Establish functional partnerships involving communities, industries, governments, citizens, non-profit organizations and others to manage and promote the Refuge consistent with the plan's vision statement and the Act that created the Refuge. Provide an institutional framework to develop effective private or public partnerships for the purpose of sustainability.		
Objective 1: Annually, for a period of 5 years, identify and contact 10 potential partners to offer direct participation in Refuge programs. Partners will include local area schools, conservation and business organizations, and local governments.	Objective 1: Annually, for a period of 5 years, identify and contact 20 potential partners to offer direct participation in Refuge programs. Partners will include local area schools, conservation and business organizations, and local governments.	Same as Alternative A.
Objective 2: Establish a group of partners to coordinate, advise and integrate all environmental project proposals on or adjacent to Refuge-owned lands or properties managed under cooperative agreements. Strategies: Task groups will be designated by the working group. Include NGOs, business leaders, resource users, and recreational users. In one year, task groups will formulate their strategies and recommendations for habitat conservation and other programs. Note: Working group recommendations are subject to compatibility determination by the Refuge Manager.	Objective 2: Establish a working group or similar group, representing all partners, to coordinate, advise and integrate all environmental project proposals within the authorized boundary of the Refuge. Strategies: Task groups will be designated by the working group. Include NGOs, business leaders, resource users, and recreational users. In one year, task groups will formulate their strategies and recommendations for habitat conservation and other programs. Note: Working group recommendations are subject to compatibility determination by the Refuge Manager.	Same as Alternative A.
Objective 3: Develop a Friends of Detroit River IWR group and establish a volunteer program within 2 years. Strategy: Friends will provide a pool of volunteers to assist in environment education and outreach.	Objective 3: Develop a Friends of Detroit River IWR group within the first year. Strategy: Friends will provide a pool of volunteers to assist in environment education and research.	Objective 3: Develop a Friends of Detroit River IWR group within 2 years. Strategy: Friends will provide volunteers to assist in habitat restoration work.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 2: The Refuge will facilitate and promote hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation as wildlife-dependent uses.		
<p>Objective 1: Provide waterfowl hunting opportunities on Refuge lands and waters, subject to state and local regulations and public safety concerns, that meet the definition of quality in the FWS manual.</p> <p>Strategy: Issue a compatibility determination on whether to open waters surrounding Grassy Island for waterfowl hunting within 2 years of plan approval.</p>	Same as Alternative A.	Same as Alternative A.
<p>Objective 2: Allow fishing and hunting to the maximum extent, except where contaminant exposure, safety or sensitive species needs prohibit such uses.</p> <p>Strategy: Develop a leaflet identifying access locations for public hunting and fishing areas in the authorized Refuge boundary.</p>	Same as Alternative A.	Same as Alternative A.
<p>Objective 3: Annually, provide on-site environmental education and interpretive programs for 500 participants to increase the community's understanding and appreciation of the Refuge.</p> <p>Strategies: Visitation target will be reviewed as the Refuge staff and capabilities grow. Assist Wayne County in development of an administrative/interpretive facility at the former Daimler/Chrysler site in Trenton.</p>	<p>Objective 3: Annually, provide on-site environmental education programs for 1,000 participants to increase the community's understanding and appreciation of the Refuge.</p> <p>Strategies: Annual visitation target will be reviewed as partnerships and Refuge staffing grows. Assist Wayne County in development of an administrative/interpretive facility at the former Daimler/Chrysler site in Trenton.</p>	Same as Alternative A.
<p>Objective 4: Annually, provide on-site wildlife observation and photography opportunities for 500 visitors to increase public appreciation for the ecological value of the Detroit River and Lake Erie.</p>	<p>Objective 4: Annually, provide on-site wildlife observation and photography opportunities for 1,000 visitors to increase public appreciation for the ecological value of the Detroit River and Lake Erie.</p>	Same as Alternative A.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 3: Visitors and local citizens demonstrate a strong conservation ethic that supports the Refuge and broad-based environmental awareness.		
<p>Objective 1: Within 4 years of CCP approval, develop an environmental education program about the Refuge and its role in the Great Lakes ecosystem that will reach 25 percent of the people in southeast Michigan.</p> <p>Strategies:</p> <ul style="list-style-type: none"> Develop a logo/slogan (marking/ publicity campaign) Develop a school curriculum focused on the Refuge (include same in MEAP) test, mail leaflets to educators and school systems. frequently post upcoming education opportunities on the Refuge website. Workshops for local teachers, realtors, townships, county or city planning commissions. Publish a birding trail map highlighting key viewing areas within the Refuge. Develop photo blinds in various locations and encourage photo or video submissions to local media to promote the Refuge. 	<p>Objective 1: Within 2 years of CCP approval, develop an environmental education program about the Refuge and its role in the Great Lakes ecosystem that will reach 50 percent of the people in southeast Michigan.</p> <p>Strategies:</p> <ul style="list-style-type: none"> Develop a logo/slogan. Include outreach to Essex County, Ontario, residents through appropriate Canadian partner organizations. Host an annual "Refuge Days" street fair involving all downriver communities. Print quarterly newsletters, use viewo and local cable TV programs. Develop school curriculum focused on the Refuge (include same in MEAP test), mail leaflets to educators and school systems. Frequently post upcoming educational opportunities on the Refuge website. Workshops for local teachers, realtors, townships, county or city planning commissions. Publish a birding trail map highlighting key viewing areas within the Refuge. Develop photo blinds in various locations and encourage photo or video submissions to local media to promote the Refuge. 	<p>Same as Alternative A, but with additional projects and interpretive themes related to habitat.</p>
<p>Objective 2: Within 10 years of plan approval, 25 percent of Refuge visitors will be able to explain a key environmental theme for the Refuge. The themes may include wetland ecology, human impact on the landscape, migratory bird corridors, habitat restoration, etc.</p> <p>Strategy: Measure success through periodic exit surveys.</p>	<p>Objective 2: Within 5 years of plan approval, 50 percent of visitors will be able to explain a key environmental theme for the Refuge. The themes may include wetland ecology, human impact on the landscape, migratory bird corridors, habitat restoration, etc.</p> <p>Strategy: Measure success through periodic exit surveys.</p>	<p>Same as Alternative A.</p>

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
<p>Objective 3: Within 10 years of plan approval, 20 percent of neighboring communities and businesses will express support for the Refuge through active promotion of Refuge facilities and events.</p> <p>Strategies: Develop methods to show support (street banners, posters, window decals, etc.) Working group to develop measures to judge which businesses or organizations should be publicly recognized.</p>	<p>Objective 3: Within 5 years of plan approval, 50 percent of neighboring communities and businesses will express support for the Refuge through active promotion of Refuge facilities and events.</p> <p>Strategies: Develop methods to show support (street banners, posters, window decals, etc.) Working group to develop measures to judge which businesses or organizations should be publicly recognized.</p>	
<p>Goal 4: Future development that occurs within surrounding watersheds that may impact the Refuge is well planned, environmentally sustainable, and reflects Best Management Practices.</p>		
<p>Objective 1: Within 2 years of plan approval, make the local, state and federal regulatory (permitting) agencies aware of the Refuge vision and goals.</p> <p>Strategy: Distribute Refuge brochures to regional and state headquarters of each agency.</p>	<p>Objective 1: Within 1 year of plan approval, make the local, state and federal regulatory (permitting) agencies aware of the Refuge vision and goals.</p> <p>Strategy: Distribute Refuge brochures to regional and state headquarters for each agency.</p>	<p>Objective 1: Within 2 years of plan approval, make the local, state and federal regulatory (permitting) agencies aware of the vision, goals and habitat-related programs available through the Refuge.</p>
<p>Objective 2: Within 3 years of plan approval, Refuge staff and partners are representing Refuge interests as participants in the Southeast Michigan Council of Governments (SEMCOG) and other regional planning boards.</p>	<p>Objective 2: Within 1 year of plan approval, Refuge staff and partners are representing Refuge interests as participants in the Southeast Michigan Council of Governments and other regional planning boards.</p>	<p>Same as Alternative A.</p>
	<p>Objective 3: By 2010, a formalized clearinghouse will be in place to provide streamlined review of all development proposed within the approved boundary. Service staff and the working group will determine representatives for this group.</p> <p>Note: The clearinghouse could be a group within SEMCOG that will review for representative agency and Refuge interests. Review will assure Best Management Practices and environmental sustainability.</p>	

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 5: People living or working within the Refuge watershed will understand and appreciate the importance and ecological value of the Detroit River and Western Lake Erie, and their contributing watersheds to fish and wildlife and to human quality of life.		
<p>Objective 1: Within 3 years of plan approval, all plan/planning commissions, township boards, city governments, and major landowners will have been informed as the importance of the Refuge and its associated waterway connectors as a migratory bird corridor and the importance of fish habitat to the Detroit River watershed.</p> <p>Strategy: Promotional materials will be placed in a public place of each neighboring township or city showcasing goals/objectives/vision of the Refuge.</p>	<p>Objective 1: Within 2 years of plan approval, all plan/planning commissions, township boards, city governments and major landowners will have been informed as to the importance of the Refuge and its associated waterway connectors as a migratory bird corridor and the importance of fish habitat to the Detroit River watershed.</p> <p>Strategy: At least one interpretive display, developed through partnership efforts, will be placed in a public place of each neighboring township or city showcasing goals/objectives/vision of the Refuge.</p>	Same as Alternative A.
<p>Objective 2: By 2008, 25 percent of local real estate agents and corporate relocation departments will include information about the Refuge in material promoting the area.</p> <p>Strategy: Distribute brochures and/or e-mail information to each agency.</p>	<p>Objective 2: By 2008, 50 percent of local real estate agents and corporate relocation departments will include information about the Refuge in material promoting the area.</p> <p>Strategy: Distribute brochures and/or e-mail information to each agency.</p>	
Goal 6: The hunting and fishing heritage, cultural resources and cultural history of the Refuge are valued and preserved, and connect Refuge staff, visitors and the community to the area's past.		
<p>Objective 1: Within 2 years after construction of the proposed visitor facility, 50 percent of visitors will be aware of key heritage values of the area. (River transportation, hunting, fishing.)</p> <p>Strategies: Refuge promotional and educational materials incorporate a section on heritage values. Ensure staff and volunteer training highlights these values. Link heritage information to other educational information available in the area.</p>	Objective 1: Same as Alternative A.	Objective 1: Same as Alternative A.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 7: Fish and wildlife communities are healthy, diverse and self-sustaining.		
Objective 1: By 2015, protect 20 percent of remaining coastal wetland and island habitat on public and private lands through fee, easements, and cooperative agreements. Strategy: High priority for Humbug Marsh Complex, Hennepin Marsh Ecosystem, and Conservation Crescent.	Objective 1: By 2015, protect 40 percent of remaining coastal wetland and island habitat on public and private lands through fee, easements, and cooperative agreements. Strategy: High priority for Humbug marsh Complex, Hennepin Marsh Ecosystem, and Conservation Crescent.	Objective 1: By 2015, protect 75 percent of all remaining habitat for Service trust species through fee or easements. Strategy: Priorities are the same as alternatives A and B, with additional forested and riparian lands to be identified.
Objective 2: Establish partnerships to identify and monitor populations of federal and state endangered and threatened species within the approved Refuge boundary and work to prevent the listing of additional species.	Same as Alternative A.	Same as Alternative A.
Objective 3: By 2007, quantify the importance of habitats within the Refuge authorized boundary to migratory waterfowl with an emphasis on Regional Resource Conservation Priority Species such as Canvasback, Black Duck, Mallard and Blue-winged Teal.	Same as Alternative A.	Same as Alternative A.
Objective 4: Participate in the restoration of lake sturgeon spawning in the Detroit River within 3 years of acquiring a permanent staff for the Refuge.	Same as Alternative A.	Same as Alternative A.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
<p>Objective 5: Working with others, identify and prioritize areas best suited for restoration through partnership efforts (e.g. coastal wetlands, lakeplain prairies, forested wetlands, oak openings, and riparian buffers).</p> <p>Strategies:</p> <p>Review and consider linkage to remaining open space areas. (Manny, USGS map).</p> <p>Conduct Geographic Analysis Program (GAP).</p> <p>Restore native plant species identified as appropriate for the Refuge. Develop a native seed inventory and sources.</p>	Same as Alternative A.	<p>Objective 3: Within 3 years of plan approval, identify and prioritize areas best suited for restoration through Service efforts (e.g. coastal wetlands, lakeplain prairies, forested wetlands, oak openings, and riparian buffers).</p> <p>Strategies: Complete a habitat management concept plan covering all lands within the authorized Refuge boundary.</p> <p>Restore native plant species identified as appropriate for the Refuge.</p> <p>Develop a native seed inventory and sources.</p>
<p>Objective 6: Work cooperatively with all local government jurisdictions to advocate zoning and comprehensive land use planning that promotes no net loss and protection of existing habitat.</p> <p>Strategy:</p> <p>Refuge staff will attend scheduled planning and zoning meetings.</p>	Same as Alternative A.	Same as Alternative A.
<p>Goal 8: Reduce levels of toxic substances to a threshold that does not threaten or harm or adversely affect wildlife, fish or human health.</p>		
<p>Objective 1: Within 3 years of plan approval, establish partnerships with state, federal, local agencies, nonprofits and industrial partners to facilitate creative solutions to contamination sources and liability issues based on intended future restoration and use.</p> <p>Strategy:</p> <p>Service contaminant specialists would select and coordinate with participants.</p>	<p>Objective 1: Within 1 year of plan approval, establish partnerships with state, federal, local agencies, nonprofits and industrial partners to facilitate creative solutions to contamination sources and liability issues based on intended future restoration and use.</p> <p>Strategy:</p> <p>Service contaminant specialists would select and coordinate with participants.</p>	Same as Alternative A.
<p>Objective 2: Within 2 years of identifying land parcels in priority order, and with the landowner's permission, complete a Level I environmental contaminants review on priority parcels.</p> <p>Strategy:</p> <p>Liability issues will be decided based upon DEQ/EPA criteria.</p>	Same as Alternative A.	Same as Alternative A.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Objective 3: Within 6 months of plan approval, identify mechanisms for addressing contaminant issues that may apply to less-than-fee-ownership situations (easements, leases, cooperative agreements).	Same as Alternative A.	Same as Alternative A.
	Objective 4: Monitor air quality within the Refuge directly, or through partnership effort, and present data to responsible entities.	
Goal 9: Economic development and redevelopment is environmental sustainable, well planned, and aesthetically pleasing.		
Objective 1: Within 5 years of plan approval, work with landowners, the business community and all local governments within the Refuge boundaries to implement a voluntary certification for developments that are environmentally sustainable, well planned and aesthetically pleasing. Strategies: Look at other organizations' certification processes, e.g. Wildlife Habitat Council and National Wildlife Federation. an example: conversion of coal-fired plants to gas. Within 1 year of developing the certification, meet with landowners, business and industry to inform them of the certification and encourage their participation and application.	Objective 1: Same as Alternative A, but within 3 years of plan approval.	Same as Alternative A.
Goal 10: Restore beneficial uses of water resources in the Refuge.		
Objective 1: By 2010, the Detroit River is removed from listing as an Area of concern under the International Joint Commission's Great Lakes Water Quality Agreement Protocol. Strategy: Refuge will be an active partner in the Detroit River Remedial Action Plan and Lake Erie Lakewide Area Management Plan.	Same as Alternative A.	Same as Alternative A.

Table 1: Detroit River IWR Objectives and Strategies by Alternative (Continued)

Alternative A: Current Direction (No Action)	Alternative B: Leading Through Partnerships (Preferred Alternative)	Alternative C: Habitat Emphasis
Goal 11: Lands and waters within the Refuge are responsibly managed to resolve potentially conflicting uses.		
<p>Objective 1: Within 5 years of plan approval, establish a Refuge program for environmental education and interpretation that emphasizes the need for compatible uses on Refuge lands and waters.</p> <p>Strategy: Message will emphasize how to reduce disturbance of resting and feeding migratory waterfowl.</p>	<p>Same as Alternative A.</p>	<p>Objective 1: Within 5 years of plan approval, establish a Refuge program for environmental education and interpretation that emphasizes the need for compatible uses on Refuge lands and waters.</p> <p>Strategy: Message will emphasize reducing wildlife disturbance through increasing the amount of habitat.</p>

III. Affected Environment

The Detroit River IWR lies within the Great Lakes Basin Ecosystem, a system shared with Canada and eight states. The ecosystem is made up of the world's largest freshwater body, which holds 18 percent of the world's supply of fresh water, covers 95,000 square miles, has 9,000 miles of shoreline, has over 5,000 tributaries, and has a drainage basin of 288,000 square miles. The Detroit River consists of a 32-mile-long channel bordered by a poorly drained clay lake plain. 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.

Within the Great Lakes basin certain species have drawn special concern. Fish species of concern include lake trout, lake sturgeon, lake whitefish, walleye, Pacific salmon, and landlocked Atlantic salmon and their forage. There is concern about native mussel species that are being seriously impacted by zebra mussels. Thirty-one species of migratory non-game birds of management concern to the Service are found in the Great Lakes ecosystem.

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. One hundred species of breeding birds (approximately 50 percent of the breeding birds of Ontario) use the Detroit River wetlands along the Canadian shoreline.

In their evaluation of the importance of the Detroit River wetlands, the U.S. Environmental Protection Agency (EPA) and Environment Canada acknowledged that the general perception is that the Detroit River's large submergent vegetation beds provide important habitat for migrating waterfowl and nursery areas for fish. However, the agencies identified the wetlands along the Detroit River as deserving high priority not only because they serve as important habitat for a large number of fish and birds species, but especially because there are so few wetlands remaining in the area.

A more detailed description of the affected environment can be found in Chapter 3 of the CCP.

Threatened and Endangered Species

Several pairs of Bald Eagles, a federally-listed threatened species, nest and feed along the Detroit River and western Lake Erie basin. The Northern riffleshell, a federally-listed endangered mussel, has not been documented in the Detroit River but may occur on island shoals.

Two state-listed threatened species have been associated with Detroit River islands. The spotted turtle was recorded in the Michigan Natural Features Inventory in 1997, and the Common Tern was recorded in 1977.

Lake sturgeon once spawned on the rocky bottom in swift currents near Grassy Island and several other sites on the Detroit River. Today the fish is listed as "threatened" by 19 of the 20 states in its original range and by seven of the eight Great Lakes states, including Michigan. More information on sturgeon distribution and recovery efforts can be found in Chapter 3 or the CCP.

Cultural Resources

The Service has some information about cultural resources associated with that part of Refuge formerly known as the Wyandotte NWR in Wayne County. The Service has no information about cultural resources for the Refuge in Monroe County, but is attempting to obtain data. Presumably the situation for the new Refuge as a whole should be similar to the information presented in the “Overview Study of Archaeological and Cultural Values on Shiawassee, Michigan Islands, and Wyandotte National Wildlife Refuges in Saginaw, Charlevoix, Alpena, and Wayne Counties, Michigan,” (Robertson 2000).

Grassy Island and Mamajuda Island are small, almost ephemeral islands in the Detroit River. Historic maps show substantial size and shape changes, and they likely have been affected by dredge spoil or other materials placed on the islands. Nevertheless, records indicate a seasonal fishing camp by an Indian woman prior to 1807 and Euro-American fisheries in the second half of the 19th century. Thus the islands, which are probably typical of others in the Detroit River, have had temporary human use and occupation from prehistoric times to the present. The only structure on the islands is an abandoned lighthouse.

Archeological records show evidence of 13 recorded archeological sites on the Michigan mainland within 2 miles of the two islands. One site is prehistoric and two are 19th century Indian culture; the remainders are 19th century Euro-American residences, cemeteries, a community, and an unknown historic site. Beyond that, however, southeast Michigan and western Ontario have archeological sites from the earliest recorded culture, the Paleoindian, through the Late Woodland periods when Europeans arrived.

Turmoil associated with arrival and westward advancement of Euro-Americans in the French and British colonies and the United States so disrupted Indian tribes in the area that virtually no connection can be made between prehistoric cultures found in the archeological record and historic tribes located in the area. Modern Indian tribes that may have cultural interest in the Refuge area include the Ottawa, Huron, Wyandotte, and Ojibwa. Other cultural groups may have interests in the cultural resources of the Refuge, but none have been identified.

As of January 2003, the National Register of Historic Places lists 209 sites, buildings, and districts within the City of Detroit. The list contains no prehistoric archeological properties.

Cultural resources are important parts of the Nation’s heritage. The Service is committed to protecting valuable records of human interactions with each other and the landscape. Protection is accomplished in conjunction with the Service’s mandate to protect fish, wildlife, and plant resources.

IV. Environmental Consequences

This section evaluates the potential impacts each alternative would have on the three issues that were identified in the CCP. Alternative 1, “Current Direction,” is the No Action alternative where the level of land management, public use, and outreach are projected into the foreseeable future and are based on currently proposed staff and operations funding. Alternative 2, “Leading through Partnerships,” is the preferred course of action and seeks to establish the Refuge as a focal point for cooperative land conservation and environmental education efforts. Refer to Chapter 4 of the CCP for specific objectives and strategies. Alternative 3, “Habitat Emphasis,” proposes to commit more Refuge staff and funding toward pro-active land conservation measures.

Specific environmental and social impacts of implementing each alternative are examined in the seven broad issue categories: habitat, functional partnerships, future of hunting and fishing, conflicting secondary uses, contamination/pollution, land conservation and environmental education. However, a few potential effects will be the same under each alternative and are summarized below:

Issues Common to All Alternatives

Environmental Justice

Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by President Bill Clinton on February 11, 1994, to focus Federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed Federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

None of the proposed management alternatives disproportionately place adverse environmental, economic, social, or health impacts on minority or low-income populations. The wildlife-dependent uses promoted under each alternative, such as fishing and environmental education, should have benefits for all local populations.

Archeological and Cultural Values

The consequences of each action alternative in terms of cultural resources are the same, but apply only to United States lands of this international Refuge. Lands within the Refuge boundary owned or otherwise controlled, managed, and administered by the Service come under the several Federal cultural resources laws (and executive orders and regulations), in addition to policies and procedures established by the Department of the Interior and the Service to implement the laws. Thus cultural resources on these lands receive protection and consideration that would not normally apply to private or other government lands.

Nevertheless, undertakings accomplished on the Refuge have the potential to impact cultural resources. The presence of cultural resources including historic properties cannot stop a Federal undertaking, the several laws require only that adverse impacts on historic properties be considered before irrevocable damage occurs.

Thus the Refuge Manager will, during early planning, provide the Regional Historic Preservation Officer (RHPO) a description and location of all undertakings (projects,

activities, routine maintenance and operations that affect ground and structures, and requests for permitted uses); and of alternatives being considered. The RHPO will analyze these undertakings for potential to affect historic properties and enter into consultation with the State Historic Preservation Officer and other parties as appropriate. The Refuge Manager will notify the public and local government officials to identify concerns about impacts by the undertaking; this notification will be at least equal to, preferably with, public notification accomplished for NEPA and compatibility.

Endangered Species

The Bald Eagle is the only known federal-listed (threatened) species to occur within the boundary of the Detroit River IWR. The northern riffleshell mussel, a federal-listed species, has not been documented but could possibly occur within the Detroit River. The lake sturgeon is a candidate species and research continues to determine their status in the river. The action of developing the Refuge under each alternative would have no significant negative impact on Bald Eagles, lake sturgeon, or northern riffleshell mussels. Existing contamination on Refuge lands, specifically Grassy Island, is not suspected to affect any of these species. Land conservation and restoration projects would improve habitat for these species. The actions proposed within all three alternatives would have “no effect” on federally listed species or their critical habitat.

Climate Change Impacts

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies under its direction that have land management responsibilities to consider potential climate change impacts as part of long range planning endeavors.

The increase of carbon within the earth’s atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy’s “*Carbon Sequestration Research and Development*” (U.S. DOE, 1999) defines carbon sequestration as “...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere.”

The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts – grasslands, forests, wetlands, tundra, perpetual ice and desert – are effective both in preventing carbon emission and acting as a biological “scrubber” of atmospheric carbon monoxide. The Department of Energy report’s conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

Safeguarding natural habitat for wildlife is the heart of any long range plan for national wildlife refuges. The actions proposed in this comprehensive conservation plan would conserve or restore land and water, and would thus enhance carbon sequestration. This in turn contributes positively to efforts to mitigate human-induced global climate changes.

Summary of Effects by Alternative

The following section describes the environmental consequences of adopting each Refuge management alternative. Table 2 addresses the likely outcomes for specific issues and is organized by seven broad issue categories.

Alternative 1 – Current Direction (No Action)

1. Habitat Restoration, Management and Creation

Habitat restoration and management would occur primarily through cooperative efforts with partners. Cooperative management agreements would be arranged with industrial property owners along the river. The result would be a net increase, up to 500 acres, of new lands restored or managed as fish and wildlife habitat.

2. Land Conservation

Land acquisition, primarily of river island and coastal wetland habitats, would occur through donations, partnerships and special grants. A net increase of up to 20 percent of remaining habitat would receive permanent conservation.

3. Contamination/Pollution

Identification and/or cleanup of environmental contaminants would focus on existing Refuge lands or lands actively considered for acquisition. Partnerships with government agencies and industrial property owners would result in reduced levels and dispersion of environmental toxins.

4. Functional Partnerships

New partnerships would be developed as the Refuge staff and resources continue to grow. Up to 10 potential partner organizations would be contacted each year. The establishment of a Friends of Detroit River IWR would provide a pool of volunteers and increase effectiveness of all Refuge programs.

5. Environmental Education

The theme for environmental education would focus on the need for conserving migratory bird and fish habitats as well as the river ecosystem. A visitor center, to be shared with other organizations, would dramatically increase the visibility of the Service and trust resources. Refuge promotional materials and displays would also contribute to new conservation efforts in the Detroit River watershed.

6. Future of Hunting and Fishing

Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge lands where it is safe and appropriate. The addition of new Refuge lands would increase hunting and fishing opportunities on the lower Detroit River and Lake Erie shorelines.

7. Secondary Public Uses

Recreational uses that are not dependent upon wildlife would be limited on Refuge-owned lands and waters. Restrictions or closures may be necessary due to the small size of Refuge land holdings and potential conflicts with wildlife-dependent priority uses.

Alternative 2 – Leading through Partnerships (Preferred Alternative)

1. Habitat Restoration, Management & Creation

Habitat restoration and management would occur primarily through cooperative efforts with partners. Cooperative management agreements would be arranged with industrial property owners along the river. A net increase of up to 2,000 acres would be restored or managed as fish and wildlife habitat.

2. Land Conservation

Land acquisition, primarily of river island and coastal wetland habitats, would occur through donations, partnerships and special grants. A net increase of up to 40 percent of remaining habitat would receive permanent conservation.

3. Contamination/Pollution

Identification and/or clean-up of environmental contaminants would focus on existing Refuge lands or lands actively considered for acquisition. Partnerships with government agencies and industrial property owners would result in reduced levels and dispersion of environmental toxins.

4. Functional Partnerships

New partnerships would be developed as the Refuge staff and resources continue to grow. Up to 10 potential partner organizations would be contacted each year. The establishment of a Friends of Detroit River IWR would provide a pool of volunteers and increase effectiveness of all Refuge programs.

5. Environmental Education

The theme for environmental education would focus on the need for conserving migratory bird and fish habitats as well as the river ecosystem. A visitor center, to be shared with other organizations, would dramatically increase the visibility of the Service and trust resources. Refuge promotional materials and displays would also contribute to new conservation efforts in the Detroit River watershed.

6. Future of Hunting and Fishing

Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge lands where it is safe and appropriate. The addition of new Refuge lands would increase hunting and fishing opportunities on the lower Detroit River and Lake Erie shorelines.

7. Secondary Public Uses

Recreational uses that are not dependent upon wildlife would be limited on Refuge-owned lands and waters. Restrictions or closures may be necessary due to the small size of Refuge land holdings and potential conflicts with wildlife-dependent priority uses.

Alternative 3 – Habitat Emphasis

1. Habitat Restoration, Management & Creation

Habitat restoration and management would occur primarily through cooperative efforts with partners. Cooperative management agreements would be arranged with industrial property owners along the river. The result would be a net increase, up to 1,000 acres, of new lands restored or managed as fish and wildlife habitat.

2. Land Conservation

Land acquisition, primarily of river island and coastal wetland habitats, would occur through donations, partnerships and special grants. A net increase of up to 75 percent of remaining habitat would receive permanent conservation.

3. Contamination/Pollution

Identification and/or clean-up of environmental contaminants would focus on existing Refuge lands or lands actively considered for acquisition. Partnerships with government agencies and industrial property owners would result in reduced levels and dispersion of environmental toxins.

4. Functional Partnerships

New partnerships would be developed as the Refuge staff and resources continue to grow. Up to 10 potential partner organizations would be contacted each year. The establishment of a Friends of Detroit River IWR would provide a pool of volunteers and increase effectiveness of all Refuge programs.

**Table 2: Summary of Environmental Consequences for Management Alternatives
for the Detroit River International Wildlife Refuge**

Issues	Alternative 1 Current Management Direction (No Action)	Alternative 2 Leading Through Partnerships (Preferred Alternative)	Alternative 3 Habitat Emphasis
Habitat Restoration, Management and Creation			
All Habitat Types	Increased. up to 500 acres to be restored or managed for fish and wildlife.	Increased. Up to 2,000 acres to be restored or managed for fish and wildlife.	Increased. Up to 1,000 acres to be restored or managed for fish and wildlife.
Land Conservation			
Coastal Wetlands	Increased conservation. Up to 20 percent of remaining wetlands receive permanent conservation.	Increased conservation. Up to 40 percent of remaining wetlands receive permanent conservation.	Increased conservation. Up to 75 percent of remaining wetlands receive permanent conservation.
Islands	Increased. Up to 20 percent of remaining island habitats receive permanent conservation.	Increased. Up to 40 percent of remaining island habitats receive permanent conservation.	Increased. Up to 75 percent of remaining island habitats receive permanent conservation.
Wet Prairie	Stable or increased.	Stable or increased.	Increased restoration of prairie sites, especially in Monroe County.
Upland Forests	Stable.	Stable.	Increased. Trees will be planted on some new Refuge lands.
Contamination / Pollution			
	Stable to decreased. New partnerships with cities and industry will facilitate creative solutions.	Decreased. New partnerships with cities and industry will facilitate creative solutions.	Decreased. New partnerships with cities and industry will facilitate creative solutions.
Functional Partnerships			
	Increased. Up to 10 potential partner organizations contacted per year. Refuge Friends organization formed.	Increased. Up to 20 potential partner organizations contacted per year. Refuge Friends organization formed.	Increased. Up to 10 potential partner organizations contacted per year. Refuge Friends organization formed.
Environmental Education			

Table 2: Summary of Environmental Consequences for Management Alternatives for the Detroit River International Wildlife Refuge (Continued)

Issues	Alternative 1 Current Management Direction (No Action)	Alternative 2 Leading Through Partnerships (Preferred Alternative)	Alternative 3 Habitat Emphasis
	Increased. On-site education programs for up to 500 participants. Outreach to 25 percent of southeast Michigan residents.	Increased. On-site education programs for up to 1,000 participants. Outreach to 50 percent of southeast Michigan residents.	Increased. On-site education programs for up to 500 participants. Outreach to 25 percent of southeast Michigan residents.
Future of Hunting and Fishing			
	Stable to increased. Hunting and fishing opportunities may increase as lands are conserved or restored.	Stable to increased. Hunting and fishing opportunities may increase as lands are conserved or restored.	Stable to increased. Hunting and fishing opportunities may increase as lands are conserved or restored.
Conflicting Secondary Public Uses			
	Decreased. Lands and waters managed by the Refuge will be subject to the compatibility standard.	Decreased. Lands and waters managed by the Refuge will be subject to the compatibility standard.	Decreased. Lands and waters managed by the Refuge will be subject to the compatibility standard.

5. Environmental Education

The theme for environmental education would focus on the need for conserving migratory bird and fish habitats as well as the river ecosystem. A visitor center, to be shared with other organizations, would dramatically increase the visibility of the Service and trust resources. Refuge promotional materials and displays will also contribute to new conservation efforts in the Detroit River watershed.

6. Future of Hunting and Fishing

Wildlife-dependent recreational uses, including hunting and fishing, would be encouraged on Refuge lands where it is safe and appropriate. The addition of new Refuge lands would increase hunting and fishing opportunities on the lower Detroit River and Lake Erie shorelines.

7. Secondary Public Uses

Recreational uses that are not dependent upon wildlife would be limited on Refuge-owned lands and waters. Restrictions or closures may be necessary due to the small size of Refuge land holdings and potential conflicts with wildlife-dependent priority uses.

Cumulative Impact Analysis

“Cumulative impact” is the term that refers to impacts on the environment that result from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. In this section, the cumulative impacts of each of the three alternatives are discussed in terms of migratory birds, coastal wetland conservation, and habitat restoration.

Migratory Birds

The authorized Refuge boundary contains habitat important to numerous bird species including waterfowl, songbirds, marsh and wading birds, shorebirds, raptors, and upland game birds. Some of the factors relevant to migratory birds are offered in the following list; Chapter 3 of the CCP offers greater detail.

- # More than 300 species of birds use the Detroit River and Western Lake Erie during migration.
- # Twenty-nine species of waterfowl use the Detroit River; a crossroads of the Mississippi and Atlantic Flyways.
- # Extensive beds of aquatic vegetation, particularly wild celery, historically attracted large concentrations of divers, primarily Canvasback and Scaup.

The cumulative benefit of Alternative 2 and 3 would be the most positive because the habitat base increases and is enhanced, and management is intensified. Maintaining current management, and a slow growth in land holdings, as described in Alternative 1 (Current Direction) would have a neutral to slight benefit for migratory birds. If other U.S. agencies and organizations pursue land acquisition, and if those lands adjoin Service lands, each alternative provides an even greater benefit. The active land protection work of Canadian organizations such as the Essex Region Conservation Authority contribute to improved migratory bird population numbers.

Alternative 2 and 3 would have the most positive cumulative benefits for Bald Eagles, the only migratory bird species that is Federally-listed as threatened and nests on the Refuge. Bald Eagle numbers have been gradually increasing in the region and further land conservation measures would contribute to available food resources and nesting habitats.

Coastal Wetlands

Coastal wetlands along the Detroit River shoreline, on river islands, and along Lake Erie have been severely impacted by human activities. All alternatives would include acquisition and management of coastal wetland habitats.

- # More than 97 percent of wetlands in Michigan waters of the Detroit River have disappeared under shoreline modifications.
- # Ninety percent of the remnant U.S. wetlands in the Detroit River are found downstream of Grassy Island.
- # About 40 percent of these remnant wetlands are in Humbug Marsh and on small, undeveloped islands forming the “Conservation Crescent” around the southern tip of Grosse Ile.

Challenges to wetlands along the Detroit River and Lake Erie include:

- # Wetland loss from dredging, filling, and urban and industrial development.
- # Contamination by phosphates, heavy metals, oils, and PCBs, especially along the U.S. shoreline.
- # Vulnerability to invasive exotic species of plants, fish, and invertebrates
- # Many marshes are diked with accompanying problems of being isolated from the river.

The positive cumulative impact of alternatives 2 and 3 would be the greatest because of a focus on wetland acquisition. Reversing wetland losses would benefit the fisheries of the Detroit River and Lake Erie and maintain the status quo on filtering of water-borne pollutants. The positive benefits would be greater if the Michigan DNR, Canadian governments and non-government conservation organizations were also acquiring and enhancing wetlands, however the positive impacts would not be diminished if others did not pursue the same course.

Habitat Restoration

Numerous efforts are underway along the Detroit River to restore and manage natural shorelines, riparian wetlands, and island habitats. All alternatives would increase the amount of wetland, wet prairie and upland forest habitat within the Refuge boundary. River islands would be conserved to varying degrees with the most benefit deriving from Alternative 3.

Alternatives 2 and 3 could lead to the direct restoration of wild celery beds nearshore to islands. Wet prairie restorations that occur on new Refuge lands would use native vegetation and aggressive management techniques to eradicate non-native invasive species. The positive benefits would be greater if the Michigan DNR, Canadian governments and non-government conservation organizations were also acquiring and enhancing these habitats, however the positive impacts would not be diminished if others did not pursue the same course.

V. List of Preparers

Please see Appendix I of the CCP.

VI. Consultation and Coordination with the Public and Others

The Detroit River International Wildlife Refuge Comprehensive Conservation Plan and Environmental Assessment has been written with the participation of U.S. Fish and Wildlife Service and Michigan Department of Natural Resources staff, Refuge users and local communities. The CCP planning process began in April 2002 with the formation of a Refuge planning team. Subsequently, the planning team hosted a series of open houses in communities along the river. In October, individuals from state agencies, non-profit organizations, and others were invited to participate in a workshop to review and develop goals and objectives for the Refuge. The ideas generated at the open house events, at the workshop, and received in writing throughout the past year have provided valuable information for the authors of this plan. Please see Chapter 2 of the CCP for more information on the public scoping process.

VII. References and Literature Cited

Please see Appendix G of the CCP.

Appendix: B: Glossary

Appendix B: Glossary

Alternative	A set of objectives and strategies needed to achieve refuge goals and the desired future condition.
Biological Diversity	The variety of life forms and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.
Compatible Use	A wildlife-dependent recreational use, or any other use on a refuge that will not materially interfere with or detract from the fulfillment of the mission of the Service or the purposes of the refuge.
Comprehensive Conservation Plan	A document that describes the desired future conditions of the refuge, and specifies management actions to achieve refuge goals and the mission of the National Wildlife Refuge System.
Cultural Resources	Those parts of the physical environment, natural and built, that have cultural value to some kind of sociocultural group, and including non-material human social institutions. Cultural resources include historic sites, archeological sites and associated artifacts, sacred sites, traditional cultural properties, cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony), and buildings and structures.
Ecosystem	A dynamic and interrelated complex of plant and animal communities and their associated non-living environment.
Ecosystem Approach	A strategy or plan to protect and restore the natural function, structure, and species composition of an ecosystem, recognizing that all components are interrelated.
Ecosystem Management	Management of an ecosystem that includes all ecological, social and economic components that make up the whole of the system.
Endangered Species	Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.
Environmental Assessment	A systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.
Goals	Descriptive statements of desired future conditions.

Issue	Any unsettled matter that requires a management decision. For example, a resource management problem, concern, a threat to natural resources, a conflict in uses, or in the presence of an undesirable resource condition.
National Wildlife Refuge System	All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife and plant resources.
Objectives	Actions to be accomplished to achieve a desired outcome.
Preferred Alternative	The Service's selected alternative identified in the Draft Comprehensive Conservation Plan.
Scoping	A process for determining the scope of issues to be addressed by a comprehensive conservation plan and for identifying the significant issues. Involved in the scoping process are federal, state and local agencies; private organizations; and individuals.
Species	A distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. A category of biological classification.
Strategies	A general approach or specific actions to achieve objectives.
Wildlife-dependent Recreational Use	A refuge use that involves hunting, fishing, wildlife observation and photography, or environmental education and interpretation, as identified in the National Wildlife Refuge System Improvement Act of 1997.
Threatened Species	Those plant or animal species likely to become endangered species throughout all of or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.
Undertaking (Cultural Resources)	A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval..., ^o i.e., all Federal actions.
Vegetation	Plants in general, or the sum total of the plant life in an area.
Vegetation Type	A category of land based on potential or existing dominant plant species of a particular area.

Watershed	The entire land area that collects and drains water into a stream or stream system.
Wetland	Areas such as lakes, marshes, and streams that are inundated by surface or ground water for a long enough period of time each year to support, and that do support under natural conditions, plants and animals that require saturated or seasonally saturated soils.
Wildlife Diversity	A measure of the number of wildlife species in an area and their relative abundance.

Appendix C: Priority Refuge Operating Needs

Appendix C: Priority Refuge Operating Needs

The CCP directs an ambitious course for the future management of the Detroit River International Wildlife Refuge. The following provides a brief description of the highest priority Refuge projects. Each project description also includes the number of a corresponding strategy; linking it to the Goals/Objectives/Strategies section of Chapter 4.

All of these projects are listed in the Refuge Operating Needs System (RONS); the Service's national database of unfunded operational activities. The RONS was established in 1990 as a planning, budgeting, and communication tool to enhance identification of funding and staffing needs for the National Wildlife Refuge System. RONS projects describe the need for new or expanded activities in order to implement plans, attain goals, or satisfy legal mandates. RONS is structured around 35 management activities which include categories such as wildlife habitat management and restoration, law enforcement, visitor services and outreach, wildlife surveys, administration, and many others. Projects are linked to specific goals and objectives which are prioritized and implemented as funding becomes available. Data within RONS are used regularly in budget justifications presented to the Department of the Interior, the Office of Management and Budget, and Congress.

Specifically, the RONS projects for the Detroit River IWR will provide funding for pre-acquisition contaminant surveys, land acquisition, office equipment, vehicles, and outreach material. The projects also encompass personnel needs such as an assistant Refuge manager, a park ranger, a law enforcement officer, and an administrative technician. The listed projects include the funds, equipment, and personnel required to manage a newly-established, functional Refuge. As Refuge goals and objectives are formalized, new RONS projects will be added annually, and current projects will be reviewed to update funding and equipment needs.

Land Acquisition Planning

This project involves new staffing and acquisition planning for the Detroit River IWR. Acquisition may be through purchase, donation, cooperative agreements, and/or leases. There is great urgency to conserve remaining fish and wildlife habitats in and along the lower Detroit River, and to improve the quality of life for people recreating and living in the area. Partnerships involved include the government of Canada, the Michigan DNR, the Michigan cities of Detroit, Trenton, Wyandotte, Ecorse, Gibraltar, Monroe and Grosse Ile, Wayne County, Grosse Ile Nature and Land Conservancy, The Nature Conservancy, US EPA, the Downriver Linked Greenways Initiative, and many others. Strategies 7.1.1, 7.3.1-3. Estimated Annual Costs: \$124,000

Conduct Biological Survey of Wildlife Use and Habitat Diversity

Standard surveys of wildlife use and habitat diversity of the lower Detroit River and Lake Erie shoreline are needed to obtain accurate documentation of flora and fauna in the area of the Refuge. Documentation based on various surveys will assist in habitat improvement planning to enhance wildlife use and diversity. This documentation will also be incorporated into outreach materials to provide environmental education to the public. Surveys will be coordinated with Michigan DNR personnel, US Geological Survey biologists, FWS fisheries biologists, and local environmental organizations. Strategy 7.2.1. *Estimated Annual Costs: \$32,000*

Establish Partnerships with Canada, other Agencies, Governments and NGOs

Establishment of the Refuge has the potential to bring together a number of communities and interests along the US and Canadian shoreline. There will be involvement with a host of governments, agencies, organizations, and recreational groups. Interaction with these parties will be required to share information, resolve problems, develop cooperative efforts, and manage species and habitats. Coordination will involve research activities, routine surveys, and public outreach and education. These efforts will require attendance at various meetings and conferences both in the U.S. and Canada. Strategies 1.2.1-2, 7.4.1, 10.1.1.

Estimated Annual Costs: \$98,000

Develop Interpretive Displays, Kiosks, and Brochures

The newly established Refuge will provide outreach to the public through the use of interpretive kiosks, Refuge brochures, and displays for use at events, in schools, at conferences, etc. The information will focus on the Refuge, the lower Detroit River ecosystem, partnerships, recreational opportunities, and area history. The brochures will include a map of the lower Detroit River showing islands, marshes, and shorelines on the Canadian as well as the U.S. portions of the Refuge. Strategies 2.2.1, 3.1.1-9, 4.1.1, 5.1.1, and more. *Estimated Annual Costs: \$58,000*

Install Entrance Signs and Post Boundary Signs

Place boundary signs on islands and shorelines of lands within the Refuge. Entrance signs will be placed at access points to the Refuge, such as at boat landings and parking lots which access the Refuge or nearby parks. In partnership with Canada, standardized signs should be developed for use throughout the Refuge area, including Canadian and U.S. shorelines. Signs should have a designation to indicate Canadian or U.S. portions of the Refuge. These signs will increase public awareness of the Refuge and National Wildlife Refuge System, and generate support for conservation of the habitats of the Refuge. Strategy 2.2.2.

Estimated Annual Costs: \$61,000

Investigate Grassy Island for Extent of Contamination

Grassy Island, an 80-acre island originally part of Wyandotte NWR and now part of the Detroit River IWR, is a containment site for material dredged from the Rouge River by the U.S. Army Corps of Engineers. An investigation of the extent of contaminants and the affects of these contaminants on fish, wildlife, and habitats is required. The investigation when completed will aid in efforts to monitor, evaluate, and remediate this site. Strategies 8.3.1-3. *Estimated Total Cost: \$115,000*

Refuge Administrative Support

An administrative services staff person will be hired to process Refuge administrative work and receive visitors to the Refuge office. This person will administer Refuge budgets and staff payroll, serve as Refuge radio dispatcher, respond to various reports, and will also reply to public inquiries. All Strategies. *Estimated Annual Costs: \$43,000*

Appendix D: Compatibility Determinations

The following compatibility determinations were presented for public review in the draft CCP, which was published in July 2004 with a 30-day comment period. The final signature copies are available at the Refuge Headquarters.

- # Hunting
- # Fishing
- # Wildlife Observation and Photography
- # Environmental Education and Interpretation
- # Pre-acquisition Compatibility of Uses

Appendix: E: Bird Species List

Species	Nested on Refuge Recently	Status on Refuge by Season				Potential Benefit by Habitat Objective								Status in Region and State
	Y = Yes	a = abundant common species that is numerous. c = common, certain to be seen or heard in suitable habitat u = uncommon, present but not always seen o = occasional, seen only a few times during season r = rare, seen every few years				(Habitat used regularly for food (f), nesting (n), or cover (c) * indicates the species is found in habitat as a result of Best Management Practices and developing a beneficial plant structure.								R3 = Region 3 Conservation Priority; SMC = Species of Management Concern; ST = state listed threatened; SE = state-listed endangered; t = federally listed threatened; E = federally listed endangered
		Spring	Summer	Fall	Winter	Open water /river	Back water / river	Beach	Island	Emergent Marsh	Grassland	Cropland	Forest	
Common Loon														
Horned Grebe														
Pied-billed Grebe					o									
Double-crested Cormorant			a		o	f	f,c							R3
Mute Swan					c									
Tundra Swan					a									
Trumpeter Swan														
Canada Goose	y		a		a	c	f,c		f,c,n	f,c,n	f,c,n	f,c		
Snow Goose														
Greater White-fronted Goose														
Mallard	y		a		a	c	f,c		f,c,n	f,c,n	c,n	f		R3
Black Duck					c									R3
Gadwall					c									
Pintail					o									SMC
American Widgeon					u									
Northern Shoveler														
Blue-winged Teal			a				f,c		f,c,n	f,c,n	n	f		R3

Species	Nested on Refuge Recently	Status on Refuge by Season				Potential Benefit by Habitat Objective								Status in Region and State
	Y = Yes	a = abundant common species that is numerous. c = common, certain to be seen or heard in suitable habitat u = uncommon, present but not always seen o = occasional, seen only a few times during season r = rare, seen every few years				(Habitat used regularly for food (f), nesting (n), or cover (c) * indicates the species is found in habitat as a result of Best Management Practices and developing a beneficial plant structure.								R3 = Region 3 Conservation Priority; SMC = Species of Management Concern; ST = state listed threatened; SE = state-listed endangered; t = federally listed threatened; E = federally listed endangered
		Spring	Summer	Fall	Winter	Open water /river	Back water / river	Beach	Island	Emergent Marsh	Grassland	Cropland	Forest	
Green-winged Teal					r									
Wood Duck	y		c				f,c		n	f,c			n	R3
Redhead					c	f,c								
Canvasback					a	f,c								R3
Ring-necked Duck														
Greater Scaup					a	f,c								
Lesser Scaup					c	f,c								SMC
Common Goldeneye					c	f,c								
Bufflehead					u	f,c								
Ruddy Duck					c	f,c								
Common Merganser					a	f,c								
Red-breasted merganser					o	f,c								
Hooded merganser					o	f,c								
Turkey Vulture														
Bald Eagle					u									T, ST, R3
Golden Eagle					r									
Osprey	y		u			f	f		c,n	f			c,n	ST
Sharp-shinned Hawk					u									
Cooper's Hawk			u		c				f,c				f,c	SSC

[illegible]

[illegible]

Species	Nested on Refuge Recently	Status on Refuge by Season				Potential Benefit by Habitat Objective								Status in Region and State
	Y = Yes	a = abundant common species that is numerous. c = common, certain to be seen or heard in suitable habitat u = uncommon, present but not always seen o = occasional, seen only a few times during season r = rare, seen every few years				(Habitat used regularly for food (f), nesting (n), or cover (c) * indicates the species is found in habitat as a result of Best Management Practices and developing a beneficial plant structure.								R3 = Region 3 Conservation Priority; SMC = Species of Management Concern; ST = state listed threatened; SE = state-listed endangered; t = federally listed threatened; E = federally listed endangered
		Spring	Summer	Fall	Winter	Open water / river	Back water / river	Beach	Island	Emergent Marsh	Grassland	Cropland	Forest	
Wilson's Phalarope														
American Woodcock														
Common Snipe														
Glaucous Gull					o	f,c								
Great Black-backed Gull					u	f,c								
Herring Gull	y		c		c	f,c	f,c		n	f,c		f,c		
Ring-billed Gull	y		c		a	f,c	f,c		n	f,c		f,c		
Bonaparte's Gull					c	f,c								
Common Tern	y	c	c	u		f,c	f,c	n	n	f,c				ST, R3, SMC
Caspian Tern	y	u	c	u		f,c	f,c		n	f,c				ST
Forster's Tern														
Black Tern			u											
Rock Dove	y				c									
Mourning Dove	y		c		a				f,c,n			f,c	f,c,n	
Screech Owl	y				u									
Great Horned Owl	y				o									
Snowy Owl					r									
Long-eared Owl					r									
Common Nighthawk			u							f	f,c	f,c	c	

[illegible]

[illegible]

[illegible]

Species	Nested on Refuge Recently	Status on Refuge by Season				Potential Benefit by Habitat Objective								Status in Region and State
	Y = Yes	a = abundant common species that is numerous. c = common, certain to be seen or heard in suitable habitat u = uncommon, present but not always seen o = occasional, seen only a few times during season r = rare, seen every few years				(Habitat used regularly for food (f), nesting (n), or cover (c) * indicates the species is found in habitat as a result of Best Management Practices and developing a beneficial plant structure.								R3 = Region 3 Conservation Priority; SMC = Species of Management Concern; ST = state listed threatened; SE = state-listed endangered; t = federally listed threatened; E = federally listed endangered
		Spring	Summer	Fall	Winter	Open water /river	Back water / river	Beach	Island	Emergent Marsh	Grassland	Cropland	Forest	
Field Sparrow					u									
Fox Sparrow					r									
Swamp Sparrow					u									
Song Sparrow	y				c									
White-throated Sparrow					u									
White-crowned Sparrow					o									
Dark-eyed Junco					c									
Snow Bunting														
Lapland Longspur					o									

Appendix F: Compliance Requirements and Authorizing Legislation

Appendix F: Compliance Requirements

The following pages contain the full text of the Detroit River IWR Establishment Act, a Memorandum of Understanding between the Department of the Interior and United States Coast Guard, and a list of laws and orders that guide Refuge management.

Public Law 107-91 Detroit River International Wildlife Refuge Establishment Act

One Hundred Seventh Congress of the United States of America

AT THE FIRST SESSION

Begun and held at the City of Washington on Wednesday, the third day of January, two thousand and one

An Act

To provide for the establishment of the Detroit River International Wildlife Refuge in the State of Michigan, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Detroit River International Wildlife Refuge Establishment Act”.

SEC. 2. FINDINGS.

The Congress finds the following:

1. The Detroit River, one of North America’s greatest rivers, was created some 14,000 years ago during the retreat of the Wisconsin Glacier.
2. The present river channel, established when falling water levels permitted erosion of the Lake Plain and moraines, is a connecting channel linking the Upper and Lower Great Lakes, as well as linking the United States to Canada.
3. The Lower Detroit River ecosystem is diverse with a number of distinct channels, numerous shoals that support dense stands of aquatic plants, and many islands. These nationally and internationally significant habitats and ecological features attract as many as 29 species of waterfowl and 65 kinds of fish.
4. The Detroit River is a major migration corridor for fish, butterflies, raptors, and other birds, in addition to waterfowl. Over 300 species of birds have been documented in the Detroit-Windsor area, of which about 150 species breed in the immediate area.
5. Because the Great Lakes are situated at the intersection of the Atlantic and Mississippi Flyways, the Detroit River is an important waterfowl migration corridor. 3,000,000 ducks, geese, swans, and coots migrate annually through the Great Lakes region.
6. The importance of this corridor is recognized in the Canada-United States North American Waterfowl Management Plan that has identified the Detroit River as part of one of 34 Waterfowl Habitat Areas of Major Concern in the United States and Canada.
7. Some 300,000 diving ducks stop in the Lower Detroit River on their fall migration from Canada to the east and south each year to rest and feed in beds of water celery found in the region.

8. The international importance of the Lower Detroit River area is manifested in the United States congressional designation of the 460-acre Wyandotte National Wildlife Refuge.
9. Canada's Canard River Marsh Complex is an internationally significant waterfowl staging area which is one of the main resting and feeding areas for canvasbacks migrating from their nesting grounds in the Canadian prairies to the East Coast. Many over-winter in the area as well.
10. The diversity of biota and habitats in the Lower Detroit River ecosystem provides substantial benefits to the over 5,000,000 people who live in the vicinity. The Lower Detroit River has an international reputation for duck hunting. On an economic basis, retail sales related to waterfowl hunting in Michigan were estimated in 1991 to be \$20,100,000. During the same year birding, photography, and other nonconsumptive uses of waterfowl contributed an additional \$192,800,000 in Michigan.
11. More than 1,000,000 pleasure boats are registered in Michigan and about half of those are used on the Detroit River and Lake St. Clair, in part to fish for the estimated 10,000,000 walleye that migrate to the Detroit River each spring from Lake Erie to spawn. These walleye have helped create an internationally renowned sport fishery estimated to bring in \$1,000,000 to the economy of communities along the lower Detroit River each spring.
12. All of these natural resource values and socioeconomic benefits were acclaimed when the Detroit River was designated an American Heritage River in 1998. The Detroit River is also a Canadian Heritage River, making it the first international heritage river system in the world.
13. The Detroit River has lost over 95 percent of its coastal wetland habitats and despite increased awareness and supporting science of their importance, habitats continue to be destroyed and degraded.
14. Protection of remaining wildlife habitats and enhancement of degraded wildlife habitats are essential to sustain the quality of life enjoyed by so many living along the Detroit River corridor.

SEC. 3. DEFINITIONS.

For purposes of this Act:

1. The term "Refuge" means the Detroit River International Wildlife Refuge established by section 5.
2. The term "Secretary" means the Secretary of the Interior.
3. The term "Detroit River" means those lands and waters within the area described in section 5(a).

SEC. 4. PURPOSES.

The purposes for which the Refuge is established and shall be managed are as follows:

1. To protect the remaining high-quality fish and wildlife habitats of the Detroit River before they are lost to further development and to restore and enhance degraded wildlife habitats associated with the Detroit River.
2. To assist in international efforts to conserve, enhance, and restore the native aquatic and terrestrial community characteristics of the Detroit River (including associated fish, wildlife, and plant species) both in the United States and Canada.
3. To facilitate partnerships among the United States Fish and Wildlife Service, Canadian national and provincial authorities, State and local governments, local communities in the United States and in Canada, conservation organizations, and other non-Federal entities to promote public awareness of the resources of the Detroit River.

SEC. 5. ESTABLISHMENT OF REFUGE.

- (a) BOUNDARIES. – There is hereby established the Detroit River International Wildlife Refuge, consisting of the lands and waters owned or managed by the Secretary pursuant to this Act in the State of Michigan within the area extending from the point in Michigan directly across the river from northernmost point of Ojibway Shores to the southern boundary of the Sterling State Park, as depicted upon a map entitled “Detroit River International Wildlife Refuge Proposed”, dated July 31, 2001, which shall be available for inspection in appropriate offices of the United States Fish and Wildlife Service.
- (b) EXISTING REFUGE LANDS. – The Wyandotte National Wildlife Refuge is hereby included within, and shall be a part of, the Detroit River International Wildlife Refuge. All references to the Wyandotte National Wildlife Refuge shall hereafter be treated as references to the Detroit River International Wildlife Refuge.
- (c) BOUNDARY REVISIONS. – The Secretary may make such revisions of the boundaries of the Refuge as may be appropriate to carry out the purposes of the Refuge or to facilitate the acquisition of property within the Refuge.
- (d) ACQUISITION. – The Secretary is authorized to acquire by donation, purchase with donated or appropriated funds, or exchange the lands and waters, or interests therein (including conservation easements), within the boundaries of the Refuge.
- (e) TRANSFERS FROM OTHER AGENCIES. – Any Federal property located within the boundaries of the Refuge which is under the administrative jurisdiction of another department or agency of the United States may, with the concurrence of the head of administering department or agency, be transferred without consideration to the administrative jurisdiction of the Secretary for the purposes of this Act.
- (f) STUDY OF ASSOCIATED AREA. – The Secretary (acting through the Director of the United States Fish and Wildlife Service) shall conduct a study of fish and wildlife habitat and aquatic and terrestrial communities of the north reach of the Detroit River, from the northernmost point of Ojibway Shores north to the mouth of Lake St. Clair, for potential inclusion in the Refuge. Not later than 18 months after the date of the enactment of the Act, the Secretary shall complete such study and submit a report containing the results thereof to the Congress.

SEC. 6. ADMINISTRATION.

- (a) IN GENERAL. – The Secretary shall administer all federally owned lands, waters, and interests therein that are within the boundaries of the Refuge in accordance with the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd et seq.) and this Act. The Secretary may use such additional statutory authority as may be available for the conservation of fish and wildlife, and H. R. 1230—4 the provision of fish and wildlife dependent recreational opportunities as the Secretary considers appropriate to carry out the purposes of this Act.
- (b) PRIORITY USES. – In providing opportunities for compatible fish and wildlife dependent recreation, the Secretary, in accordance with paragraphs (3) and (4) of section 4(a) of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd(a)), shall ensure that hunting, fishing, wildlife observation and photography, and environmental education and interpretation are the priority public uses of the Refuge.
- (c) COOPERATIVE AGREEMENTS REGARDING NONFEDERAL LANDS. – The Secretary is authorized to enter into cooperative agreements with the State of Michigan, or any political subdivision thereof, and with any other person or entity for the management in a manner consistent with this Act of lands that are owned by such State, subdivision, or other person or entity and located within the boundaries of the

Refuge and to promote public awareness of the resources of the Detroit River International Wildlife Refuge and encourage public participation in the conservation of those resources.

- (d) USE OF EXISTING GREENWAY AUTHORITY. – The Secretary shall encourage the State of Michigan to use existing authorities under the Transportation Equity Act for the 21st Century (TEA– 21) to provide funding for acquisition and development of trails within the boundaries of the Refuge.

SEC. 7. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Department of the Interior –

- (1) such sums as may be necessary for the acquisition of lands and waters within the Refuge;
- (2) such sums as may be necessary for the development, operation, and maintenance of the Refuge; and
- (3) such sums as may be necessary to carry out the study under section 5(f).

Speaker of the House of Representatives. Vice President of the United States and President of the Senate.

Transcription of Memorandum of Understanding between Department of Interior and United States Coast Guard:

WHEREAS, under date of 13 November 1843, the President of the United States of America did execute an Executive Order wherein the islands known as Grassy and Mamajuda (also known as Mammajuda or Mammy Juda) situated in the Detroit River, Wayne County, Michigan, were reserved from the Public Domain for lighthouse purposes and,

WHEREAS, the Congress of the United States on 3 August 1961 did enact Public Law 87-119 wherein Grassy and Mamajuda Islands were established and designated as the Wyandotte National Wildlife Refuge, to be administered by the Secretary of the Interior in accordance with laws and regulations relating to national wildlife refuges and,

WHEREAS, the Commandant of the United States Coast Guard has accomplished the administrative transfer of Grassy and Mamajuda Islands to the Department of the Interior, Bureau of Sport Fisheries and Wildlife, pursuant to Public Law 87-119 and,

WHEREAS, the United States Coast Guard has a continuous need for the lighted aids to navigation presently located on the two Islands and designated the Grassy Island Light (LL 821), the Grassy Island North Channel Range Front and Rear Lights (LL 847 and LL 849), the Mamajuda Light (LL 817), THEREFORE,

IT IS MUTUALLY UNDERSTOOD AND AGREED THAT, the United States Coast Guard shall:

- (a) have the right and privilege in perpetuity to operate and maintain aids to navigation on Grassy and Mamajuda Islands,
- (b) have the right and privilege of ingress and egress for purposes incident to the servicing and maintaining of the aids to navigation, and

- (c) have the right and privilege to relocate the aids to navigation as changing marine traffic patterns in the Detroit River dictate.

IT IS FURTHER UNDERSTOOD AND AGREED THAT, the Director, Bureau of Sport Fisheries and Wildlife, Department of the Interior, shall ensure full protection of the United States Coast Guard's interests in its aids to navigation in any permit, license, or lease for use of any part of, or all, of Grassy and Mamajuda Islands by other Federal agencies, by State, municipal, or local governments, or by private individuals or concerns.

Signed July 31, 1964 by Bureau of Sport Fisheries and Wildlife and August 18, 1964 by United States Coast Guard.

Compliance Requirements

Rivers and Harbor Act (1899) (33 U.S.C. 403): Section 10 of this Act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act (1934), as amended: Requires that the Fish and Wildlife Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted or modified under a Federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the Nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the opening of part of a refuge to waterfowl hunting.

Historic Sites, Buildings and Antiquities Act (1935), as amended: Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

Refuge Revenue Sharing Act (1935), as amended: Requires revenue sharing provisions to all feehold ownerships that are administered solely or primarily by the Secretary through the Service.

Bald and Golden Eagle Protection Act, 1940

Transfer of Certain Real Property for Wildlife Conservation Purposes Act (1948): Provides that upon a determination by the Administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred without reimbursement to the Secretary of Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.

Federal Records Act (1950): Directs the preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act (1964), as amended: Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

*National Wildlife Refuge System Administration Act (1966), as amended by the National Wildlife Refuge System Improvement Act (1997)*¹⁶ U.S.C. 668dd668ee. (*Refuge Administration Act*): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Historic Preservation Act (1966), as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended: Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.

Clean Air Act, 1970

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Archaeological and Historic Preservation Act (1974): Directs the preservation of historic and archaeological data in Federal construction projects.

Fishery (Magnuson) Conservation and Management Act, 1976

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Surface Mining Control and Reclamation Act (1977) as amended (Public Law 95-87) (SMCRA): Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order 11988 (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990: Executive Order 11990 directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372 (Intergovernmental Review of Federal Programs): Directs the Service to send copies of the Environmental Assessment to State Planning Agencies for review.

Executive Order 11644, Use of Off-Road Vehicles on Public Land

Executive Order 12962, Recreational Fisheries

Executive Order 13084, Consultation/Coordination with Tribal Governments

Executive Order 11987, Exotic Organisms

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Fish and Wildlife Improvement Act (1978): Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act (1979), as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Federal Farmland Protection Policy Act (1981), as amended: Minimizes the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.

Emergency Wetlands Resources Act (1986): Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12898 (1994): Establishes environmental justice as a Federal government priority and directs all Federal agencies to make environmental justice part of their mission. Environmental justice calls for fair distribution of environmental hazards.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13007 Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act (1997): Considered the “Organic Act of the National Wildlife Refuge System. Defines the mission of the System, designates priority wildlife-dependent public uses, and calls for comprehensive refuge planning.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998): Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges, and for other purposes.

National Trails System Act: Assigns responsibility to the Secretary of Interior and thus the Service to protect the historic and recreational values of congressionally designated National Historic Trail sites.

Appendix G: Bibliography

Appendix G: Bibliography

- Caswell, N., D. Peterson, B. Manny, and G. Kennedy. 2003. Spawning by lake sturgeon in the Detroit River. Central Michigan University. In prep.
- Chow-Fraser, Patricia and Dennis A. Albert. 1998. Biodiversity Investment Area, Coastal Wetland Ecosystems: Identification of "Eco-Reaches" of Great Lakes Coastal Wetlands that have high biodiversity value. Draft for discussion at SOLEC 98. 101 pp.
- Cibrowski, J. 2001. Lessons from sentinel invertebrates (Mayflies and other species), in J.H. Hartig (ed.) Honoring our Detroit River, Caring for Our Home, Detroit. Wayne State University Press.
- Detroit River Canadian Cleanup Committee. Detroit River Update Report. 1999. Available online at <http://www.drccc.info/DetroitRiverUpdate.pdf>
- Eisler, R. 1985. Cadmium hazards to fish, wildlife, and invertebrates: A synoptic review. Biological Report 85(1.2). U.S. Fish and Wildlife Service, Laurel, MD; USA.
- Eisler 1986. Polychlorinated biphenyl hazards to fish, wildlife, and invertebrates: A synoptic review. Biological Report 85(1.7). U.S. Fish and Wildlife Service, Laurel, MD; USA.
- Eisler 1987a. Polycyclic aromatic hydrocarbon hazards to fish, wildlife, and invertebrates: A synoptic review. Biological Report 85(1.11). U.S. Fish and Wildlife Service, Laurel, MD; USA.
- Eisler 1987b. Mercury hazards to fish, wildlife, and invertebrates: A synoptic review. Biological Report 85(1.10). U.S. Fish and Wildlife Service, Laurel, MD; USA.
- Farara, D.G. and A.J. Burt. 1993. Environmental Assessment of Detroit River Sediments and Benthic Macroinvertebrate Communities - 1991. Brampton, ON, Report prepared for the Ontario Ministry of Environment and Energy by Beak Consultants Ltd.
- Francis, J.T. In press. A creel survey of the Detroit River, spring 2000. Michigan Department of Natural Resources, Fisheries Division, Fisheries Technical Report, Ann Arbor, MI.
- Froese, K.L., D.A. Verbrugge, S.A. Snyder, F. Tilton, M. Tuchman, A. Ostaszewski and G.P. Giesy. 1997. "PCBs in the Detroit River water column," J. Great Lakes Res. 23(4):440-449.
- Goodyear, Carole D., Thomas A. Edsall, Diane M. Ormsby Dempsey, G. David Moss, and Paul E. Polanski. 1982. Atlas of the Spawning and Nursery Areas of Great Lakes Fishes, Volume VIII, Detroit River. Great Lakes Fishery Laboratory, U.S. Fish and Wildlife Service, Ann Arbor, MI. 42 pp.
- Government of Canada and the U.S. Environmental Protection Agency. 1995. Great Lakes Atlas - 3rd Edition. <http://www.epa.gov/glnpo/atlas/use-imp.html> accessed March 29, 2000.
- Haas, R. C., W. C. Bryant, K. D. Smith, and A. J. Nuhfer. 1985. Movement and harvest of fish in Lake St. Clair, St. Clair River, and Detroit River. Final Report, Winter Navigation Study. Michigan Department of Natural Resources, Fisheries Division, 610 p.

- Hamdy, Y. and L. Post. 1985. "Distribution of mercury, trace organics, and other heavy metals in Detroit River sediments," J. Great Lakes Res. 11(3):353-365.
- Heidtke, T.M., J.H. Hartig, and B. Yu. eds. 2003. Evaluating Ecosystem Results of PCB Control Measures within the Detroit River-Western Lake Erie Basin. Available online at http://www.tnnusa.com/art/pfd/PCB_Final_ReportUEF.pdf
- Kafcas, Ernie. 1999. Telephone conversation with author, March 3.
- Kafcas, Ernie. 2000. Information from files of Mt. Clemens Fish. Research Station, Michigan Department of Natural Resources. Fax to author March 30.
- Kaiser, K.L.E., M.E. Comba, H. Hunter, R.J. Maguire, R.J. Tkacz and R.F. Platford. 1985. "Trace organic contaminants in the Detroit River," J. Great Lakes Res. 11(3):386-399.
- Kreis, R.G., G.D. Haffner, and M. Tomczak. "Contaminants in Water and Sediments." In Conference Proceeds of State of the Strait: Status and Trends of the Detroit River Ecosystem J. Read, J.H. Hartig, and P. Murray, eds.. 2001. Available online at <http://crons.uwindsor.ca/units/glier/stateofthestrat/main.nsf>
- Manny, B.A., T.A. Edsall and E. Jaworski. 1988. The Detroit River: An ecological profile. U.S. Fish and Wildlife Service, Biol. Rep. 85(7.3). 130 p.
- Manny, Bruce A. 1999. Contamination Distribution and Movement at Grassy Island. Completion Report for NBS Reimbursable Agreement No: 84080-1491-MH25. Internal document on file at Shiawassee National Wildlife Refuge, Saginaw, Michigan 29 p.
- Manny, Bruce. 2000. Telephone conversation with author, April 12, 2001.
- Manny, B. A. 2001. Setting priorities for conserving and remediating Detroit River habitats. Chapter 10 in: John Hartig (ed.) Honoring our River, Caring for our Home. Wayne State University, Detroit, Michigan. In press.
- Mazak, E.J., H.J. MacIsaac, M.R. Servos, and R. Hesslein. 1997. Influence of feeding habits on organochlorine contaminant accumulation in waterfowl on the Great Lakes. Ecological Applications 7:1133-1143.
- Michigan Department of Natural Resources and Ontario Ministry of the Environment. 1991. Detroit River Remedial Action Plan Stage I. Lansing, MI,
- Michigan Department of Natural Resources. Michigan Department of Environmental Quality. 1996. 1996 Detroit River Remedial Action Plan Report. Lansing, MI, Surface Water Quality Division.
- Miller, H.J. 1961. Waterfowl populations in vicinity of Grassy and Mammy Juda Islands, Detroit River. Memo to Grassy Island, Wayne County File dated February 10, 1961. Michigan Department of Natural Resources.
- Robertson, James A., Kent C. Taylor, Michael J. Hambacher, William A. Lovis, and G. William Monaghan. 1999. Overview study of archaeological and cultural values on Shiawassee, Michigan Islands, and Wyandotte National Wildlife Refuges in Saginaw, Charlevoix, Alpena, and Wayne Counties, Michigan. Prepared for U.S. Fish and Wildlife Service under contract number 301818M494. Two volumes.

Upper Great Lakes Connecting Channels Study Management Team. 1988. Upper Great Lakes Connecting Channels Study. Vol. II, Final Report.

Upper Mississippi River and Great Lakes Region Joint Venture Management Board. 1998. North American Waterfowl Management Plan: Upper Mississippi River and Great Lakes Region Joint Venture Implementation Plan Update. 58 pp. plus appendices.

U.S. Department of Energy, Carbon Sequestration Research and Development, 1999.

U.S. Environmental Protection Agency and Environment Canada. 1999. Biodiversity Investment Areas: Coastal Wetland Ecosystems. <http://www.epa.gov/grtlakes/solec/98/papers/coastabia/background.html> and associated pages accessed March 29, 2000.

U.S. Fish and Wildlife Service, Region 3. November 1990. Regional Wetlands Concept Plan: Emergency Wetlands Resources Act. 13 pages + tables.

U.S. Fish and Wildlife Service, Region 3. January 1999. Fish & Wildlife Resource Conservation Priorities. 25 pp.

Appendix H: Mailing List

Mailing List

Federal Officials

U.S. Senator Debbie Stabenow
U.S. Senator Carl Levin
U.S. Representative John Dingell
U.S. Representative James Barcia
U.S. Representative David Bonior
U.S. Representative Sander Levin
U.S. Representative John Conyers
U.S. Representative Carolyn Kilpatrick

Federal Agencies

Coast Guard
USDA/Natural Resources Conservation Service
USDI/Fish and Wildlife Service, Albuquerque, New Mexico; Anchorage, Alaska; Atlanta, Georgia; Denver, Colorado; Fort Snelling, Minnesota; Hadley, Massachusetts; Portland, Oregon; Washington, D.C.
USDI/East Lansing Private Lands Office; East Lansing Field Office; Alpena Fishery Resources Office; Ann Arbor Law Enforcement Field Office; Great Lakes Science Center, Biological Resources Division, USGS
USEPA, Great Lakes National Program Office, Chicago, Illinois

State Officials

Governor Jennifer Granholm
Senator Michael Goschka
Representative Michael Hanley
Representative Jim Howell

State Agencies

Michigan Department of Natural Resources,
Director Russell Harding, Michigan Department of Environmental Quality
Pte. Mouillee State Game Area
State Historic Preservation Officer, Lansing, Michigan

City/County/Local Governments

Mayor, City of Wyandotte, Michigan
Mayor, City of Ecorse, Michigan
Mayor, City of Monroe, Michigan
Superintendent of Parks, City of Wyandotte, Wyandotte, Michigan
Chairman, Wayne County Board of Commissioners
Chairman, Monroe County Board of Commissioners

Libraries

Fourteen public libraries between Detroit, Michigan, and Toledo, Ohio

Organizations

Friends of the Detroit River
The Nature Conservancy
National Audubon Society
Conservation Fund
Grosse Ile Nature and Land Conservancy

Michigan United Conservation Clubs
Wildlife Management Institute
Ducks Unlimited
Michigan Duck Hunters Association
Great Lakes Commission
Wildlife Management Institute
PEER Refuge Keeper
The Wilderness Society, Washington, D.C.
National Wildlife Federation, Ann Arbor, Michigan
The Conservation Fund, Arlington, Virginia

Media

Detroit News
Detroit Free Press
Saginaw News
Ecorse News-Herald
Wyandotte News-Herald
Michigan Radio News
Detroit Public Television
WJR-AM 760
WKBD, UPN 50
WWJ Newsradio 950

Federally-recognized Tribes and Historical Societies
Michigan State Historic Preservation Officer
Michigan Office of the State Archeologist
Charles H. Wright Museum of African American History
Detroit Historical Museums (Detroit Historical Society)
Historic Fort Wayne National Historic Site
Wyandotte Tribe of Oklahoma
Ottawa Tribe of Oklahoma
The Grand Traverse Band of Ottawa and Chippewa Indians
Little Traverse Bay Bands of Odawa Indians
Little River Band of Ottawa Indians of Michigan
Burt Lake Band of Ottawa and Chippewa Indians
Match-e-be-nash-she-wish Band of Potawatomi Indians of Michigan (Gun Lake Band of Ottawa Indians)
Michigan Anishinabe Cultural Protection and Repatriation Alliance (Ojibwa)
The Advisory Council on Historic Preservation
FWS Regional Historian

Individuals

Individuals who participated in open houses or focus groups or who requested to be on the mailing list

Appendix: I: List of Preparers

Appendix I: List of Preparers

John Hartig
Refuge Manager, Detroit River International Wildlife Refuge
Mr. Hartig assisted with editing the Comprehensive Conservation Plan.

Douglas G. Spencer
Former Refuge Manager, Shiawassee National Wildlife Refuge
Mr. Spencer provided overall direction, supervision, and coordination with agencies and the public. He assisted in writing and editing.

Gary Muehlenhardt
Wildlife Biologist/Refuge Planner, Region 3
Mr. Muehlenhardt provided planning coordination and served as primary author.

Joseph Robison
Wildlife Biologist, Michigan Department of Natural Resources
Mr. Robison provided local support, MIDNR input and served as co-author.

John Merriman
Issues Coordinator, Environment Canada
Mr. Merriman provided local support and coordination with Canadian agencies and the public.

James Dastyck
Wildlife Biologist, Shiawassee National Wildlife Refuge
Mr. Dastyck provided technical input on fish and wildlife sections of the plan.

John Dobrovolny
Regional Historian, Region 3
Mr. Dobrovolny served as primary author of the Cultural Resources sections.

Lisa Williams
Fish and Wildlife Biologist, East Lansing Field Office
Ms. Williams provided technical advice and edits for the Environmental Contaminants sections.

Becky Goche
Park Ranger, Shiawassee National Wildlife Refuge
Ms. Goche wrote several of the Compatibility Determinations.

Ed DeVries
Refuge Operations Specialist, Shiawassee National Wildlife Refuge
Mr. DeVries provided information for the Refuge Operating Needs section, fishing compatibility, and text edits.

Kevin Shinn
Refuge Officer, Shiawassee National Wildlife Refuge
Mr. Shinn served as primary author of the Law Enforcement section.

Dean Granholm, Wildlife Biologist/Refuge Planner, Region 3
Mr. Granholm assisted with writing and editing sections of the plan.

Gabriel DeAllesio
Biologist/GIS Specialist, Region 3
Mr. DeAllesio prepared maps for the comprehensive conservation plan.

Jane Hodgins
Technical Writer/Editor, Region 3
Ms. Hodgins served as primary editor.

Appendix: J: The Upper Detroit River: A Report to Congress

Appendix J: A Report to Congress

The Detroit River International Wildlife Refuge Establishment Act included a provision to study the resource merits of the Upper Detroit River. The U.S. Fish and Wildlife Service (Service) was given 18 months to conduct a study of fish and wildlife habitat and aquatic and terrestrial communities of the north reach of the Detroit River for potential inclusion in the Refuge, and to report its findings to Congress. To meet this directive, the Service developed a Comprehensive Conservation Plan for the Refuge containing this report.

The subsection of Public Law 107-91:

Section 5(f) STUDY OF ASSOCIATED AREA. – The Secretary (acting through the Director of the United States Fish and Wildlife Service) shall conduct a study of fish and wildlife habitat and aquatic and terrestrial communities of the north reach of the Detroit River, from the northernmost point of Ojibway Shores north to the mouth of Lake St. Clair, for potential inclusion in the Refuge. Not later than 18 months after the date of the enactment of the Act, the Secretary shall complete such study and submit a report containing the results thereof to the Congress.

The Environment

The 14-mile long Upper Detroit River flows past downtown Detroit and Windsor, Ontario. The shoreline has been highly altered since the time of European settlement over three centuries ago. Aquatic vegetation, shrubs and trees long ago gave way to intense agricultural use and later industry and a modern metropolis. On the U.S. side, roads, factories, and huge skyscrapers, including the new General Motors Renaissance Center, hug the riverfront. Nearly every inch of the shore has been encased in concrete and steel pilings or rock.

Several municipal parks are found along the Detroit shoreline and these are developed with trails, benches, ball fields and maintained in mowed grass for recreational purposes. The shoreline also contains a few open lots; the remnants of abandoned industrial sites. Many of these lots have environmental contaminants in the soil and adjacent river sediments such as phosphates, heavy metals, oils, and Polychlorinated biphenyls (PCBs). Very few, if any, shoreline segments contain natural vegetation suitable as wildlife habitat.

Above Fighting Island on the Canadian side of the lower river, the Detroit River narrows to an approximately one-half mile width. Domestic barge and international ship traffic pass through the shipping channel in close proximity to the shore. Water velocity also increases in the upper river, making for a harsher environment for many aquatic species.

Belle Isle at three miles long and 980 acres, one of only two islands in the upper river, is one of the most heavily used islands in the United States. Several lakes and canals have been constructed on the island and these are adjacent to historic buildings, marinas and a public aquarium. The island is connected to downtown Detroit by a bridge and is the site of high recreational use. But decades of neglect of building and landscape maintenance has taken a toll. In recent years, citizen-led efforts have focused on improving the quality of recreation facilities and restoring some natural features to Belle Isle. Several conservation projects are in progress on the island including a soft engineering demonstration project along an eroded inland lake, enhancement of fishery habitat around two fishing piers and an artificial, offshore rock bed for spawning lake sturgeon.



Resource Values

As discussed earlier, the Upper Detroit River is a heavily altered riparian system impacted by human activities. Much of the resource value of the Upper Detroit River resides in the water column itself as a travel corridor for fish and waterfowl. Several fish species, including walleye and lake sturgeon, migrate through the upper river. In the case of lake sturgeon, a species of special concern to the Service, spawning activity may occur in the upper river but is undocumented at this time.

The entire length of the Detroit River is an important travel corridor for migratory birds as it lies in the convergence of two flyways. Migrating birds, especially waterfowl, pass quickly through the upper river and on to Lake St. Clair or the marshes and aquatic vegetation beds found on the lower river on their seasonal north and south migrations. Substantial numbers of migrating waterfowl do not linger in the upper river due to the increased water velocity, the high level of disturbance by boat traffic and the limited amount of submerged vegetation as a food source.

Bald Eagles, a Federally-listed threatened species, are often spotted in flight over the upper river. However, nesting activity has not been documented in the area and only occurs on the lower river shoreline and islands. The Northern riffleshell, a federally-listed endangered mussel, has not been documented in the Detroit River but may occur on island shoals. Two state-listed threatened species have been associated with lower Detroit River islands. The spotted turtle was recorded in the Michigan Natural Features Inventory in 1997, and the Common Tern was recorded in 1977.

Findings

As a general rule, lands included in the National Wildlife Refuge System are selected because they contain habitats of high value to fish and wildlife species considered Trust resources of the agency. Trust species are those in which the Service has legislated jurisdiction and include all migratory birds and those plants, wildlife, or invertebrate species on the federal threatened and endangered species list.

The Service has determined that the shoreline of the Upper Detroit River does not contain sufficient undeveloped lands to warrant inclusion in the authorized boundary for a national wildlife refuge. Opportunities to conserve or establish quality habitats for Service Trust wildlife species are extremely limited on the Upper Detroit River. However, we recognize that the waters of the Detroit River, and some small sections of mainland shoreline and areas on Belle Isle, do provide habitats for resident and migratory birds and fish. The Service will continue to assist in the habitat restoration and environmental education programs occurring on Belle Isle even without designation of a new authorized boundary for the Detroit River International Wildlife Refuge. The Service will remain involved with habitat restoration efforts on these sites through the Partners for Fish and Wildlife program, endangered species consultations, and through environmental education programs to be developed by future staff of the adjacent Detroit River International Wildlife Refuge.

The Lower Detroit River, the area within the existing authorized Refuge boundary, contains islands and shoreline segments that can be conserved or restored as wildlife habitat. Plenty of opportunities for conservation work will exist for years to come within the current, and recently expanded, boundary of the Detroit River International Wildlife Refuge.

Appendix K: Habitat Conservation Options

Detroit River International Wildlife Refuge

Options for Fish and Wildlife Habitats

This Habitat Conservation Options presents habitat conservation and restoration options available to the Service and landowners on public and private lands within the authorized Refuge boundary. The Detroit River environment has been heavily altered since the time of European settlement over three centuries ago. Shoreline vegetation, shrubs and trees long ago gave way to intense agricultural use and later industry and a modern metropolis. Environmental contaminants remain a concern in river sediments, former dredge disposal areas, and operating and abandoned industrial sites. The limited amount of remaining coastal habitats, high recreational use on the water, and contaminants provide unique challenges to broad scale conservation efforts.

I. Options for Land Conservation

Land conservation options vary from written agreements on land management to outright purchase of the land. Land may be acquired in fee title by several methods including exchange, purchase or donation. Conservation or non-development easements can also be purchased by the Service or donated by a landowner. Each parcel of land has unique resource values and circumstances that determine the desired level of conservation.

Traditionally, most people think of full acquisition of lands, or fee title, when they hear about a new refuge. However, land purchase is only one of many options for developing a wildlife refuge. Various options for habitat conservation and restoration could be used in concert with fee title acquisition to achieve refuge goals. In particular, the prevalence of Detroit River lands with environmental contaminant issues will make less-than-fee approaches the only option available to the Service and landowners on many properties.

Fee Simple Purchase: The Service could purchase land from willing sellers within the authorized Refuge boundaries. The land would be appraised at market value and a written offer presented to a landowner. Full rights and title to purchased property would be vested with the United States as part of the National Wildlife Refuge System. Land acquisition funds are limited and allocated on a nationwide basis. Each Service Region must compete for appropriations from Congress under the Land and Water Conservation Fund and for Migratory Bird Conservation Fund (Duck Stamp) allotments. Annual land acquisition funding cannot be assured for each refuge requesting it.

Conservation Easements: Conservation easements are a popular method for land conservation used by private individuals, land trusts and governments. Conservation easements involve the acquisition of specific land rights for the purpose of achieving defined habitat objectives. Easements can either prohibit or encourage certain practices. For example, wetland easements usually involve the right to drain, burn and fill a wetland. Grassland easements usually cover the right to place timing restrictions on hay mowing to benefit wildlife. A Purchase of Development Rights, or non-development easement, precludes construction of buildings and facilities on a property. Easements become part of the title to the property and are usually permanent. If a landowner sells the property, the easement continues as part of the title.

Cooperative Agreements: The establishing legislation for the Refuge encourages the Service to enter into cooperative management agreements with private landowners and public land managing agencies. The Service can offer free technical advice, materials and restoration assistance to property owners through a cooperative agreement. The Service can agree to develop wildlife or land management plans, or do wildlife surveys on private lands and provide detailed information to the landowners. These cooperative agreements are formal, written documents, and usually place no legally binding restrictions on the land. No money is involved and either party may cancel the agreement with adequate notice to the other party. A cooperative agreement would not affect the tax status of the land.

Technical assistance for sensitive habitat management will be available through the Partners for Fish and Wildlife Program and from future Refuge staff. A future Friends group for the Refuge could operate a Heritage Registry similar to a program at Minnesota Valley NWR. In that program, landowners make a verbal commitment to conserve and preserve the land to the best of their abilities, notify the Friends of any potential threats to the area, and notify the Friends of the intent to sell the property. In return, landowners are provided with educational information on stewardship techniques, incentives (books and plaques) and public recognition of their efforts.

II. Options for Habitat Restoration

Partners for Fish and Wildlife: This program is administered by the U.S. Department of the Interior, Fish and Wildlife Service and offers technical and financial assistance to private landowners to voluntarily restore wetlands, native grasslands and other fish and wildlife habitats. The Service, along with a wide variety of partners, provides assistance and cost-sharing to complete work if the landowner agrees to maintain the area for a period of 10 years or more. Partners who contribute time and funds for these efforts include local conservation organizations, universities, businesses, school groups, other government agencies and private individuals.

Wetlands Reserve Program: The Wetlands Reserve Program is administered by the U.S. Department of Agriculture, Natural Resources Conservation Service. The program focuses on providing financial incentives to landowners in exchange for wetland restoration or enhancements. Three options are available: permanent easements, 30-year easements, and restoration cost-share agreements for a minimum 10-year duration. The landowner retains title to the land and may lease it for hunting and fishing. Additional activities, such as haying, grazing or timber cutting may be permitted if the uses are fully consistent with conservation and enhancement of the wetland.

Technical Assistance: Several programs exist for people who want to improve wildlife habitat on their land. Financial assistance for habitat improvements is often available on a cost-sharing basis.

Wildlife Habitat Incentives Program: Participants work with the Natural Resources Conservation Service to prepare a wildlife habitat development plan in consultation with the local conservation district. The plan describes the landowners' goals for habitat improvement and sets a schedule for implementation. Cost-share agreements under this program generally last from 5 to 10 years.

Private Conservation Efforts: In recent years, conservation organizations have been effective in promoting wildlife habitat improvement on private lands. Collectively, these local, regional or national organizations are a great source of financial and technical assistance for the private landowner who wishes to improve lands for wildlife. Some of the organizations active in the Midwest include The Nature Conservancy, The Conservation

Fund, Fish and Wildlife Foundation, Izaak Walton League, Audubon Society, Trust for Public Lands, Ducks Unlimited, and Pheasants Forever.

In addition, local hunting, fishing, and conservation organizations often are willing to assist private landowners with wildlife habitat improvement projects. Many of these organizations have substantial financial and technical resources and are often a dedicated source of energy for wildlife habitat improvement on both private and public lands.

III. Recommended Land Conservation Levels

The draft Environmental Assessment recommends Alternative 2 which has a Refuge land conservation goal of up to 40 percent of the remnant wetland and island habitats. In addition, up to 2000 acres of degraded habitat would be restored or managed for fish and wildlife. Any fee or easement purchases, cooperative agreements, or other measures mentioned above would be on a willing participant basis. If a landowner of identified land is not interested in a fee title sale, the Service would consider other options such as conservation easements or assistance with private conservation measures if these were of interest to the landowner. No landowner will be forced to participate in any of the conservation programs mentioned above.

The Service would not seek to acquire State lands already managed for wildlife habitat. Instead, we would like to work in concert with State land managers to enhance wildlife habitat measures on adjacent federal and state lands.

IV. Land Conservation Priorities:

The Service's highest priority (Priority 1) lands for purchase and restoration are identified in Chapter 4 of the CCP (see figures 9 and 10). These include the largest remaining wetlands in private ownership on the U.S. side of the River and select coastal and island properties. Lands that could be restored and managed under private ownership through cooperative agreements or partnerships are the second highest priority (Priority 2).

Appendix L: Species List

Appendix L: Species List

Plants, Fish, Birds, Mammals, Reptiles, Amphibians and Invertebrate Species of the Detroit River International Wildlife Refuge

Plants

No formal, complete FWS survey of the new international wildlife refuge exists, so the following is a listing representing only those species reported by other conservation agencies, organizations or groups.

Aceraceae: Maple Family

Acer negunda – Boxelder

Acer platanoides – Norway maple

Acer saccharinum – Silver maple

Acer saccharum – Sugar or hard maple

Anacardiaceae: Cashew Family

Rhus aromatica – Fragrant or aromatic sumac

Rhus copallina – Shining or dwarf sumac

Rhus glabra – Smooth sumac

Rhus typhina – Staghorn sumac

Toxicodendron radicans – Poison-ivy

Apocynaceae: Dogbane Family

Apocynum androsaemifolium – Spreading dogbane

Araceae: Arum Family

Arisaema triphyllum – Jack-in-the-pulpit or indian turnip

Tradescantia ohiensis – Spiderwort

Asclepiadaceae: Milkweed Family

Asclepias incarnata – Swamp milkweed

Asclepias syriaca – Common milkweed

Asclepias tuberosa – Butterfly-weed

Asclepias verticillata – Whorled milkweed

Balsaminaceae: Touch-me-not Family

Impatiens capensis – Spotted touch-me-not or jewelweed

Berberidaceae: Barberry Family

Podophyllum peltatum – May-apple

Betulaceae: Birch Family

Alnus rugosa – Speckled alder

Bignoniaceae: Trumpet-creeper Family

Campsis radicans – Trumpet creeper or trumpet flower

Boraginaceae: Borage Family

Lithospermum canescens – Hoary puccoon

Campanulaceae: Bellflower Family

Lobelia cardinalis – Cardinal flower or red lobelia

Lobelia siphilitica – Great blue lobelia

Lobelia spicata – Pale spiked lobelia

Caprifoliaceae: Honeysuckle Family

Diervilla lonicera – Bush honeysuckle

Celastraceae: Bittersweet Family

Euonymus spp. – Unknown euonymus

Compositae (Asteraceae): Aster or Daisy Family

Achillea millefolium – Yarrow

Antennaria neglecta – Pussy-toes or ever-lasting

Arctium minus – Common burdock

Aster ericoides – Heath, wreath, or white prairie aster

Aster laevis – Smooth aster

Aster lanceolatus – Panicked or marsh aster

Aster novae-angliae – New England aster

Aster puniceus – Swamp or purple-stemmed aster

Aster sagittifolius – Arrow-leaved aster

Aster umbellatus – Fat-topped aster

Cirsium vulgare – Bull thistle

Centaurea maculosa – Spotted knapweed

Coreopsis lanceolata – Lance-leaved coreopsis

Echinacea purpurea – Purple coneflower

Erigeron annuus – Daisy fleabane

Eupatorium maculatum -- Joe-pye-weed

Helenium autumnale – Common sneezeweed

Helianthus divaricatus – Woodland sunflower

Helianthus giganteus – Giant or tall sunflower

Hieracium kalmii – Canada hawkweed

Rudbeckia hirta -- Black-eyed susan

Senecio pauperculus – Northern or balsam ragwort

Solidago graminifolia – Flat-topped, bushy, or grass-leaved goldenrod

Solidago nemoralis -- Gray goldenrod

Solidago ptarmicoides – White or sneezewort goldenrod

Solidago speciosa -- Showy goldenrod

Vernonia spp. – Ironweed

Cornaceae: Dogwood Family

Cornus amomum – Pale or silky dogwood

Cornus florida – Flowering dogwood

Cornus foemina spp. *Racemosa* – Gray dogwood

Cornus stolonifera – Red-osier dogwood

Cruciferae (Brassicaceae): Mustard Family

Alliaria petiolata – Garlic mustard

Arabidopsis thaliana – Mustard plant or mouse-ear cress

Dentaria laciniata -- Cut-leaved toothwort

Cucurbitaceae: Gourd family

Campanula rotundifolia - Harebell or bluebell

Cupressaceae: Cypress Family

Cedrus atlantica – Cedar

Juniperus virginiana – Red-cedar

Cyperaceae: Sedge Family

Scirpus spp. – unknown bulrush

Dipsacaceae: Teasel Family

Dipsacus spp. – Unknown teasel

Equisetaceae: Horsetail Family

Equisetum arvense – Field horsetail

Ericaceae: Heath Family

Arctostaphylos uva-ursi – Bearberry or kinnikinnick

Vaccinium angustifolium – Lowbush blueberry or low sweet blueberry

Fagaceae: Beech Family

Quercus alba – White oak

Quercus bicolor – Swamp white oak

Quercus macrocarpa – Bur oak

Quercus palustris – Pin oak

Quercus rubra – Red oak

Quercus velutina – Black oak

Gentianaceae: Gentian Family

Gentiana andrewsii – Closed or bottle gentian

Geraniaceae: Geranium Family

Geranium maculatum – Wild geranium

Gramineae (Poaceae): Grass Family

Andropogon gerardi – Big bluestem

Andropogon scoparius – Little bluestem

Bouteloua curtipendula – Grama grass

Elymus canadensis – Canada wild-rye

Hierichole adorata – Sweet grass

Koeleria macrantha – June grass

Panicum virgatum – Switchgrass

Phragmites australis – Common reed grass or Phragmites

Sorghastrum nutans – Indian grass

Sporobolus cryptandrus – Sand dropseed

Stipa spartea – Needle grass

Guttiferae (Clusiaceae): St. John's-wort Family

Hypericum ascyron – Giant St. John's-wort

Hydrocharitaceae: Frog-bit Family

Elodea canadensis – Waterweed or Elodea

Vallisneria spiralis – Wild-celery

Iridaceae: Iris Family

Iris versicolor - Wild blue flag

Iris virginica - Southern blue flag or wild iris

Juglandaceae: Walnut Family

Carya ovata - Shagbark hickory

Juglans nigra - Black walnut

Labiatae (Lamiaceae): Mint family

Monarda didyma -- Bee-balm or oswego-tea

Monarda fistulosa - Wild bergamot

Monarda media - Purple bergamot

Physostegia virginiana - False dragonhead or obedient plant

Pycnanthemum virginianum - Mountain mint

Leguminosae: Pea Family

Cercis canadensis - Redbud

Gleditsia triacanthos - Honey locust

Lespedeza thunbergii - Shrub bush-clover or shrub lespedeza

Lupinus perennis - Wild lupine

Liliaceae: Lily Family

Allium spp. - Unknown onion

Erythronium americanum - Trout-lily, dogtooth violet or Adder-s-tongue

Lilium canadense - Canada lily

Lilium lancifolium - Tiger lily

Lilium philadelphicum - Wood lily

Lythraceae: Loosestrife Family

Lythrum salicaria - Purple loosestrife

Magnoliaceae: Magnolia Family

Liriodendron tulipifera - Tulip-tree or tulip-poplar

Malvaceae: Mallow Family

Hibiscus moscheutos - Swamp or rose mallow

Moraceae: Mulberry Family

Morus alba - White mulberry

Morus rubra - Red mulberry

Nymphaeaceae: Water-lily Family

Nelumbo lutea - American lotus or lotus-lily

Oleaceae: Olive Family

Fraxinus americana - White ash

Fraxinus nigra - Black ash

Fraxinus pennsylvanica - Green ash

Onagraceae: Evening-primrose Family

Oenothera biennis - Evening primrose

Papaveraceae: Poppy Family

Papaver spp. - unknown poppy

Pinaceae: Pine Family

Pinus resinosa – Red pine

Pinus sylvestris – Scotch or Scots pine

Plantaginaceae: Plantain Family

Plantago major – Common Plantain

Platanaceae: Plane-tree Family

Platanus occidentalis – Sycamore

Polemoniaceae: Phlox family

Phlox maculata – Wild-sweet-william

Polygonaceae: Smartweed Family

Rumex hymenosepalu -- Wild rhubarb

Portulacaceae: Purslane family

Claytonia virginica – Spring-beauty

Portulaca oleracea – Purslane or pusley

Ranunculaceae: Buttercup Family

Anemone canadensis – Canada anemone

Anemone cylindrica – Thimbleweed

Aquilegia canadensis – Wild columbine

Ranunculus fascicularis – Early buttercup

Thalictrum dsycarpum – Purple meadow-rue

Rhamnaceae: Buckthorn Family

Ceanothus americanus – New Jersey tea

Rhamnus frangula – Glossy buckthorn

Rosaceae: Rose Family

Crataegus crusgalli – Cockspur hawthorn

Fragaria virginiana – Wild strawberry

Potentilla anserina – Silver weed

Prunus americana – Wild plum

Prunus pensylvanica – Pin or fire cherry

Rosa multiflora – Multiflora or Japanese rose

Rosa palustris -- Swamp rose

Rubus allegheniensis – Common blackberry

Rubus occidentalis – Black raspberry

Rubiaceae: Madder Family

Cephalanthus occidentalis – Buttonbush

Galium boreale – Northern bedstraw

Salicaceae: Willow Family

Populus alba – White or silver poplar

Populus deltoides – Cottonwood

Salix discolor – Pussy willow

Salix exigua – Sandbar willow

Salix fragilis – Crack, weeping or brittle willow

Scrophulariaceae: Snapdragon Family

Castilleja coccinea – Painted-cup

Chelone glabra – Turtlehead

Mimulus ringens – Monkey flower

Verbascum blattaria – Moth mullen

Verbascum thapsus – Mullen or flannel plant

Simaroubaceae: Quassia Family

Ailanthus altissima – Tree-of-Heaven

Tillaceae: Linden Family

Tilia americana – Basswood or Linden

Typhaceae: Cattail Family

Typha spp. – unknown cattail

Ulmaceae: Elm Family

Celtis occidentalis – American hackberry

Ulmus americana – American elm

Umbelliferae (Apiaceae): Carrot or Parsley Family

Daucus carota – Queen-Anne-s-lace

Taenidia integerrima – Yellow-pimpernel

Verbenaceae: Vervain Family

Verbena hastata – Blue vervain

Violaceae: Violet Family

Viola pedata – Birdsfoot violet

Vitaceae: Grape Family

Parthenocissus quinquefolia – Virginia Creeper

Vitis riparia – River-bank grape

Fish

Acipenseridae: Sturgeon Family

Acipenser fulvescens – Lake sturgeon

Amiidae: Bowfin family

Amia calva – Bowfin or freshwater dogfish

Anguillidae: Freshwater Eel Family

Anguilla rostrata – American eel

Atherinidae: Silverside Family

Labidesthes sicculus – Brook silverside

Catostomidae: Sucker family

Carpionodes cyrinus – Quillback carpsucker

Catostomus commersoni – White sucker

Ictiobus cyprinellus – Largemouth buffalofish

Minytrema melanops – Spotted sucker

Catostomus catostomus – Longnose sucker
Ictiobus bubalus – Smallmouth buffalo
Moxostoma carinatum – River redhorse
Moxostoma anisurum – Silver redhorse
Moxostoma erythrurum – Golden redhorse
Moxostoma macrolepidotum – Shorthead redhorse

Centrarchidae: Sunfish Family

Ambloplites rupestris – Rockbass
Lepomis cyanellus – Green sunfish
Lepomis peltastes – Northern longear sunfish
Lepomis humilis – Orangespotted sunfish
Lepomis gibbosus – Pumpkinseed
Lepomis macrochirus – Bluegill
Micropterus dolomieu – Smallmouth bass
Micropterus salmoides – Largemouth bass
Pomoxis nigromaculatus – Black crappie
Pomoxis annularis – White crappie

Clupeidae: Herring Family

Alosa pseudoharengus – Alewife
Dorosoma cepedianum – Gizzard shad

Cottidae: Sculpin Family

Cottus bairdi – Mottled sculpin

Cyprinodontidae: Killifish Family

Fundulus diaphanus – Banded killifish

Cyrinidae: Minnow Family

Carassius auratus – Goldfish
Cyprinus carpio – Carp
Hybopsis storeriana – Silver chub
Nocomis micropogon – River chub
Nocomis biguttatus – Horneyhead chub
Notemigonus crysoleucas – Golden shiner
Notropis atherinoides – Emerald shiner
Notropis hudsonius – Spottail shiner
Notropis rubellus – Rosyface shiner
Notropis spilopterus – Spotfin shiner
Notropis volucellus – Mimic shiner
Notropis heterolepis – Blacknose shiner
Notropis stramineus – Sand shiner
Pimephales notatus – Bluntnose minnow
Opsopoeodus emiliae – Pugnose minnow
Semotilus atromaculatus – Creek chub

Esocidae: Pike Family

Esox lucius – Northern pike
Esox masquinongy – Muskellunge

Gasterosteidae: Stickleback Family

Culaea inconstans – Brook stickleback

Gobiidae: Goby Family

Neogobius melanostomus – Round goby

Proterorhinus marmoratus – Tubenose goby

Hiodontidae: Mooneye Family

Hiodon tergisus – Mooneye

Ictaluridae: Catfish Family

Ictalurus melas – Black bullhead

Ictalurus natalis – Yellow bullhead

Ictalurus nebulosus – Brown Bullhead

Ictalurus punctatus – Channel catfish

Noturus flavus – Stonecat

Noturus gyrinus – Tadpole madtom

Lepisosteidae: Gar Family

Lepisosteus osseus – Longnose gar

Lepisosteus oculatus – Spotted gar

Osmeridae: Smelt Family

Osmerus mordax – Rainbow smelt

Lotidae: Burbot and Ellpout Family

Lota lota – Burbot

Percidae: Perch Family

Etheostoma microperca – Least darter

Etheostoma nigrum – Johnny darter

Etheostoma blennioides – Greenside darter

Perca flavescens – Yellow perch

Percina caprodes – Log perch

Percina copelandi – Channel darter

Stizostedion canadense – Sauger

Stizostedion vitreum – Walleye

Percopsidae: Trout-perch Family

Percopsis omiscomaycus – Trout-perch

Petromyzontidae: Lamprey Family

Ichthyomyzon unicuspis – Silver lamprey

Petromyzon marinus – Sea lamprey

Salmonidae: Salmon family

Oncorhynchus tshawytscha – Chinook salmon

Salmo gairdneri – Rainbow trout

Salmo trutta – Brown trout

Salvelinus namaycush – Lake trout

Coregonus clupeaformis – Lake whitefish

Sciaenidae: Drum Family

Aplodinotus grunniens – Freshwater drum

Serranidae: Sea bass Family

Roccus americana – White perch

Roccus chrysops – White bass

Umbridae: Mudminnow Family

Umbra limi – Central mudminnow

Birds

Accipitridae: Hawk and Eagle Family

Accipiter cooperii – Cooper's hawk

Buteo jamaicensis – Red-tailed hawk

Buteo platypterus – Broad-winged hawk

Falco sparverius – American kestrel

Haliaeetus leucocephalus – Bald eagle

Pandion haliaetus – Osprey

Alcedinidae: Kingfisher Family

Ceryle alcyon – Belted kingfisher

Anatidae: Swan, Geese and Duck Family

Aix sponsa – Wood Duck

Anser albifrons – Greater White-fronted Goose

Anas acuta – Pintail

Anas americana – American Widgeon

Anas crecca – Green-winged Teal

Anas clypeata – Northern Shoveler

Anas discors – Blue-winged Teal

Anas platyrhynchos – Mallard

Anas rubripes – American Black Duck

Anas strepera – Gadwall

Aythya affinis – Lesser scaup

Aythya americana – Redhead

Aythya marila -- Greater Scaup

Aythya collaris – Ring-necked Duck

Aythya valisineria – Canvasback

Branta canadensis – Canada Goose

Bucephala albeola -- Bufflehead

Bucephala clangula – Common Goldeneye

Chen caerulescens – Snow Goose

Chen rossii – Ross's Goose

Cygnus buccinator – Trumpeter Swan

Cygnus columbianus – Tundra Swan

Cygnus olor – Mute Swan

Lophodytes cucullatus – Hooded Merganser

Mergus merganser -- Common Merganser

Mergus serrator – Red-breasted Merganser

Oxyura jamaicensis – Ruddy Duck.

Apodidae: Swift Family

Chaetura pelegica – Chimney Swift

Ardeidae: Heron and Bittern Family

Ardea alba – Great Egret

Ardea herodias – Great Blue Heron

Egretta thula – Snowy Egret
Nycticorax nycticorax – Black-crowned Night Heron

Caprimulgidae: Nighthawk Family
Chordeiles minor – Common Nighthawk

Cardinalidae: Cardinal Family
Cardinalis cardinalis – Northern Cardinal
Passerina cyanea – Indigo Bunting

Cathartidae: Vulture Family
Cathartes aura – Turkey Vulture

Charadriidae: Plover Family
Charadrius semipalmatus – Semipalmated Plover
Charadrius vociferus – Killdeer
Pluvialis squatarola – Black-bellied Plover

Columbidae: Dove Family
Columba livia – Rock Dove
Zenaida macroura – Mourning Dove

Corvidae: Crow and Jay Family
Corvus brachyrhynchos – American Crow
Cyanocitta cristata – Blue Jay

Emberizidae: Sparrow Family
Junco hyemalis – Dark-eyed Junco
Melospiza melodia – Song Sparrow
Spizella passerina – Chipping Sparrow

Fringillidae: Finch Family
Carduelis tristis – American Goldfinch

Gaviidae: Loon Family
Gavia immer – Common Loon

Hirundinidae: Swallow Family
Hirundo rustica – Barn Swallow
Porgne subis – Purple Martin
Tachycineta bicolor – Tree Swallow

Icteridae: Blackbird Family
Agelaius phoeniceus – Red-winged Blackbird
Icterus galbula – Baltimore Oriole
Molothrus ater – Brown-headed Cowbird
Quiscalus quiscula – Common Grackle

Laridae: Gull and Tern Family
Chlidonias niger – Black Tern
Larus argentatus – Herring Gull
Larus delawarensis – Ring-billed Gull
Larus marinus – Great black-backed Gull
Larus hyperboreus – Glaucous Gull

Larus philadelphia – Bonaparte's Gull
Sterna caspia – Caspian Tern
Sterna fosteri – Forster's Tern
Sterna hirundo – Common Tern

Paridae: Chickadee and Titmouse Family
Baeolophus bicolor – Tufted Titmouse
Poecile atricapillus – Black-capped Chickadee

Parulidae: Wood-warbler Family
Setophaga ruticilla – American Redstart

Passeridae: Old World Sparrow Family
Passer domesticus – House Sparrow

Phalacrocoracidae: Cormorant Family
Phalacrocorax auritus – Double-crested Cormorant

Phasianidae: Pheasant Family
Phasianus colchicus – Ring-necked Pheasant

Picidae: Woodpecker Family
Colaptes auratus – Northern Flicker
Picoides pubescens – Downy Woodpecker

Podicipedidae: Grebe Family
Podiceps auritus – Horned Grebe
Podiceps nigricollis – Eared Grebe
Podilymbus podiceps – Pied-billed Grebe

Rallidae: Rail Family
Fulica americana – American Coot
Gallinula chloropus – Common Moorhen
Porzana carolina – Sora
Rallus limicola – Virginia Rail

Recurvirostridae: Avocet Family
Recurvirostra americana – American Avocet

Regulidae: Kinglet Family
Regulus calendula – Ruby-crowned Kinglet

Scolopacidae: Sandpiper Family
Actitis macularia – Spotted Sandpiper
Arenaria interpres – Ruddy Turnstone
Calidris alba – Sanderling
Calidris alpina – Dunlin
Calidris fuscicollis – White-rumped Sandpiper
Calidris melanotos – Pectoral Sandpiper
Calidris minutilla – Least Sandpiper
Calidris pusilla – Semipalmated Sandpiper
Catoptrophorus semipalmatus – Willet
Gallinago gallinago – Common Snipe
Limnodromus griseus – Short-billed Dowitcher

Limnodromus scolopaceus – Long-billed Dowitcher
Limosa fedoa – Marbled Godwit
Limosa limosa – Hudsonian Godwit
Numenius borealis – Whimbrel
Phalaropus tricolor – Wilson's Phalarope
Scolopax minor – American Woodcock
Tringa flavipes – Lesser Yellowlegs
Tringa melanoleuca – Greater Yellowlegs

Strigidae: Owl Family

Otus asio – Eastern Screech-owl

Sturnidae: Starling Family

Sturnus vulgaris – Starling

Troglodytidae: Wren Family

Thryothorus ludovicianus – Carolina Wren

Turdidae: Thrush Family

Turdus migratorius – American Robin

Tyrannidae: Flycatcher Family

Contopus virens – Eastern Wood-pewee

Vireonidae: Vireo Family

Vireo olivaceus – Red-eyed Vireo

Wildlife

Mammals

Canidae: Dog Family

Canis latrans – Coyote

Vulpes fulva – Red fox

Cervidae: Deer Family

Odocoileus virginianus – White-tailed deer

Cricetidae: Mouse and Rat Family

Ondatra zibethica – Muskrat

Leporidae: Hare and Rabbit Family

Sylvilagus floridanus – Eastern cottontail

Muridae: Old World Rat Family

Rattus norvegicus – Norway rat

Mustelidae: Weasel Family

Mephitis mephitis – Striped skunk

Procyonidae: Raccoon Family

Procyon lotor – Raccoon

Sciuridae: Squirrel Family

Marmota monax – Woodchuck
Sciurus niger – Eastern fox squirrel

Reptiles

Chelydridae: Snapping Turtle Family
Chelydra serpentina – Snapping turtle

Colubridae: Snake Family
Elaphe gloydi – Eastern fox snake
Nerodia sipedon – Northern water snake

Emydidae: Pond or Box Turtle Family
Chrysemys picta – Painted turtle
Clemmys guttata – Spotted turtle
Emydoidea blandingii – Blandings turtle
Graptemys geographica – Map turtle

Trionychidae: Softshell Turtle Family
Apalone spinifera – Eastern softshell turtle

Viperidae: Viper Family
Sistrurus catenatus – Massasauga rattlesnake

Amphibians

Bufonidae: Toad Family
Bufo americanus – American toad

Hylidae: Treefrog Family
Pseudacris triseriata – Chorus frog

Invertebrates

Astacidae:
Cambarus diogenes – Chimney crayfish

Carabidae:
Calosoma scrutator – Fiery searcher

Cercopidae:
Philaenus spumarius – Meadow spittlebug

Corydalidae:
Corydalus spp. – Unknown dobsonfly

Nymphalidae:
Danaus plexippus – Monarch

Saturniidae:
Antheraea polyphemus – Polyphemus moth

Appendix M: Summary and Disposition of Public Comments on the Draft Comprehensive Conservation Plan

Appendix M: Summary and Disposition of Public Comments on the Draft Comprehensive Conservation Plan

Six organizations and fourteen individuals submitted comments on the Draft CCP during the 30-day June/July 2004 comment period. We considered the comments during preparation of the final plan. Specific and/or small changes to the text were incorporated directly into the final plan and are not addressed in this summary. The following paragraphs describe the remaining comments and our response to them.

Refuge Jurisdiction

A recurring theme throughout the public planning process for the Refuge, including the public comment period on the Draft CCP, has been the issue of local/state/Federal jurisdiction. In general, many people have a difficult time understanding the limits of the Refuge and its legal jurisdiction on the land and waters of the Detroit River and Lake Erie. Understanding and accepting the limits of the Refuge (U.S. Fish and Wildlife Service) authority is crucial for our partners and the local public. We want to resolve any misconceptions people may have concerning the Refuge's ability to rectify complex environmental problems or user conflicts on the Detroit River. Misunderstanding legal jurisdiction and limits of the Refuge can lead to public anxiety or disappointment in future Refuge management actions.

Here are some facts concerning the limits of Refuge jurisdiction:

1. The Refuge is limited to only those lands owned by the U.S. Fish and Wildlife Service or managed under a lease or cooperative agreement with a private or public party.
2. Public Laws 107-91 and 108-23 for establishment and expansion of the Refuge did not change the authority of the State of Michigan or local governments over the waters and lands of the Detroit River and Lake Erie. The act merely established an authorized boundary within which the Service can acquire land or establish agreements and partnerships.
3. The Refuge cannot regulate recreational uses on waters of the Detroit River except where the Refuge actually owns a land interest (i.e. the shoals around Grassy Island).
4. The future of waterfowl hunting is not threatened by the presence of an authorized boundary for the Refuge. In fact, due to the legal mandates of the Refuge System, hunting is a priority use of lands owned by the Refuge. Waterfowl hunting will be allowed on lands owned by the Refuge, under state guidelines, if it is safe and compatible with Refuge purposes.

Fishing

Comment: One group and one individual commented that the importance of the recreational fishery in the Detroit River and Lake Erie basin needs to be emphasized in the CCP.

Response: We recognize that fishing is a vital recreational use on these waters. However, the State of Michigan is primarily responsible for regulating the fisheries. We have added a section in Chapter 3 that describes the sport fishery and its popularity and economic importance within the region. Also, we have added text about the benefits of shallow marshes in the Refuge as spawning and feeding habitat for fish.

Comment: One individual commented that sturgeon fishing should be closed on the Detroit River until the species fully recovers.

Response: Sportfishing within the Detroit River is regulated by the State of Michigan. We agree that lake sturgeon populations should be closely monitored and subject only to a sustainable harvest.

Comment: One individual asked us to open Quarry Lake on Grosse Ile to fishing and install a fishing platform and abolish lead fishing tackle in the river.

Response: These issues are outside the jurisdiction of Refuge authority. Quarry Lake is owned by the U.S. Environmental Protection Agency but may eventually become part of the Refuge. The Refuge will consider this request if/when the USEPA property is transferred to or managed by the Service. The ingestion of lead sinkers by ducks, loons and other wildlife is indeed a concern of the Service and other resource agencies and conservation groups. The Michigan Department of Natural Resources and the Michigan Department of Environmental Quality sponsor programs to encourage the use of non-toxic fishing tackle.

Hunting and Law Enforcement

Comment: Two individuals stated that hunting should not be allowed on a national wildlife refuge. One group suggested that the Humbug Marsh area should be closed to hunting in favor of wildlife observation during the fall bird migration.

Response: By law, hunting is a priority wildlife-dependent recreational use of national wildlife refuges. However, not all refuge lands are open to hunting as public safety and the needs of sensitive wildlife species are foremost. The refuge manager will consider all aspects of potential public uses and conflicts as lands are added to the Refuge in the future.

Comment: The south end of Calf Island and portions of other Detroit River islands have eroded considerably over the course of several decades. Riprap protection should be considered for the vulnerable parts of these islands.

Response: Erosion of islands in the Detroit River is a recognized problem by many resource agencies and local governments. Islands owned by the Refuge will be evaluated by Refuge staff. Bank stabilization projects, preferably using vegetation and natural materials, may be necessary in some cases.

Comment: Two individuals mentioned an apparent "disparity" in the amount of estimated funding to administer wildlife-dependent recreational uses in the Compatibility Determinations (Appendix D). Specifically, they asked why only \$37,000 is being allocated to administer hunting and fishing and nearly \$2 million is proposed for environmental education and wildlife observation.

Response: The estimated costs do not represent an actual commitment of funds to specific uses. The higher figure for environmental education/observation is based on a scenario where trails, boardwalks, signage, etc. will be needed as new lands are acquired and opened to the public. The estimate to administer hunting and fishing is primarily for seasonal law enforcement on Refuge-owned lands. There are few other administrative costs to operate small-scale hunts or fishing opportunities on the expected small land base of the Refuge. The \$37,000 estimate does not reflect the costs associated with habitat acquisition, improvement, and restoration that will occur on the Refuge and are of direct benefit to hunters and anglers.

Comment: One individual asked why hunters will be allowed to use dogs if no pets are allowed on Refuge lands.

Response: The Refuge manager has not yet completed a hunting plan to decide the parameters of hunting on Refuge lands. In general, most refuges allow waterfowl hunters to use dogs because they are an integral part of this wildlife-dependent activity and are always near and under the control of the hunter.

Comment: One individual suggested that the Refuge should consider "deputizing" a volunteer group of former military or civilian police for Refuge law enforcement duties.

Response: This is indeed a unique idea but it would be very difficult to implement and is unnecessary due to the small amount of land within the Refuge. Federal law enforcement officers must undergo specialized training for the types of duties encountered in their field; especially in remote or international border situations.

Comment: Several individuals expressed a desire that the Refuge continues to support waterfowl hunting even as other public uses grow. They emphasized the tradition of waterfowl hunting in the lower Detroit River and Lake Erie and the role that individual hunters have played in recent land conservation efforts in the region.

Response: Please see previous responses on hunting issues. We have recognized the tradition of waterfowl hunting in the goals for the Refuge and plan to support this use where it is feasible.

Habitat Conservation and Restoration

Comment: Several individuals and groups stated that acquisition and conservation of remaining undeveloped land should remain a high priority of the Refuge.

Response: Land conservation is an integral part of the Refuge and is described in several management objectives in Chapter 4 and the Habitat Conservation Options section in Appendix K.

Comment: One group asked the Refuge to consider changing the status of the Raisin Point and Plum Creek Bay area to Conservation Priority 2 (Figure 10) due to ranking of Lake Erie (West) as a Biodiversity Investment Area by the State of the Lakes Environmental Conference.

Response: We agree that the marshes and riparian areas at the outlet of the River Raisin are of environmental importance. The Conservation Priority 2 status means that we would consider entering into land management agreements with private or corporate landowners in this area.

Comment: One group proposed a specific strategy to work with the Great Lakes St. Lawrence Seaway Study Steering Committee to provide sustainable wildlife habitat in close proximity to commercial navigation projects.

Response: The Service is represented on the committee by our Ecological Services Field Office in East Lansing, Michigan. Our representative will be aware of any proposals that can impact Refuge lands.

Environmental Contaminants

Comment: One individual suggested that Grassy Island is an ideal candidate for a biological remediation study. Natural and introduced bio-remedial organisms should be studied over time instead of capping or removing the soil/sediment of Grassy Island.

Response: A report entitled "Preliminary Assessment and Site Inspection, Grassy Island Confined Disposal Facility, Wayne County, Michigan" will be issued for public review later in 2004. A Remedial Investigation of Grassy Island is recommended in this report and biological remediation will be examined in that document.

Comment: The Refuge should quantify the pollutant loading to the river due to public firework displays.

Response: This subject is beyond the scope of Refuge jurisdiction.

Comment: Several reviewers urged the Service to place a high priority on baseline wildlife research: especially monitoring songbird populations and the effect of contaminants on wildlife populations.

Response: Research will be an integral part of Refuge operations as the land base and staff grows in the future. However, specific topics and species will be selected as we further understand the management needs of this relatively new Refuge. The CCP does identify several research projects for future Refuge staff to assist with including investigations on lake sturgeon, waterfowl, and habitat restoration.