Bringing Conservation to Cities: Lessons from Building the Detroit River International Wildlife Refuge
WHAT COMES TO MIND WHEN YOU THINK OF DETROIT?
Metropolitan Detroit has Experienced a Number of Paradigm Shifts

Paradigm Shift = a significant change in thinking that results in a completely changed view or outlook
PRINTING PRESS

PERSONAL COMPUTER
The height of the Fur Trade was in 1700s and 1800s

Hundreds of thousands of beaver skins were exported annually
SHIP BUILDING PARADIGM SHIFT

- During the 1890s more ships were built along the Detroit River than any other city in America.
- On December 3, 1819, the Detroit River was declared a public highway by Act of Congress.
AUTOMOBILE MANUFACTURING PARADIGM SHIFT
ARSENAL OF DEMOCRACY

During WWII President Franklin D. Roosevelt recognized the need to supply implements of war and called for the United States to become the great “Arsenal of Democracy”
UNINTENDED CONSEQUENCES

- The fur trade paradigm shift led to the virtual extinction of the beaver in our region.
- The “Arsenal of Democracy” paradigm shift resulted in substantial oil pollution.
Oil Pollution

- In 1946-1948, 5.9 million gallons of oil & other petroleum products were discharged into the Rouge and Detroit rivers each year.
- Enough to pollute the entire western basin of Lake Erie.
LAKE ERIE IS DEAD!

TIME

August 20, 1965
Citizen Protest in the 1960s
Raw Sewage and Industrial Waste Dumped Into the River
The Rouge River Caught on Fire in 1969
Environmental Awakening

Catalysts:
- Winter waterfowl die-offs in 1960 and 1967
- Silent Spring
- Eutrophication of Lake Erie
- Burning of the Rouge and Cuyahoga rivers
- Mercury Crisis of 1970

Led to:
- Earth Day in 1970
- Canada Water Act in 1970
- U.S. Clean Water Act of 1972
- Canada-U.S. GLWQA of 1972
- U.S. Endangered Species Act of 1973
Substantial reductions in oil discharges and spills have occurred, and winter duck kills due to oil pollution have been eliminated.

Billions of dollars have been spent on municipal wastewater treatment and virtually all plants in Michigan and Ontario are achieving 2\textdegree{} treatment.

90\% decline in phosphorus concentration and loading from the Detroit WWTP.

Since 1960 there has been an over 80\% reduction in untreated CSO volume from communities in southeast Michigan.
Between the 1960s and 1980s there was an over 4,000 tonnes/day decrease in chloride loadings to the Detroit River.

- 70% decline in mercury and a 90% decline of DDT in fish (yet health advisories remain).
- 90% decline in DDE and 85% decline in PCBs in herring gull eggs.
- Over one million m$^3$ of contaminated sediment remediated at a cost of over $154$ million.
THESE ENVIRONMENTAL IMPROVEMENTS ARE HEARTENING, BUT THAT IS NOT THE BEST PART OF THE STORY!
Surprising Ecological Recovery

- In 2013 there were 22 active nests in the vicinity of the Detroit River IWR after a 25-year absence.
Peregrine Falcon Recovery

- Peregrines reintroduced in Detroit in 1987
- Reproductive success has steadily increased to 10 young per year
- 2010 nesting on Ambassador Bridge, fledging three young
Return of Osprey

- Nested in Gibraltar Wetlands Unit
- Fledged two young in 2009
- First time nesting in Wayne County since 1890s
Return of Lake Sturgeon

- Substantial decline in sturgeon population between the late 1800s and early 1900s
- No sturgeon spawning recorded from 1970s to 1999
- Sturgeon reproduction first documented in 2001 (first time in 30 yr)
Return of Lake Whitefish

- Substantial decline in whitefish population between the late-1800s and early-1900s
- In 2006, whitefish spawning in the Detroit River was documented for the first time since 1916
Walleye

- In the 1970s, the walleye population was considered in "crisis"
- Lake Erie and Detroit River considered “Walleye Capital of the World”
Even Beaver Have Returned

- Beaver were hunted to near extinction during the “fur trade era”
- During the height of oil pollution (1940s-1970s), beaver could not have survived
- In 2008, a pair of beaver built a lodge at DTE’s Conner Creek Power Plant
- In 2009, this pair produced at least two pups
- As of 2013, beaver have been reported from six locations in the watershed
One of the Most Remarkable Ecological Recovery Stories in North America!
Environmental and Natural Resource Challenges

- Population growth, transportation expansion, and land use changes
- Habitat and loss and degradation
- Nonpoint source pollution
- Toxic substances contamination
- Introduction of exotic species
- Greenhouse gases and global warming
Agreement on Conservation Vision

Conservation Vision Signed in 2001
Signed into law in 2001
- first International Wildlife Refuge in North America
- one of only a few urban refuges

Founded on partnerships for conservation and for the benefit of future generations

A new paradigm for conservation and sustainability
- U.S. Registry of Lands – 13,731 acres
- Canadian Registry of Lands – 4,778 acres
- Total: 18,509 acres devoted to conservation and outdoor recreation
- Goal: 25,000 acres in next 10 years
Soft Shoreline Engineering

• Using ecological principles and practices to reduce erosion and achieve stability of shorelines and safety, while enhancing habitat, improving aesthetics, and even saving money.
DTE’s River Rouge Power Plant

 BEFORE

 AFTER
WAYNE COUNTY’S
ELIZABETH PARK

BEFORE

AFTER
53 PROJECTS
In 14 years!
Transformation of an Industrial Brownfield into an Ecological Buffer for Michigan’s only Ramsar Wetland of International Importance
First Project in the World to Clean Up an Industrial Brownfield Sufficiently to Serve as an Ecological Buffer for a Wetland of International Importance Under the Ramsar Convention
Fighting Island Reef Constructed in 2008 – First-Ever Canada-U.S. Funded Fish Habitat Restoration Project in the Great Lakes
Lake Sturgeon Reproduction Documented in 2009 – First Time in 30 Years that Reproduction was Confirmed in Canadian Waters of the Detroit River
Detroit Made the River its backdoor
Bringing Conservation to the Inner City

- Place making for people and wildlife using soft shoreline engineering at five sites on the Detroit RiverWalk
- Kids Fishing Fest
- Annual Sturgeon Day
- Unique birding spot
- Citizen science component of common tern restoration
World-Class Fishing in the Walleye Capital of the World
Ducks Unlimited Designated Detroit as One of the Top Ten Metropolitan Areas for Waterfowl Hunting
ByWays to FlyWays
Bird Driving Tour Map
27 Exceptional Birding Sites in SE MI and SW Ontario
Detroit Heritage River Water Trail

The Detroit Heritage River Water Trail weaves through the rich natural and cultural history of the Detroit, Rouge, and Basotho Rivers and offers new opportunities for canoeing and kayaking. Paddle through time along rivers that sustained Native Americans and fueled the industrial revolution. Experiences from the water our region’s natural beauty and amazing variety of wildlife - the marshes, coastal wetlands, islands, fish, ducks, herons, eagles, and more!

Discover... diverse experiences, from highly urban to serene, natural waterways.

Paddling Access
- Red Arrow
- Belle Isle State Park
- Belle Isle State Park
- Tyrell Island State Park
- Tyrell Island State Park
- River Front Park - Flat Iron
- Old River - Flat Iron Village
- Detroit
- Detroit Canoe Access Center

A timeless inspiration, an invitation to journey, to adventure.

Detroit Heritage River Water Trail

[Map of Detroit Heritage River Water Trail]
Where Do Most Conservationists Want to Work?
We need to challenge each other to step out of our comfort zone!

Life begins at the end of your comfort zone!

Neale Walsh
Globally, where do most people live?

In the United States and Canada, where do most people live?
There are millions of difficult challenges and delightful opportunities ahead. I think the only constraint is the willingness to dream, to create and to hope and feel undefended enough to face the tough questions and ideas that must be fiercely engaged at this moment of human history. If design is the signal of human intention then we must continuously ask ourselves – What are our intentions for our children, for the children of all species, for all time! How do we profitably and boldly manifest the best of those intentions.

William McDonough, Renowned Architect and Industrial Designer
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by

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