

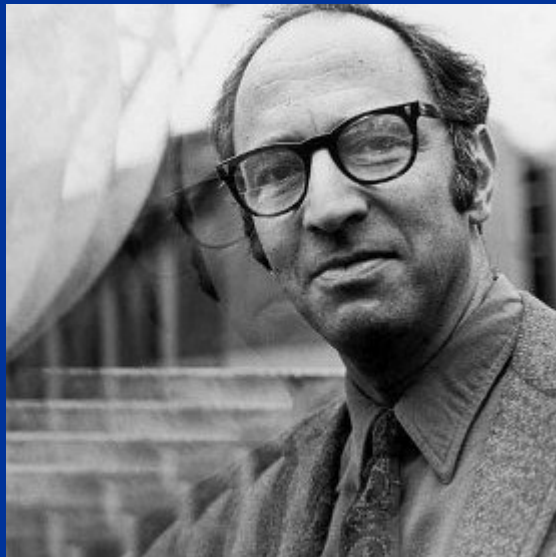
Bringing Conservation to Cities

Lessons from Building the Detroit River International Wildlife Refuge

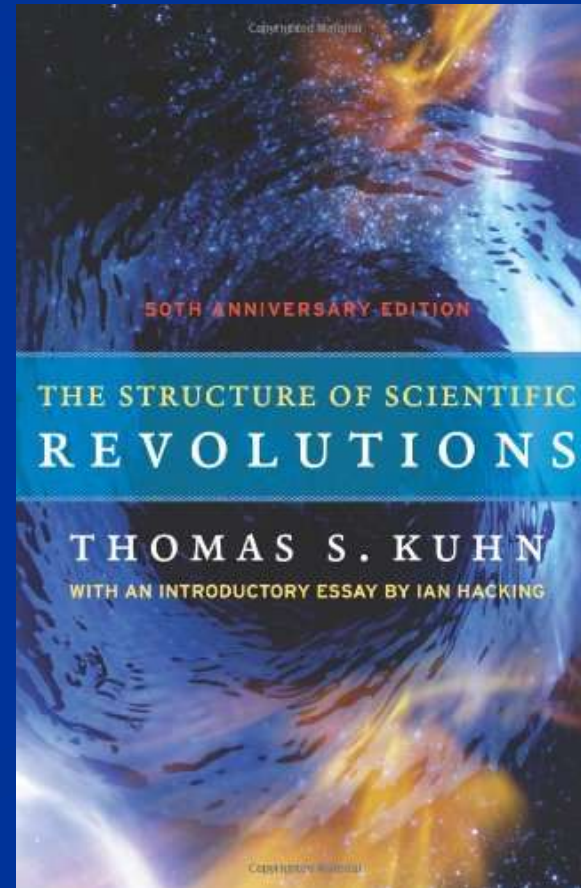
*John H. Hartig, Great Lakes Science-Policy Advisor
International Association for Great Lakes Research*



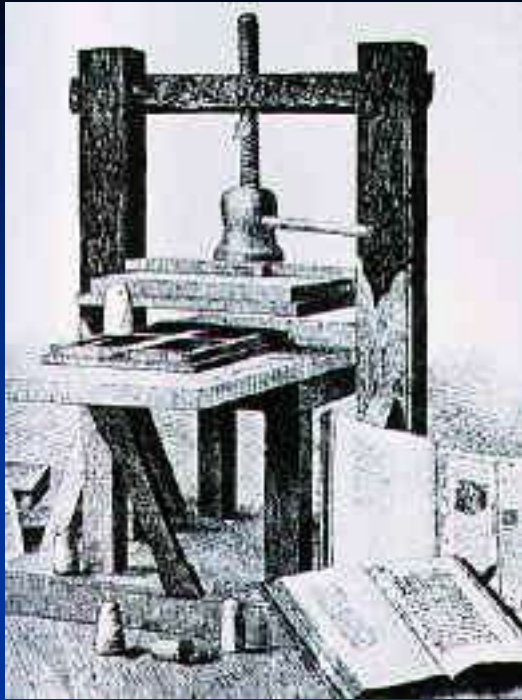
PARADIGM SHIFT = A SIGNIFICANT
CHANGE IN THINKING THAT
RESULTS IN A COMPLETELY
CHANGED VIEW OR OUTLOOK



Thomas Kuhn



1962

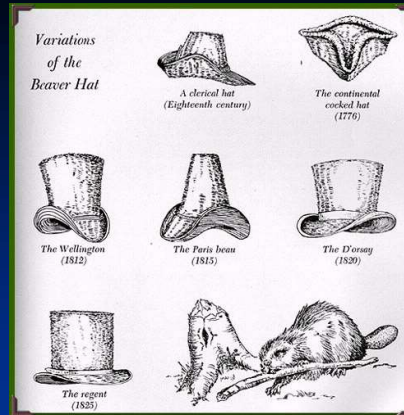


**PRINTING
PRESS**



PERSONAL COMPUTER

■ FUR TRADE



■ SHIP BUILDING



■ AUTOMOBILES



■ ARSENAL OF DEMOCRACY



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



Public Outcry Voiced in Detroit





The Rouge River Caught on Fire in 1969



THE MERCURY CRISIS OF 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

ENVIRONMENTAL IMPROVEMENTS

During the 1960s the Detroit River was one of the most polluted rivers in North America!

- 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
- Over 90% decline in phosphorus concentration and loading from the Detroit WWTP
- Since 1960 there has been an over 95% 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



Ecological Recovery

- ❑ 25 active Bald Eagle nests after a 25-year absence
- ❑ Peregrine Falcons back and fledging 30 young
- ❑ Osprey nested in Gibraltar in 2009 – the first time in Wayne County since 1890s
- ❑ Sturgeon reproduction documented in 2001 – the first time in 30 years
- ❑ Whitefish spawning documented in the Detroit River in 2006 – first time since 1916
- ❑ In the 1970s, the walleye population was in crisis; today we are considered part of the “Walleye Capital of the World”
- ❑ Beaver are back in at least six locations in the watershed

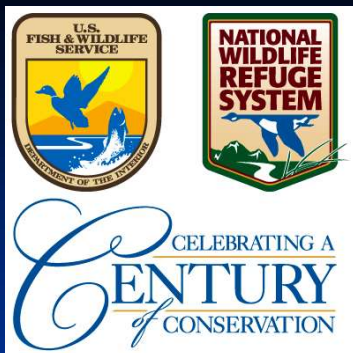


One of the Most Remarkable Ecological Recovery Stories in North America!



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
- Climate change



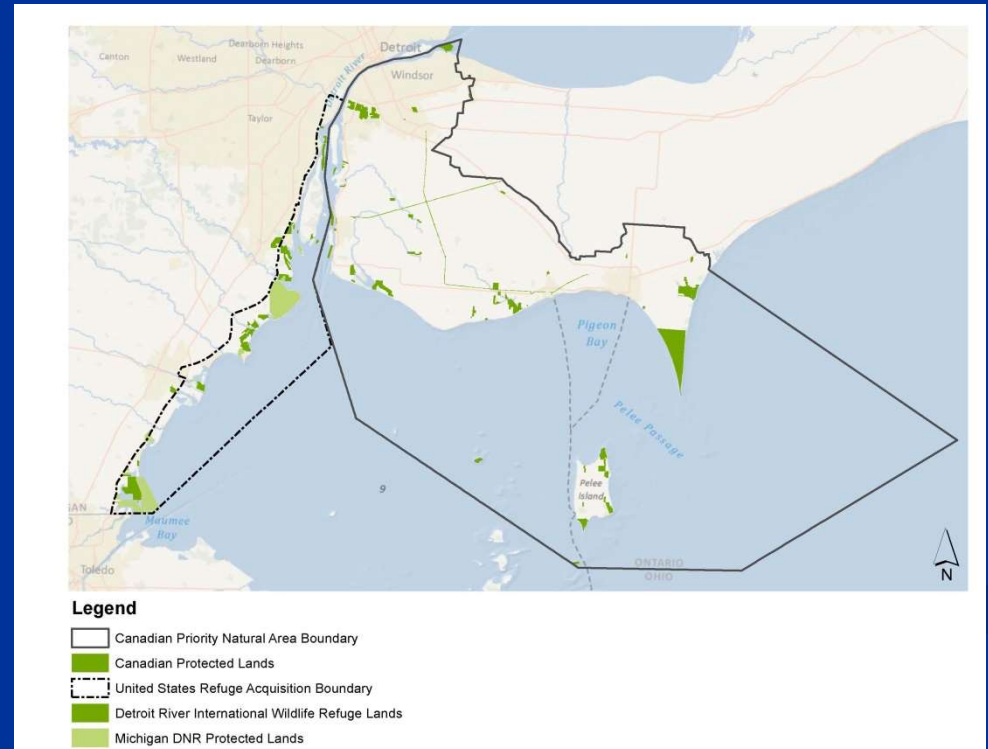
U.S. Fish and Wildlife Service



Detroit River International Wildlife Refuge

- U.S. Registry of Lands – 6,202 acres from USFWS and 7,897 acres from MDNR via MOU
- Canadian Registry of Lands – 3,797 acres from ERCA and 981 acres from the City of Windsor
- Total: Over 18,700 acres devoted to conservation and outdoor recreation
- Goal: 25,000 in next 10 years

First and Only International Wildlife Refuge in North America



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



BEFORE

WAYNE COUNTY'S
ELIZABETH
PARK



AFTER



53 PROJECTS IN 14 YEARS!



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 River–Western Lake Erie Cooperative Weed Management Area

DTE Energy, ITC, Wildlife Habitat Council, Ducks Unlimited, EMU, Huron-Clinton Metropolitan Authority, International Wildlife Refuge Alliance, Michigan DNR - Wildlife Division, Monroe Conservation District, Southeast Michigan Council of Governments, Stewardship Network, The Nature Conservancy, and U.S. Fish and Wildlife Service



Our Focus: Sustained Management *and* Monitoring



- ▶ Collaborative approach to invasive plant species on 1,200 acres of coastal wetlands and uplands
- ▶ Creating efficiencies and greater effectiveness
- ▶ Sharing marshmaster, helicopter application of selective herbicides, prescribed fire, mowing

Fix Unit



- Mouth of Swan Creek
- Acquired in 2007
- 40 acres of wetlands and 25 acres of uplands

Wetlands Dominated by *Phragmites*



Prescribed Fire in May 2013





Uplands After



Wetlands After – targeted herbicide and burn resulted in the resurgence of the state-threatened giant arrowhead (*Sagittaria montevicensis*), and dominance away from *Phragmites* to stiff arrowhead, common arrowhead, white-water lily, yellow pond-lily, bur-reeds, water-plantains, cat-tails, & more

Detroit Made the River its backdoor





Detroit Riverwalk



- \$110 million raised in the first 10 years
- In addition, \$40 million invested in an endowment to operate, care, maintain, and steward the Detroit RiverWalk
- \$1 billion return on investment in first ten years alone

What has been achieved and learned in 33 years of RAPs for AOCs?

- Three-year project
- Special issue of AEHMS
- 10 economic benefits case studies (Collingwood Harbour, Severn Sound, Hamilton Harbour, Cuyahoga River, Buffalo River, River Raisin, Muskegon Lake, St. Louis River, Detroit River, Toronto Harbour)
- Science transfer report
- Edited monograph in Ecovision World Monograph Series
- Review article in JGLR
- Outreach
- <http://iaglr.org/aoc/>

Public-Private Collaboration on River Raisin Yields Substantial Environmental Results that Lead to Community Revitalization

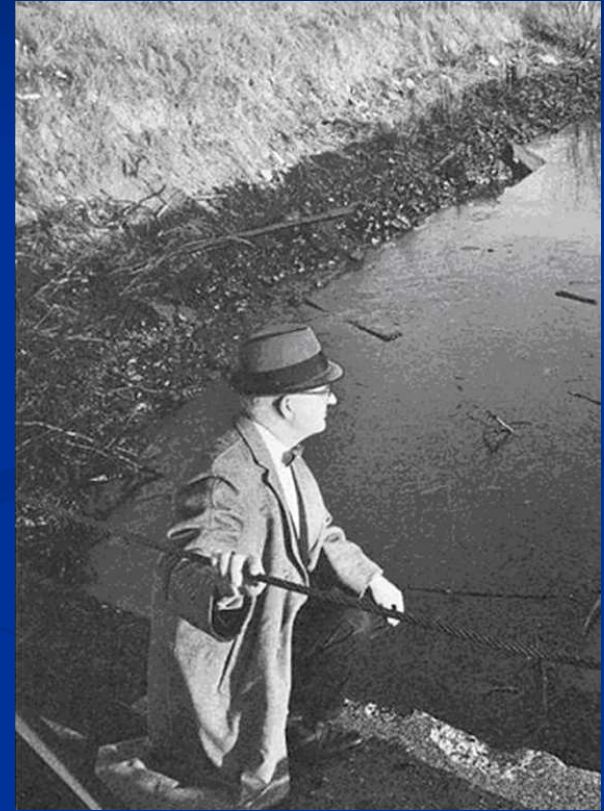


River Raisin Story

- \$45 million on upgrading WWTP
- \$43 million on sediment remediation
- \$7 million on habitat rehabilitation
- Public-private collaboration yields substantial environmental results that leads to community revitalization
- River Raisin National Battlefield Park (240,000 visitors in 2017; local economic impact: \$32 million; statewide economic impact: \$22 million)

Buffalo River – repulsive holding basin

- By the 1950s and 1960s, both industrial and municipal effluents were overwhelming the Buffalo River and no fish were caught in the river
- Buffalo River caught on fire on Jan. 24, 1968
- *The Buffalo River is a repulsive holding basin for industrial and municipal wastes. It is devoid of oxygen and almost sterile. Oil, phenols are present in large amounts. FWPCA, 1968*



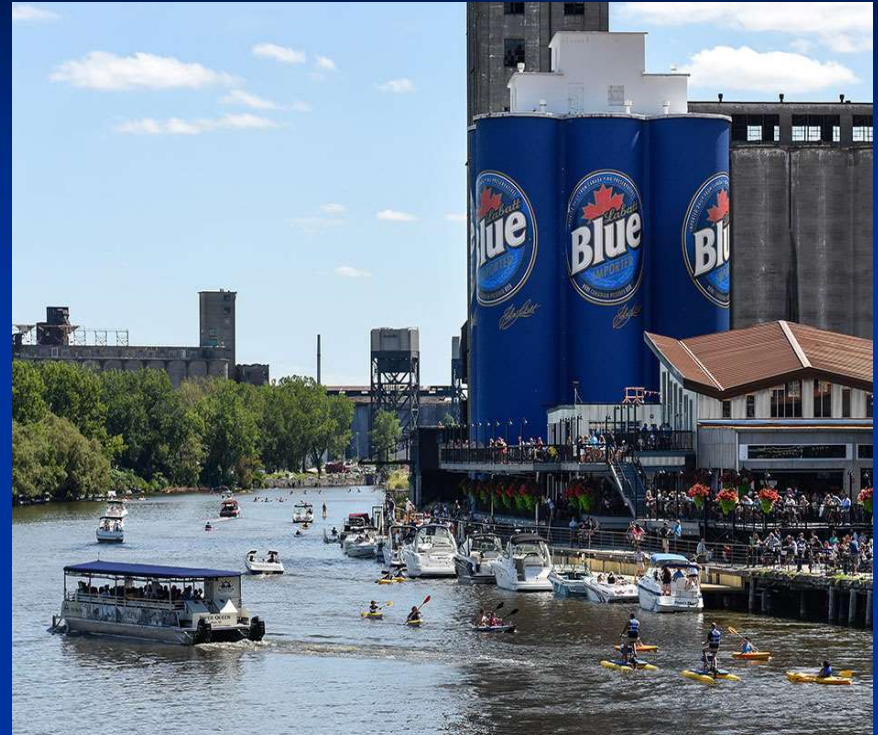
River Cleanup Leads to Community Revitalization

- The Buffalo Niagara Riverkeeper have brought in over \$75 million to restore the river
- A cleaner river has led to improved public access
- This has led to economic revitalization
- Between 2012 and 2018 \$400 million of waterfront development has occurred along the Buffalo River





Buffalo Inner Harbor, 1924



Redevelopment of Buffalo's Waterfront Today

*COLLABORATION IS A KEY TO
ACHIEVING ENVIRONMENTAL, ECONOMIC,
AND SOCIAL RESULTS!*

