

CONNECTING CHANNELS

BUI Status and Research and Monitoring in the Detroit River Area of Concern

Lake Erie Millennium Network
The 8th Binational Meeting
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DETROIT RIVER AREA OF CONCERN CANADIAN SIDE

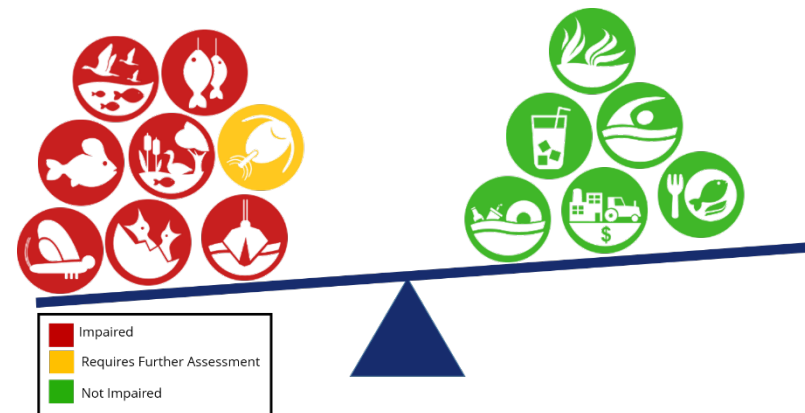


DETROIT RIVER AOC – CANADIAN SIDE

Beneficial Use Impairment	Status
Restrictions on fish and wildlife consumption	Impaired for fish
Tainting of fish and wildlife flavour	Not Impaired Re-designated in 2014
Degradation of fish and wildlife populations	Impaired
Fish tumours or other deformities	Impaired
Bird or animal deformities or reproductive problems	Impaired
Degradation of benthos	Impaired
Restrictions on dredging activities	Impaired
Eutrophication or undesirable algae	Not impaired
Restrictions on drinking water consumption or taste and odour problems	Not impaired Re-designated in 2009
Beach closings	Not Impaired Re-designated in 2016
Degradation of aesthetics	Not Impaired Re-designated in 2016
Added costs to agriculture or industry	Not impaired
Degradation of phytoplankton and zooplankton populations	Requires further assessment
Loss of fish and wildlife habitat	Impaired

PATHWAY TO DELISTING

Workplan details
remaining actions
needed to satisfy re-
designation criteria
for each BUI
remaining



Bird and Animal Deformities or Reproductive Problems



Considered not impaired when incidence rates of reproductive problems do not exceed background levels AND when bioassays confirm there are no reproductive problems and no significant toxicity:

- Reproductive success of Tree Swallows, collecting eggs and plasma for contaminant analysis and other tissues for biochemical parameters (ECCC)
- Snapping Turtle hatching success and deformity rates; declines in PCB burdens over time, mercury burdens in eggs are similar to reference sites (ECCC)
- Following up on 2007 Northern Leopard Frog deformities survey in 2018
- Some trends from colonial waterbirds as well

Fish Tumours and Other Deformities

Considered not impaired when incidence rates of liver tumours are not statistically different than the Great Lakes background rate (2%)

- In 2016, 35 additional Brown Bullhead were collected in Lower DR; currently undergoing liver tumour analysis (ECCC)
- Will add to previous samples (total ~100 fish)



Restrictions on Fish Consumption

Considered not impaired when consumption advisories for indicator fish species are similar to upstream and downstream non-AOC GL reference sites





























- Statistical assessment of tissue residues in MOECC sport fish with focus on PCBs and Mercury as priority pollutants; additional fish collected in 2016
- Food web and fish movement models (K. Drouillard)
- Mercury isotope studies in sediment and fish (UMichigan & GLIER)

Eat fish, choose wisely

Mangez du poisson, choisissez-le judicieusement

General tips • Conseils généraux

■ Eat regularly / À manger régulièrement
■ Eat less regularly / À manger moins régulièrement
■ Eat rarely; choose smaller fish / À manger rarement; choisissez des poissons plus petits

Inland locations Plans d'eau intérieurs		Great Lakes Grands Lacs	
Bluegill/Pumpkinseed Crapet arlequin/Crapet-soleil		Yellow Perch Perchaude	
Black Crappie Marigane noire		Largemouth Bass Achigan à grande bouche	
Yellow Perch Perchaude		Smallmouth Bass Achigan à petite bouche	
Brown Bullhead Barbotte brune		Northern Pike Brochet	
Cisco Cisco		White Perch Baret	
Brook Trout Omble de fontaine		Walleye Doré	
Lake Whitefish Grand corégone		Rainbow Trout Truite arc-en-ciel	
Largemouth Bass Achigan à grande bouche		White Bass Bar blanc	
Smallmouth Bass Achigan à petite bouche		Common Carp Carpe commune	
Lake Trout Touladi, Truite de lac		Chinook/Coho Salmon Saumon quinnat/Saumon coho	
Northern Pike Brochet		Lake Whitefish Grand corégone	
Common Carp Carpe commune		Lake Trout Touladi, Truite de lac	
Walleye Doré		Brown Trout Truite brune	
Channel Catfish Barbotte de rivière		Channel Catfish Barbotte de rivière	

Reduce contaminants by:
Réduisez les contaminants en :



1. Choosing smaller fish
Choisissez des poissons plus petits



2. Removing fillet
Enlevant le filet



3. Removing skin and fat along the side and belly
Enlevant la peau et le gras des côtés et de la partie ventrale



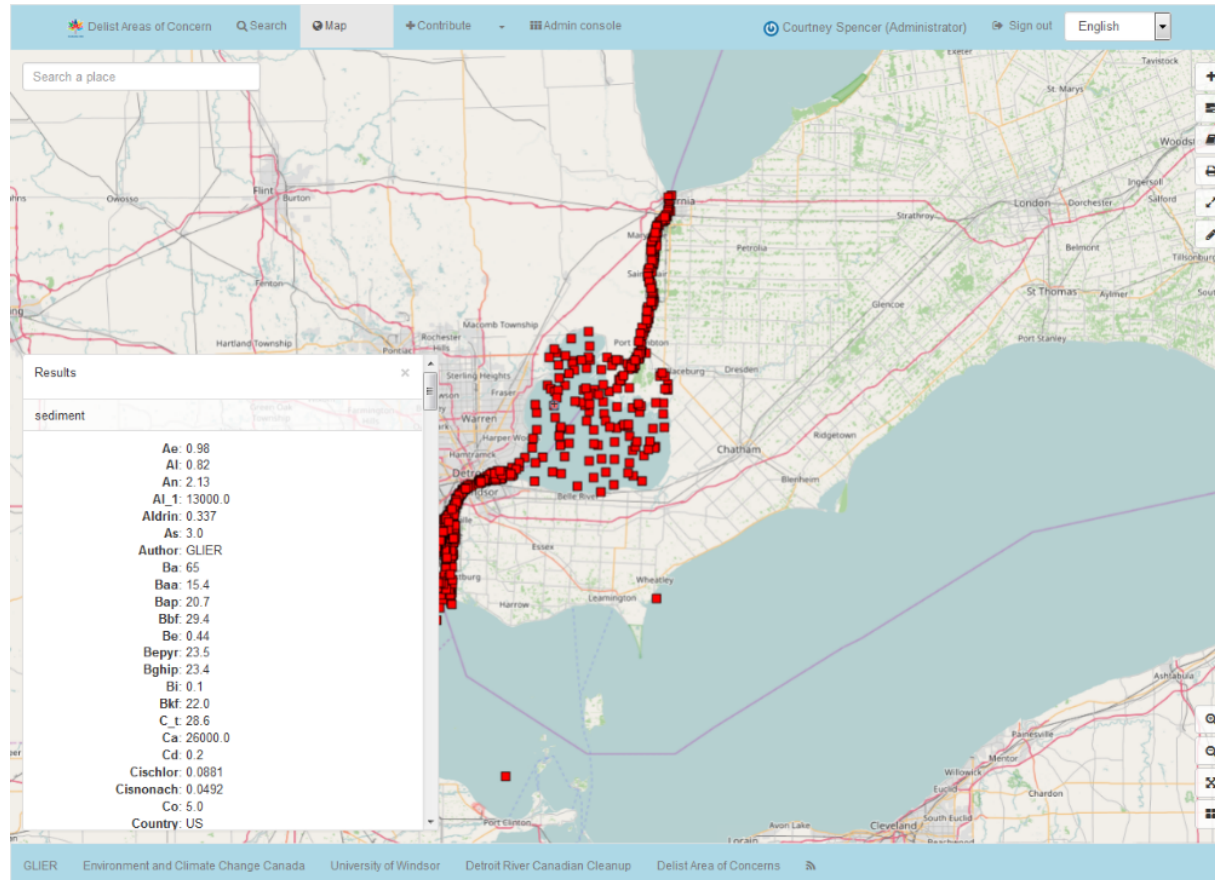
4. Cooking on a rack or grill to let fat drip away
Cuisinant sur une grille de cuisson pour laisser la graisse s'écouler



For location-specific advice visit ontario.ca/fishguide
Pour des conseils selon le lieu, visitez ontario.ca/guidepoisson



Restrictions on Fish Consumption



- GLIER Geonetwork (with spatial data from: EPA, Environment Canada, GLIER, MDEQ, GLATOS, OMNRF, OMOECC, other universities) to help inform this BUI and others in the future

Other Beneficial Use Impairments

Degradation of Benthos BUI



Examining several lines of evidence to evaluate biomagnification potential, sediment toxicity, and benthic community structure; assessment is under review

Degradation of Phytoplankton & Zooplankton BUI



Sampling complete and analysis underway

RESEARCH NEEDS

- Assess effectiveness of restoration projects to date
- Further refine delisting criteria for some BUIs (Fish Consumption & Degradation of Fish & Wildlife Populations)



- ✓ Over 300 hectares restored (~750 acres) since 2000
- ✓ 8 Shoreline Projects + assessment of shoreline condition
- ✓ Sturgeon Reef Construction & Expansion at Fighting Island

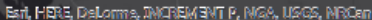


DETROIT RIVER AREA OF CONCERN U.S. SIDE



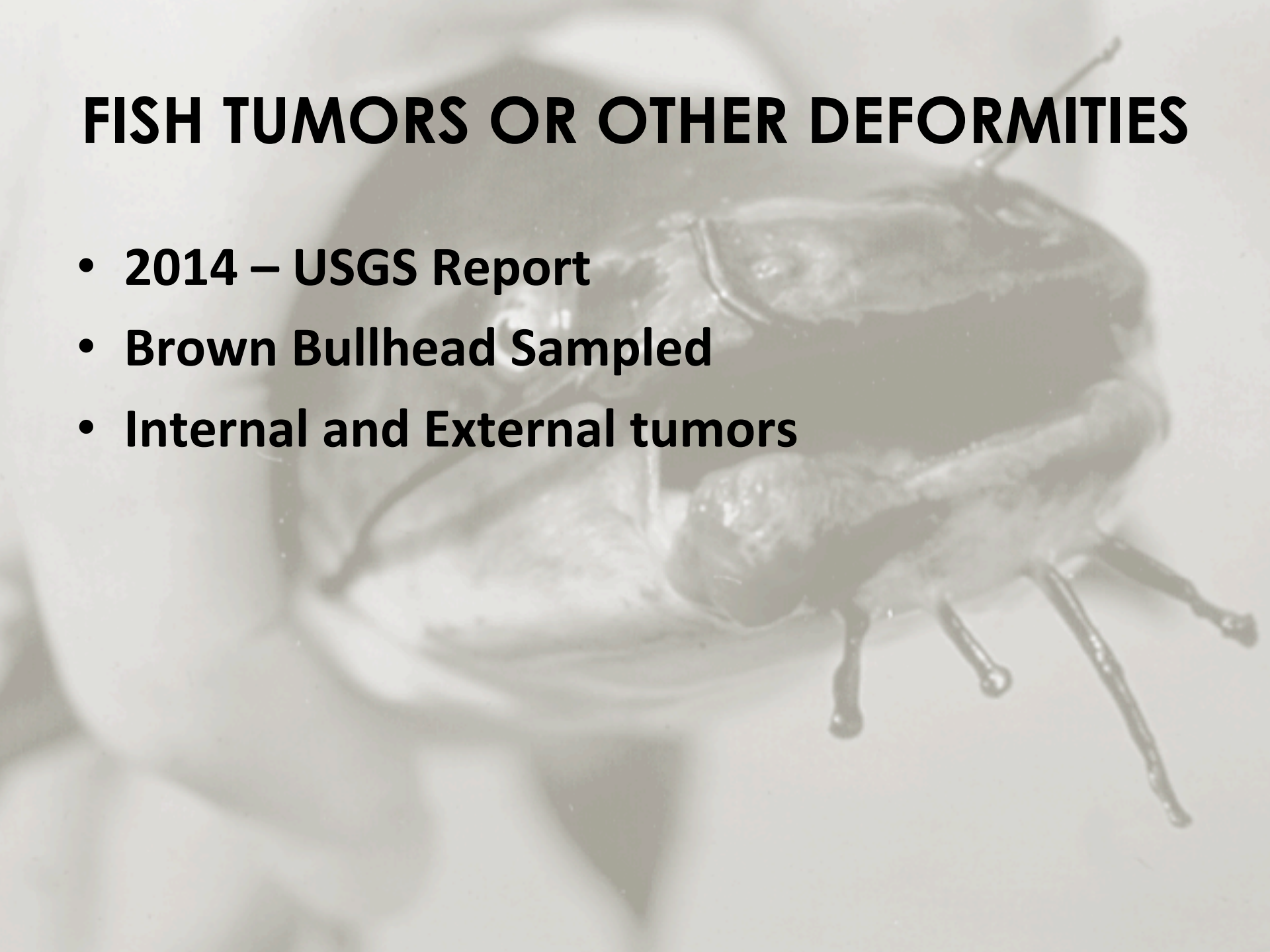
DETROIT RIVER AOC – BENEFICIAL USE IMPAIRMENTS

- 1. Restrictions on Drinking Water or Taste and Odor Problems – Removed 2011**
- 2. Tainting of Fish and Wildlife Flavor – Removed 2013**
- 3. Degradation of Aesthetics**
- 4. Beach Closings**
- 5. Loss of Fish and Wildlife Habitat**
- 6. Degradation of Fish and Wildlife Populations**
- 7. Degradation of Benthos ***
- 8. Restrictions on Dredging Activities ***
- 9. Bird or Animal Deformities or Reproductive Problems ***
- 10. Restrictions on Fish and Wildlife Consumption ***
- 11. Fish Tumors or Other Deformities ***



FISH TUMORS OR OTHER DEFORMITIES

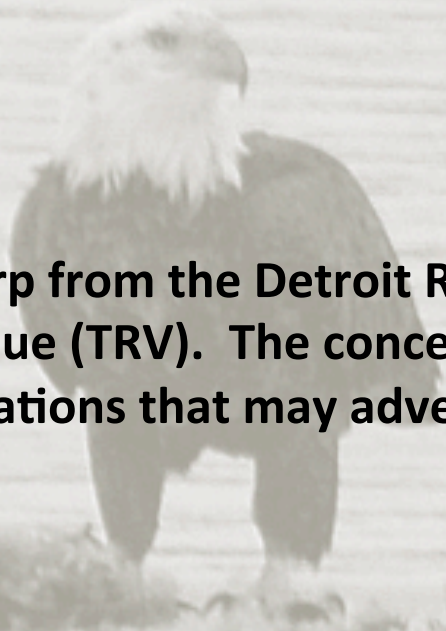
- **2014 – USGS Report**
- **Brown Bullhead Sampled**
- **Internal and External tumors**




BIRD OR ANIMAL DEFORMITIES OR REPRODUCTION PROBLEMS

- **Bald Eagles**
- **Forage Fish – 2013**

“PCB concentrations in carp from the Detroit River AOC exceed the fish tissue toxicity reference value (TRV). The concentration of PCBs in forage fish are above concentrations that may adversely impact wildlife.”





● Grosse Pointe – 0 Young
(New Territory – Outside of Detroit AOC)

BIRD OR ANIMAL DEFORMITIES OR REPRODUCTION PROBLEMS BALD EAGLES – 2016 NESTING SEASON

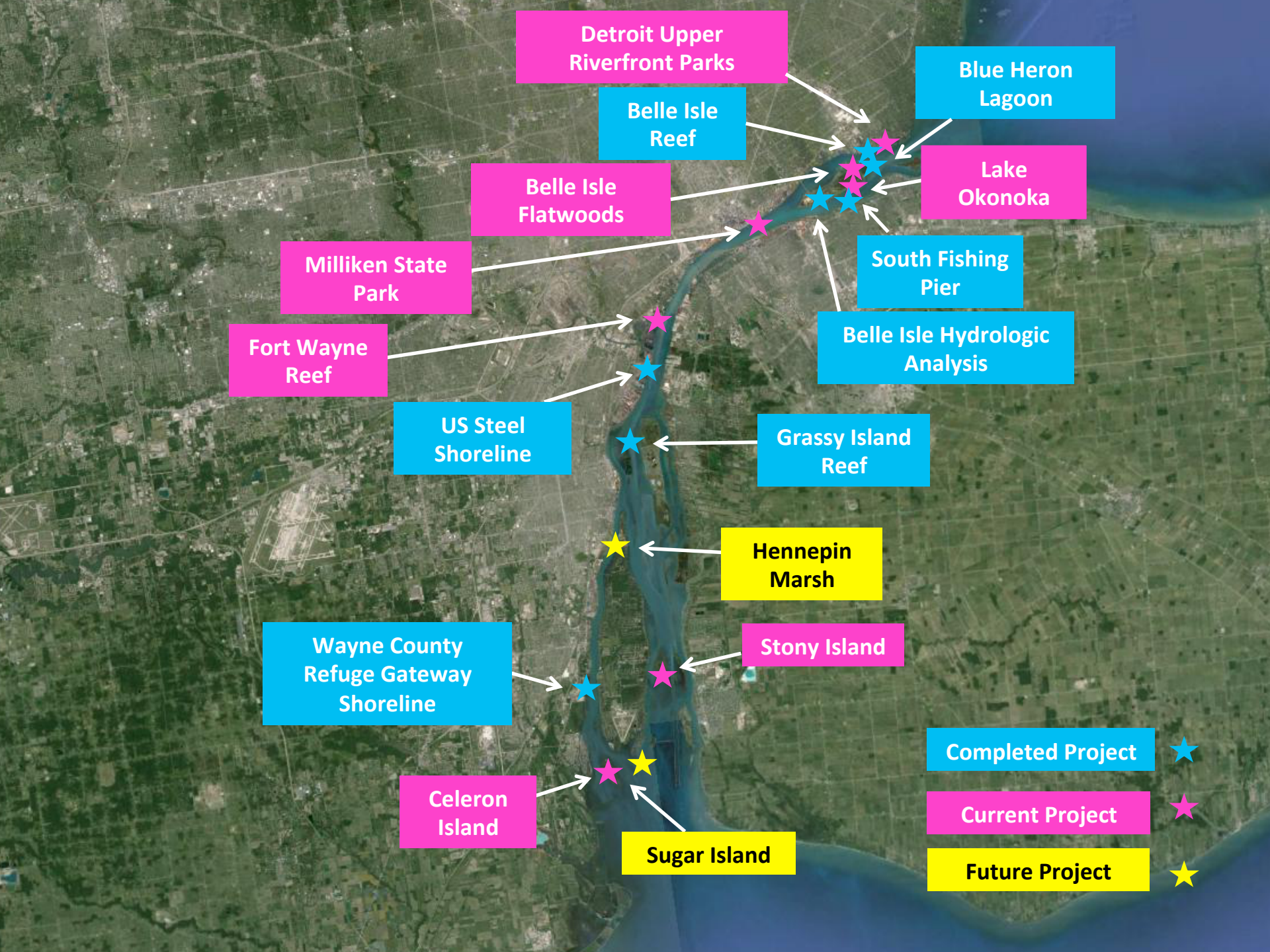
Grassy Island – 1
Young

Stony Island – 2 Young

Humbug – 2
Young

Celeron Island – Inactive Nest

Huron River – 0 Young
(Outside of Detroit AOC)



Detroit Upper
Riverfront Parks

Belle Isle
Reef

Belle Isle
Flatwoods

Milliken State
Park

Fort Wayne
Reef

US Steel
Shoreline

Grassy Island
Reef

Hennepin
Marsh

Wayne County
Refuge Gateway
Shoreline

Stony Island

Celeron
Island

Sugar Island

Blue Heron
Lagoon

Lake
Okonoka

South Fishing
Pier

Belle Isle Hydrologic
Analysis

Completed Project

Current Project

Future Project



THANK YOU!

