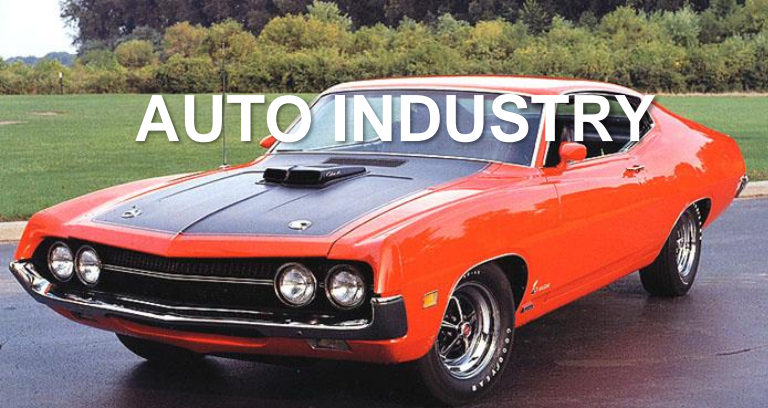


Bringing Conservation to Cities: Lessons from Building the Detroit River International Wildlife Refuge





**WHAT COMES TO MIND WHEN YOU
THINK OF DETROIT?**



AUTO INDUSTRY



DETROIT

METROPOLITAN

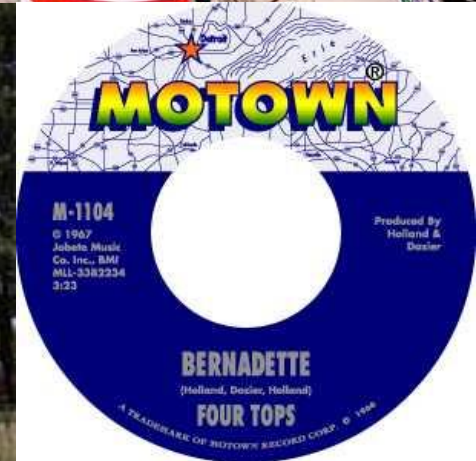
COMMUNITY



SPORTS!



MANUFACTURING



AVAILABLE
LAND

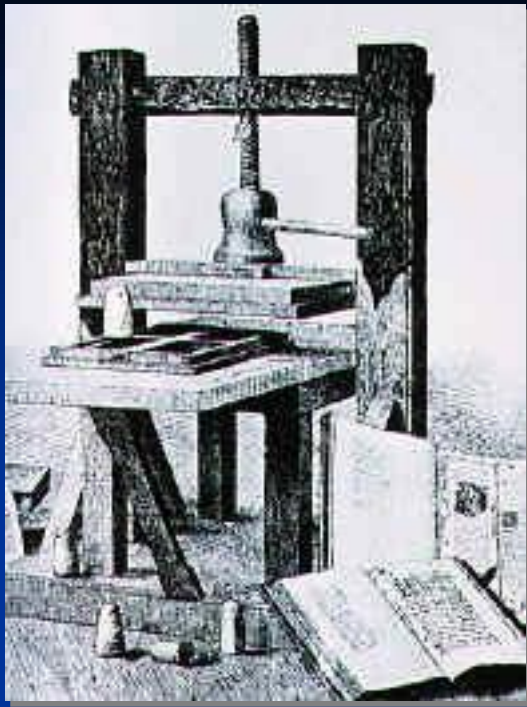


PUBLIC ART

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**



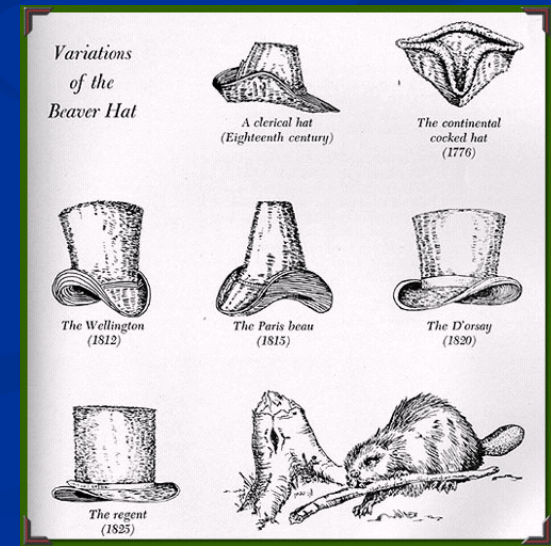
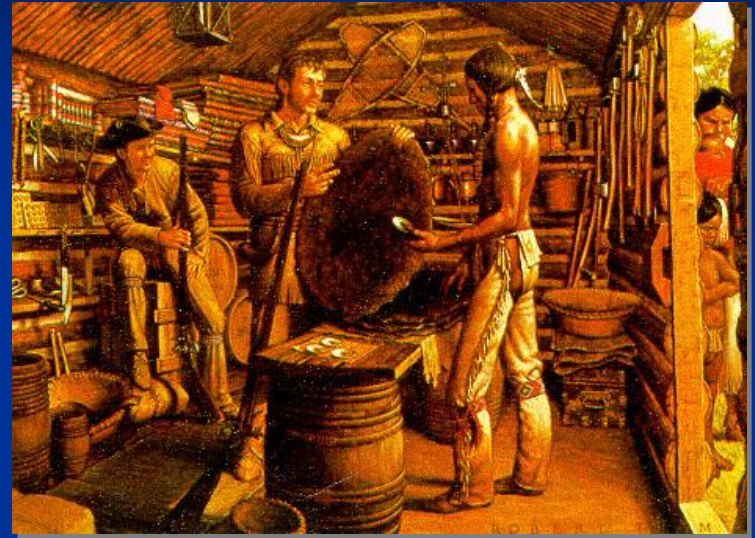
**PRINTING
PRESS**



PERSONAL COMPUTER

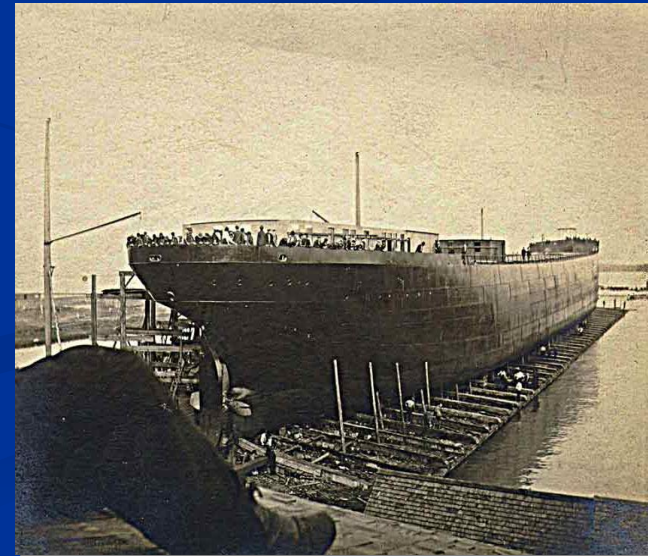
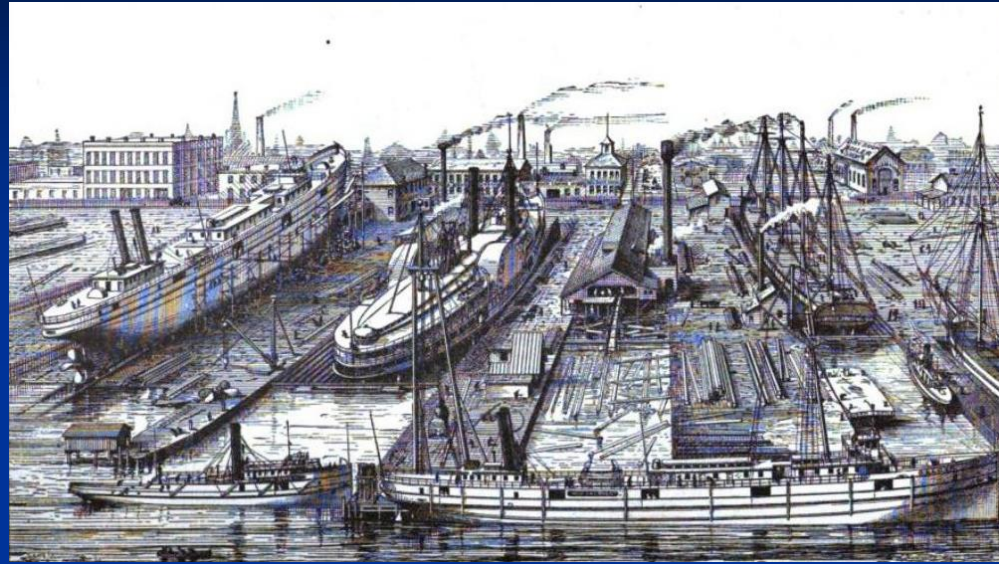
FUR TRADE – DETROIT'S FIRST PARADIGM SHIFT

- The height of the Fur Trade was in 1700s and 1800s
- Hundreds of thousands of beaver skins were exported annually



SHIP BUILDING PARADIGM SHIFT

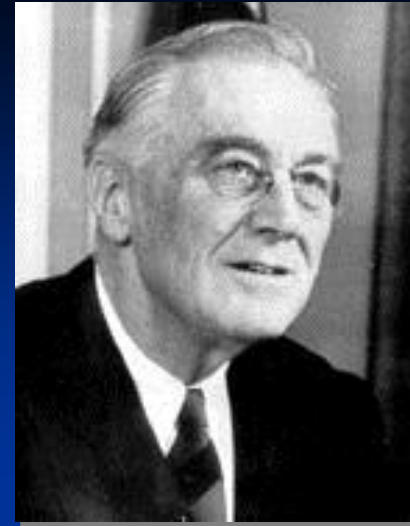
- During the 1890s more ships were built along the Detroit River than any other city in America
- On December 3, 1819 the Detroit River was declared a public highway by Act of Congress



AUTOMOBILE MANUFACTURING PARADIGM SHIFT



ARSENAL OF DEMOCRACY PARADIGM SHIFT



- 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



THE MERCURY CRISIS OF 1970





Earth Day 1970



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

Over Four Decades of Pollution Prevention and Control under the 1970 Canada Water Act, 1972 Clean Water Act and U.S.-Canada Great Lakes Water Quality Agreement, and 1973 U.S. Endangered Species Act



- 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^o 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



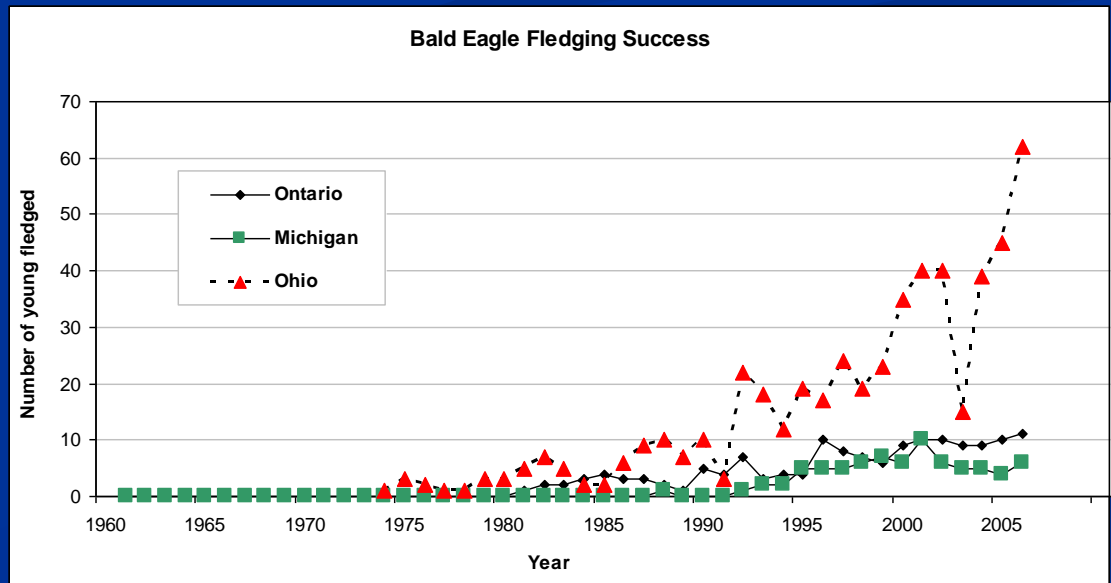
- Between the 1960s and 1980s there was an over 4,000 tonnes/day decrease in chloride loadings to the Detroit River
- 70% decline in mercury and a 90% decline of DDT in fish (yet health advisories remain)
- 90% decline in DDE and 85% decline in PCBs in herring gull eggs
- Over one million m³ of contaminated 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



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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



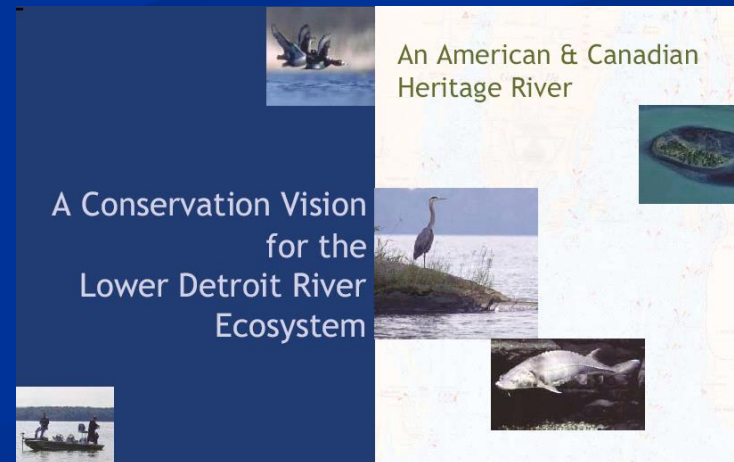
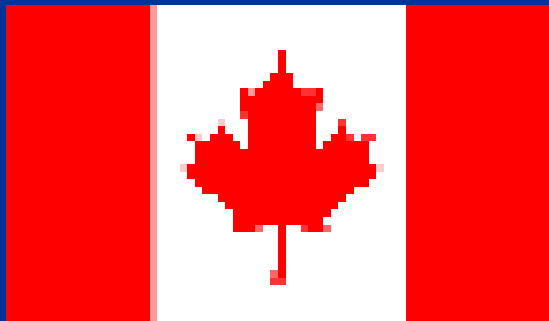
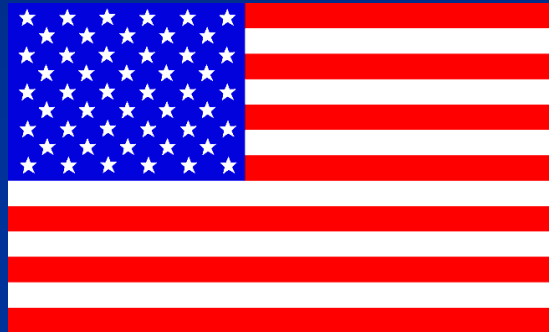
One of the Most Remarkable Ecological Recovery Stories in North America!



Environmental and Natural Resource Challenges

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

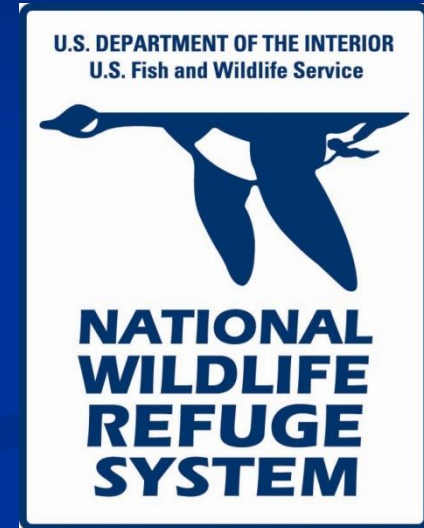
Agreement on Conservation Vision

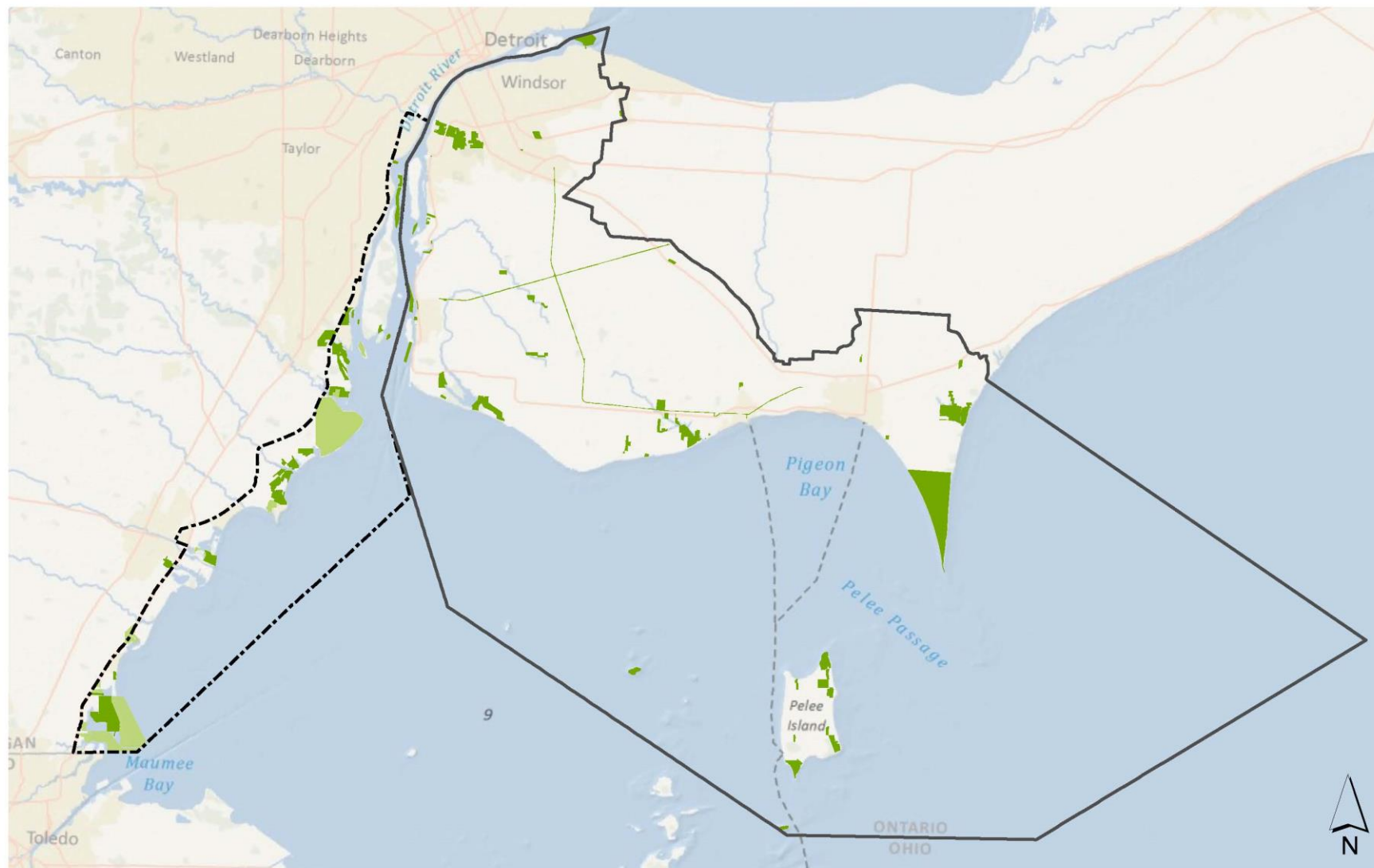


Conservation Vision Signed in 2001

Detroit River International Wildlife Refuge

- 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



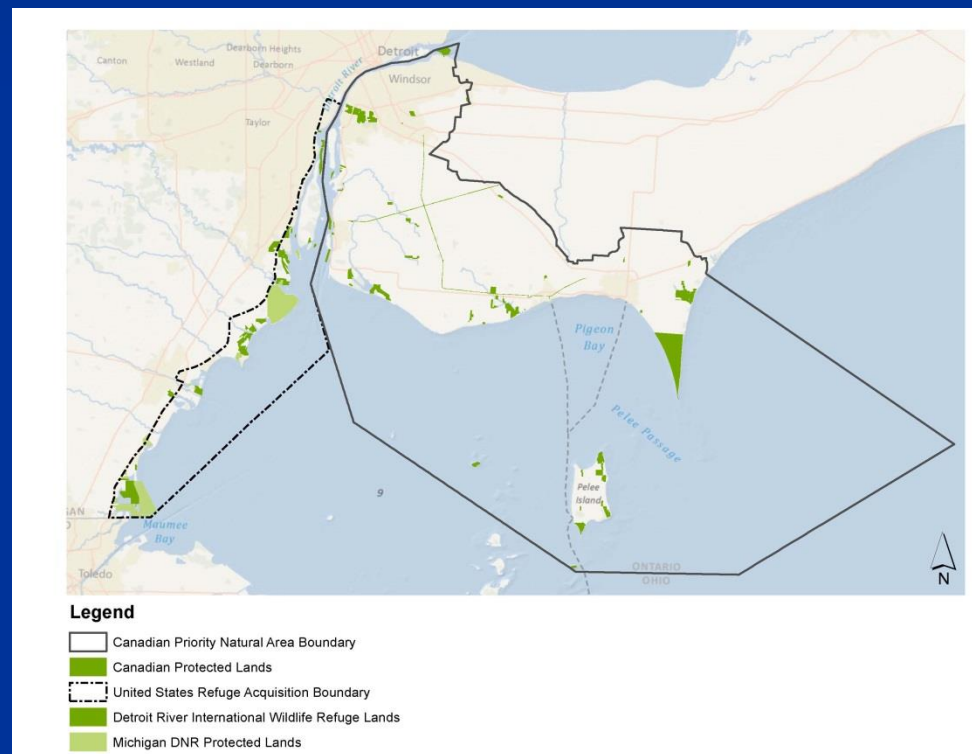


Legend

-  Canadian Priority Natural Area Boundary
-  Canadian Protected Lands
-  United States Refuge Acquisition Boundary
-  Detroit River International Wildlife Refuge Lands
-  Michigan DNR Protected Lands

Canada-U.S. Cooperation on the Refuge

- 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!





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



16 PARTNERING ORGANIZATIONS!



Environment Canada, U.S. Fish and Wildlife Service, Ontario Great Lakes Renewal Foundation, Essex Region Conservation Authority, U.S. Geological Survey – Great Lakes Science Center, Michigan Wildlife Conservancy, Ontario Ministry of Natural Resources, National Fish and Wildlife Foundation, Detroit River Canadian Cleanup, BASF Corporation, DTE Energy, Landmark Engineers Inc., International Wildlife Refuge Alliance, Michigan Sea Grant, Michigan Department of Natural Resources, and Wildlife Habitat Council

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



[illegible][illegible]

A group of people are kayaking on a calm river. In the foreground, a man in a blue kayak and a woman in a green kayak are visible. Other kayakers are further back, and a bridge is in the background.



Where Do Most
Conservationists
Want to Work?

We need to challenge each other to
step out of our comfort zone!



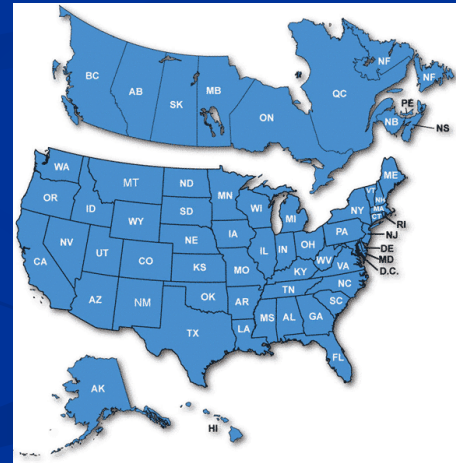
Life begins at the end of your comfort zone!

Neale Walsh

Globally, where do most people live?



In the United States and Canada, where do most people live?





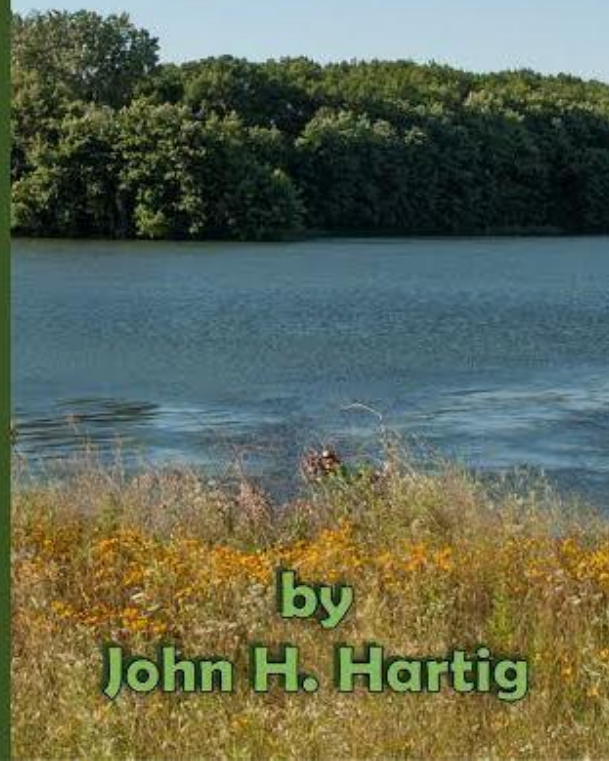
There are millions of difficult challenges and delightful opportunities ahead. I think the only constraint is the willingness to dream, to create and to hope and feel undefended enough to face the tough questions and ideas that must be fiercely engaged at this moment of human history. If design is the 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



Bringing Conservation to Cities

*Lessons from building the
Detroit River International Wildlife Refuge*



by
John H. Hartig