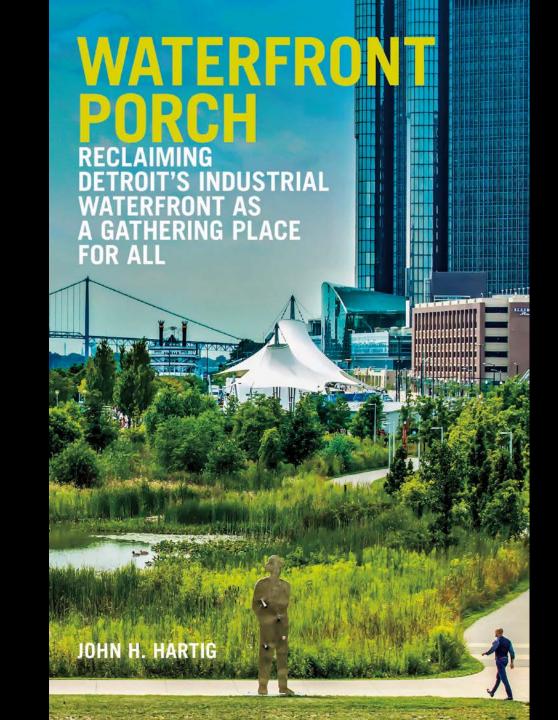
### **JOHN HARTIG**

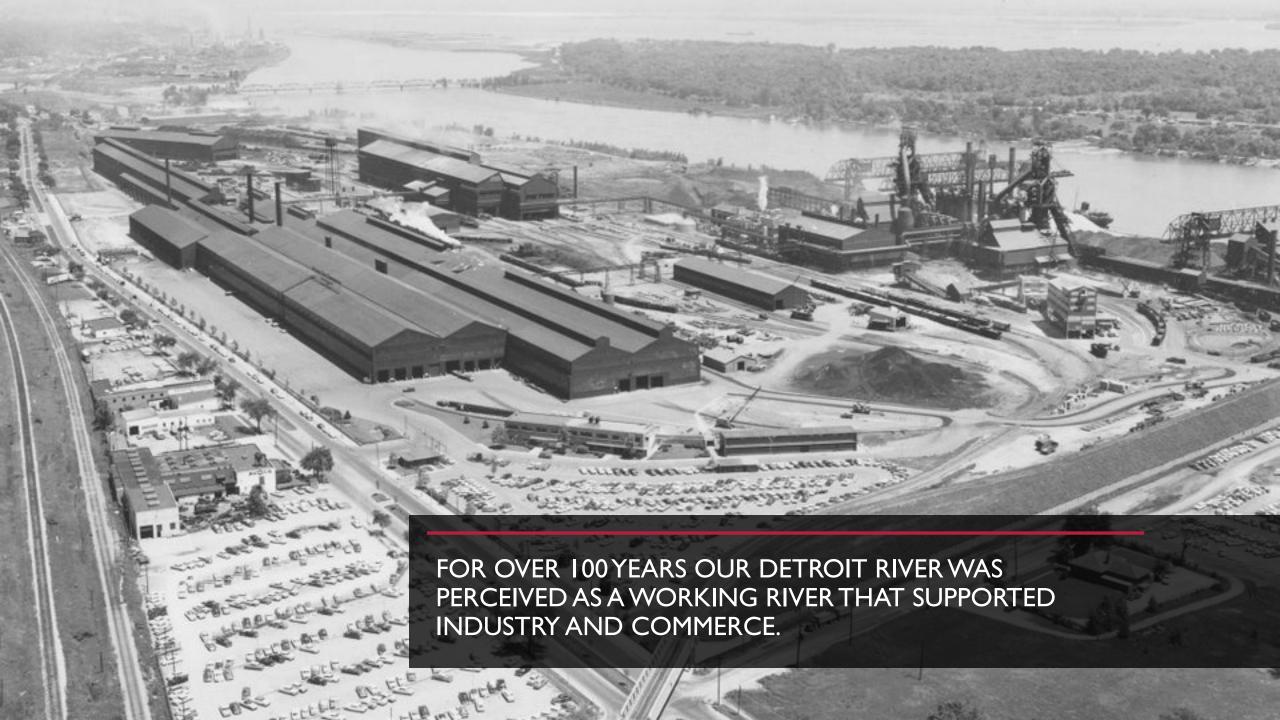
GREAT LAKES SCIENCE-POLICY ADVISOR, INTERNATIONAL ASSOCIATION FOR GREAT LAKES RESEARCH

VISITING SCHOLAR, GREAT LAKES INSTITUTE FOR ENVIRONMENTAL RESEARCH, UNIVERSITY OF WINDSOR











WATER POLLUTION WAS JUST PART OF THE COST OF DOING BUSINESS.

INTHE 1960s,
FEDERAL WATER
POLLUTION
CONTROL
ADMINISTRATION
IDENTIFIED THE
DETROIT RIVER AS
ONE OF THE MOST
POLLUTED RIVER
INTHE U.S.



## WINTER DUCK KILLS DUE TO OIL POLLUTION

- In 1960, 12,000 ducks and geese died from oil pollution
- In 1967, another 5,400 ducks and geese died from oil pollution



## DETROIT WASTEWATER TREATMENT PLANT

In the 1960s, this plant was only achieving primary treatment (removal of material that would either float or settle out and disinfection) and Detroit's regional combined storm and sanitary sewer system was discharging over 31 billion gallons of untreated wastewater per year from combined sewer overflows





Left: Normal Peregrine Egg; Right: DDT Exposed Egg

IN THE 1960s,
REPRODUCTIVE FAILURE OF
BALD EAGLES, PEREGRINE
FALCONS, AND OSPREY WAS
OCCURRING, DUE TO EGG
SHELL THINNING FROM
PESTICIDES LIKE DDT



THEN ON OCTOBER 9, 1969 THE LOWER ROUGE RIVER CAUGHT ON FIRE



"WHEN YOU HAVE A RIVER THAT BURNS, FOR CRYING OUT LOUD, YOU HAVE TROUBLES. IT HAPPENED ON CLEVELAND'S CUYAHOGA, AND NOW IT HAS HAPPENED ON THE ROUGE RIVER."

Detroit Free Press

DETROIT FREE PRESS EDITORIAL
OCT. 12, 1969





## EARTH DAY 1970

#### **Public outcry over water pollution led to:**

- The U.S. National Environmental Policy Act of 1970
- The Canada Water Act of 1970
- The U.S. Clean Water Act of 1972
- The U.S.-Canada Great Lakes Water Quality Agreement of 1972
- The U.S. Endangered Species Act of 1973



THESE LAWS, IN TURN, PROVIDED THE FOUNDATION FOR CLEANUP OF THE DETROIT RIVER

- 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, achieving 2° treatment
- Greater than 90% decline in phosphorus concentration and loading from the Detroit WWTP
- Since 1960 there has been a more than 90% reduction in untreated CSO volume from communities in SE MI, but more is needed



- Between the 1960s and 1980s there was an over 4,000 tonnes/day decrease in chloride loadings to the Detroit River
- 80% decline in mercury in walleye (yet health advisories remain in effect on certain species and size classes)
- 88% decline in DDE and 90% decline in PCBs in herring gull eggs

• 293,000 m<sup>3</sup> of contaminated sediment remediated on the Detroit River, 397,000 m<sup>3</sup> on the Rouge River, and

168,000 m<sup>3</sup> on the River Raisin

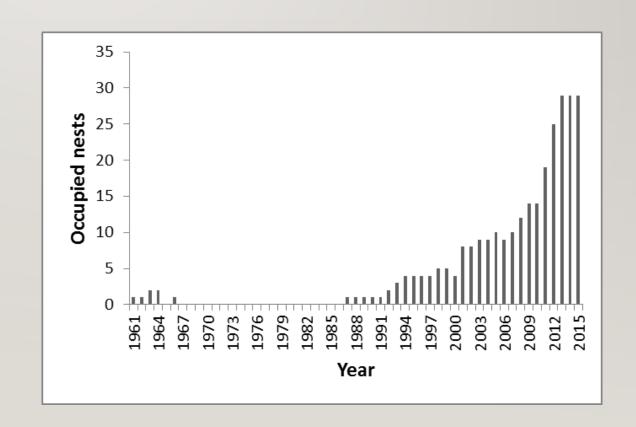


# THESE ENVIRONMENTAL IMPROVEMENTS ARE HEARTENING, BUT THAT IS NOT THE BEST PART OF THE STORY!

#### **SURPRISING ECOLOGICAL RECOVERY**

- The Bald Eagle population has recovered
- There are over 25 active nests in SE MI after a 20-year absence

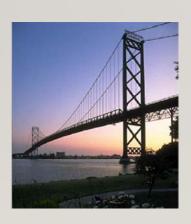


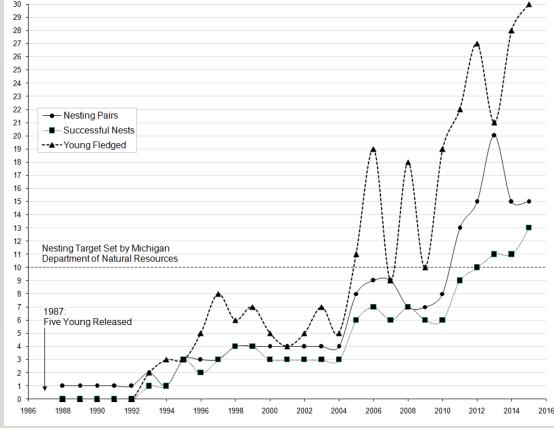


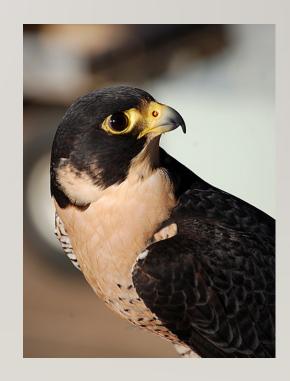
#### PEREGRINE FALCON RECOVERY

- Peregrines reintroduced in Detroit in 1987
- 20 or more young fledged in SE Michigan, 2011-2015









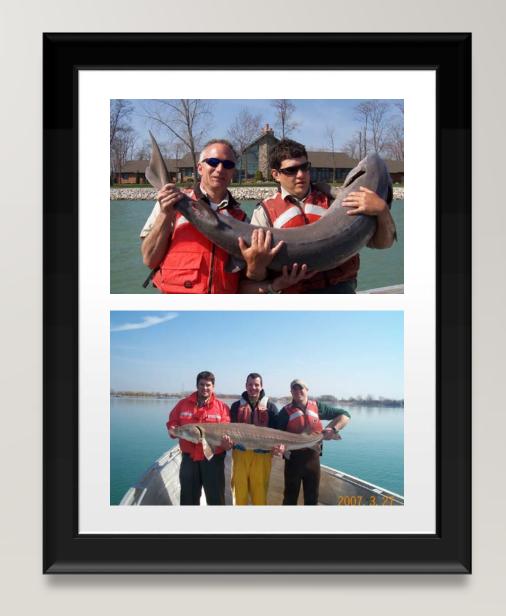


## RETURN OF OSPREY

- Osprey population rapidly declining in early-1960s
- By 1999 only one active nest in southern Michigan
- Osprey re-introduction starts in late-1990s
- 50 nesting pairs in SE MI in 2016 and 52 in 2017
- Goal: 30 nesting pairs by 2020 in MI's Lower Peninsula

## 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 (only 3% of historical Detroit River wetlands remain – target is 25% by 2030)

Nonpoint source pollution (Wayne County has 38% impervious surface; Rouge River has 23% impervious surface – target is < 10%)

Toxic substances contamination (over 5 million m³ of contaminated sediment requires remediation on the Det. Riv.)

ENVIRONMENTAL
AND NATURAL
RESOURCE
CHALLENGES
CONTINUED

Introduction of exotic species (we are not doing enough to prevent the introduction)

Greenhouse gases and climate change (one of the greatest environmental challenges of the 21st Century)









## DETROIT MADE THE RIVER ITS BACKDOOR



- For over a century, city planners identified the highest and best use of the waterfront was "industrial"
- Detroit was an industrial town and it had a working riverfront that supported industry and commerce
- And the Detroit River was a working river in the industrial heartland

- Fewer people and industries
- Much underutilized and undervalued riverfront land
- Out of the convergence of growing public and private support to gain access to the Detroit River, revival of the river, and new designations as American and Canadian Heritage Rivers came an opportunity to reenvision the downtown Detroit waterfront as a gathering place for both people and wildlife





### **Detroit Riverfront Conservancy**

- Established in 2003
- 501 c 3 organization
- Public-private partnership
- 44-member Board of Directors
- Vision: Transform Detroit's international riverfront the face of the city into a beautiful, exciting, safe, accessible world-class gathering place for all











#### DETROIT RIVERWALK

- \$110 million raised in the first 10 years
- In addition, \$40 million invested in an endowment to operate, care, maintain, program, and steward the Detroit RiverWalk





Before



After – Milliken State Park



Before



After – GM Plaza



Before



After – Cullen Plaza



Before



After – Milliken State Park



Before



After Stroh River Place



Before



After – Gabriel Richard Park

## **ECONOMIC BENEFITS (CSL INTERNATIONAL, 2013)**

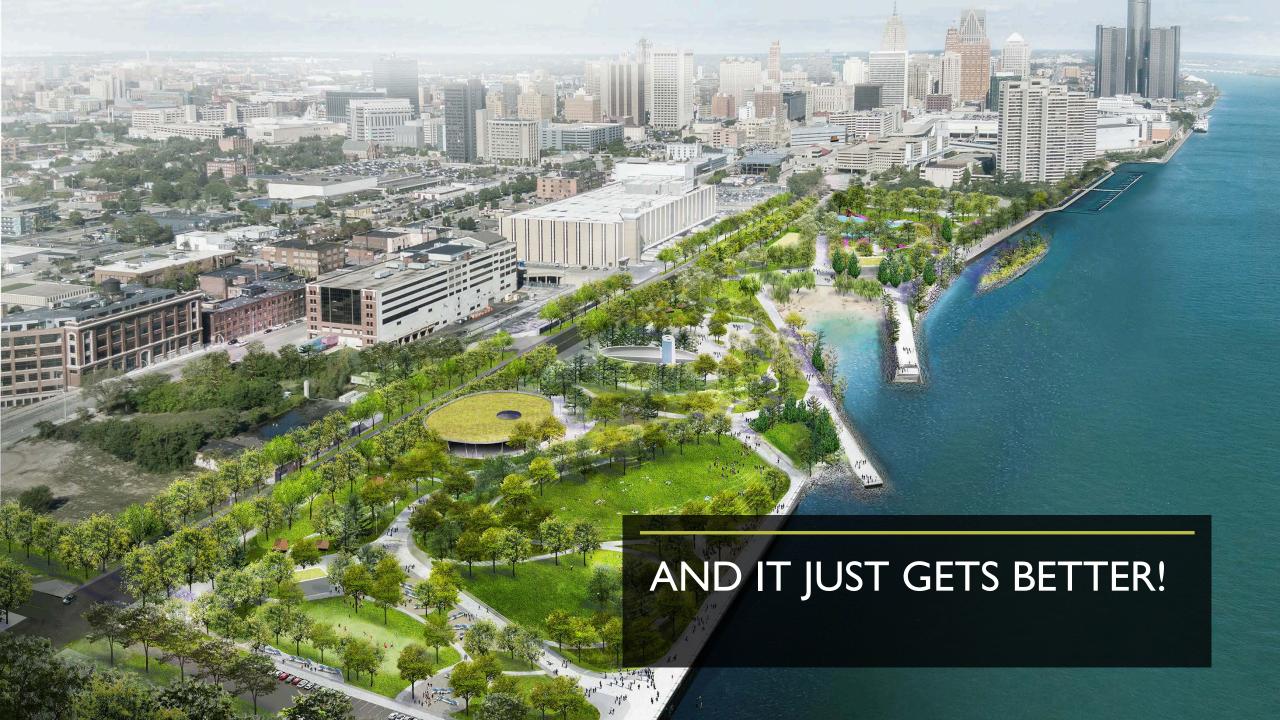
CONSTRUCTION IMPACTS	
Riverfront construction and land value	\$1.548 billion
Portion attributable to riverfront	\$639 million
Construction period jobs	16,700
ANNUAL IMPACTS	
Total annual spending by visitors, residents, and employees	\$43.7 million
Combined annual spending: 2003-2013	\$360.6 million
Annual positive media value	\$600,000
Annual jobs	1,300
Total annual tax revenue generation	\$4.5 million

TOTAL PUBLIC AND PRIVATE INVESTMENT IN THE FIRST 10 YEARS - \$1 BILLION

## DETROIT RIVERWALK

- Nearly 80% complete (3.5 miles completed)
- Three million annual visitors
- One of the City's most attractive features
- Open every day, free, welcoming to all, and has become a major tourist attraction
- The Detroit RiverWalk is rapidly becoming the iconographic image of Detroit in the 21<sup>st</sup> Century and a key supporting element in Detroit's revival









RALPH C.WILSON, JR. CENTENNITAL PARK – PROJECTED TO OPEN IN 2022 (\$50 MILLION GIFT FROM THE RW FOUNDATION; U.S. EPA IS PROVIDING \$2.5 MILLION FOR CONTAMINATED SEDIMENT REMEDIATION AND HABITAT RESTORATION

























## U.S.-CANADA GREENWAYS VISION MAP – GORDIE HOWE BRIDGE TO OPEN IN 2024

Detroit was the epicenter of the Fur Trade Era, an unparalleled leader of ship building for 100 years, the "Silicon Valley" of the industrial age, and the unquestioned leader of the Arsenal of Democracy. Today, Detroit is once again demonstrating its creativity, innovation, and work ethic in building the Detroit RiverWalk, and leading the nation down a more sustainable path.



If you are interested in getting involved in the Detroit Riverfront Conservancy, visit: <a href="detroitriverfront.org/waystohelp">detroitriverfront.org/waystohelp</a>

## THANK YOU!

