

State of the Bay



STATE OF THE BAY CONFERENCE
CHARLES W. STOCKEY CENTRE, PARRY SOUND
NOVEMBER 19, 2019



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



United Nations
Educational, Scientific and
Cultural Organization



GEORGIAN BAY
BIOSPHERE RESERVE

STATE OF THE BAY CONFERENCE AGENDA

- 8:00 AM** **REGISTRATION**
Coffee and tea provided
- 8:30 AM** **WELCOME AND OPENING**
Ozawaanimkeeqwe (Deina) Bomberry, Wasauksing First Nation
- 9:00 AM** **CONFERENCE OVERVIEW**
Paul Parete, Environment and Climate Change Canada
Greg Mason, Georgian Bay Biosphere Reserve
- 9:15 AM** **CLIMATE CHANGE KEYNOTE**
David Sweetnam, Georgian Bay Forever
- 10:00 AM** **CLIMATE CHANGE PARTNER PROFILE**
Cory Kozmik, Magnetawan First Nation
- 10:15 AM** **BREAK, NETWORKING**
Refreshments provided
- 10:30 AM** **THEME 1: NUTRIENTS**
Todd Howell, Ministry of Environment, Conservation and Parks
- 11:15 AM** **THEME 1: PARTNER PROFILE**
David Sweetnam, Georgian Bay Forever
- 11:30 AM** **THEME 1: BREAKOUT SESSION**
Facilitated discussion
- 12:00 PM** **LUNCH, NETWORKING**
Lunch provided
- 1:00 PM** **THEME 2: LOWER FOOD WEB**
Bo Bunnell, USGS Great Lakes Science Center
- 1:45 PM** **THEME 2: PARTNER PROFILE**
Aisha Chiandet, Severn Sound Environmental Association
- 2:00 PM** **THEME 2: BREAKOUT SESSION**
Facilitated discussion
- 2:30 PM** **BREAK, NETWORKING**
Refreshments provided
- 2:45 PM** **THEME 3: FISHERIES**
Arunas Liskauskas, Upper Great Lakes Management Unit
- 3:30 PM** **THEME 3: PARTNER PROFILE**
Aaron Pamajewong, Shawanaga First Nation
- 3:45 PM** **THEME 3: BREAKOUT SESSION**
Facilitated discussion
- 4:15 PM** **WRAP UP**
Greg Mason, Georgian Bay Biosphere Reserve
- 4:30 PM** **CLOSING**
Deina Bomberry, Wasauksing First Nation
-



State of the Bay

GEORGIAN BAY RESEARCH AND MONITORING PRIORITIES

NUTRIENTS

1. Nutrient Mass Balance - Improve understanding of nutrients (sources, sinks, pathways, and loadings) and nutrient-related issues (nuisance and harmful algal blooms) in nearshore and offshore. Explore the relevance of high water levels on nutrient-phosphorus loading over the exposed coastline.
2. Determine phosphorus loadings from the major Lake Huron tributaries. Hourly tributary flow data is needed for the majority of tributaries along eastern and northern Georgian Bay. This information has numerous applications, such as calculating nutrient loading from watershed sources.
3. Determine nutrient conditions and dynamics in the shallow nearshore (i.e., <3 m depth) in terms of nutrient variability, algae growth (both phytoplankton and periphyton), and benthic invertebrates.
4. Explore the causal relationships accounting for patterns of variability in phosphorus and water quality (tributary loading, exposure, circulation, and flushing, thermal regime, anthropogenic development, invasive species) to separate anthropogenic from natural influences.
5. Continue to evaluate water quality trends in relation to multiple factors such as: climate variables (air temperature, wind speed and direction, precipitation, timing of ice on/ice off), water levels, changes in land use, septic inspection results, and changes in temperature and oxygen regimes, both seasonally and inter-annually.

LOWER FOOD WEB

1. Phytoplankton - assess seasonal phytoplankton production, especially spring bloom conditions and possible implications for zooplankton timing and larval fish food supply at locations throughout Georgian Bay.
2. Zooplankton - investigate the drivers of recent shifts in zooplankton community structure (e.g., roles of *Bythotrephes* and *Leptodora*, top-down versus bottom-up mechanisms, and declines in *Diporeia* populations) including a detailed examination of trophic interactions. Food preferences of the dominant Great Lakes zooplankton need to be investigated, and whether they are able to tolerate shifting diets.
3. Benthic macroinvertebrates - studies are required to better characterize the spatial differences across Georgian Bay, including *Diporeia*. Monitoring would include protocols like that of the GLNPO and CABIN including nearshore and hard substrates in addition to soft substrates, to identify temporal and spatial trends in the benthic community.

GEORGIAN BAY RESEARCH AND MONITORING PRIORITIES

LOWER FOOD WEB (CONTINUED)

4. Update status on distribution, spread, and abundance/density of invasive mussels. Improve understanding of the influence of invasive mussels on phosphorus cycling, their role in nearshore algae growth (*Cladophora*), reasons for regional variations in abundance, and possible mitigation efforts.

FISHERIES

1. Evaluate connections between changing water levels and fish production.
2. Improve understanding of declining lake whitefish recruitment. Expand spatial scope of lake whitefish early life history sampling efforts - consider contrasting unaltered and highly modified/impacted shoreline and reefs. Traditional Ecological Knowledge (TEK) concerned with when and where lake whitefish were observed or encountered during their spawning movements would be insightful to relate to timing and behaviour currently being discerned from provincial assessment and monitoring surveys.
3. Describe phenotypic and genetic diversity of native cisco and determine spawning habitat.
4. Acquire fine scale substrate composition and quality at identified critical spawning reefs and shoals utilized by lake trout and lake whitefish - need to establish functional capacity in the midst of invasive species colonization and other ecological changes.
5. Continue to expand monitoring of nearshore fish community composition and dynamics using provincially developed Broadscale Monitoring survey design - assist in gaining insight to fish community resiliency in the midst of ecosystem change.
6. Expand spatial scope of embayment and inshore prey fish composition and distribution through acoustic surveys - supplement USGS annual acoustic and mid-water trawls in offshore waters.
7. Conduct basin wide areal creel surveys to determine extent of harvest directed at native and naturalized fish species - addresses need to determine relative importance of harvest compared to ecological change on sport fish abundance.
8. Expand monitoring of round goby abundance and distribution. Investigate the effect of round goby on nearshore ecology; contrasts among habitat types (east Georgian Bay - west Georgian Bay; with mussels - without mussels; hard substrate - soft; etc).

GEORGIAN BAY RESEARCH AND MONITORING PRIORITIES

CHEMICAL CONTAMINANTS

1. Continue long-term monitoring of environmental media (air, water, sediment, fish, wildlife) concentrations of identified chemicals of mutual concern to track progress and inform environmental protection, natural resource management, and human health progress.
2. Continue efforts to assess fate, distribution, and effects of chemicals of emerging concern.
3. Additional monitoring of siloxanes (common ingredients in many personal care products, cosmetics, as well as industrial and dry cleaning fluids) in fish is required to determine temporal trends of these compounds in the Great Lakes.
4. Investigate microplastics sources, transport, and fate.

HABITAT AND SPECIES

1. Monitor locations where spawning bed enhancement work has been undertaken in order to evaluate success and identify the need for additional work.
2. Assess impacts of shoreline development and alteration of critical coastal wetland spawning and nursery habitats.
3. Monitor coastal wetlands to assess coastal wetland water quality, species diversity, and the impact of human activities and water level fluctuations.
4. What nearshore areas represent areas of resiliency (to climate change, energy shifts, invasive species, and trophic changes), high ecological value, and what are the associated biological, physical, and chemical factors?



State of the Bay

NUTRIENTS

Speakers: Todd Howell, David Sweetnam

Your Name (if desired): _____ Contact info: _____

Please see the program for the pre-identified research and monitoring priorities.

(USE BACK AS NECESSARY)

What questions do you have about nearshore nutrients that would help you understand and/or address your concerns?

What questions do you have about offshore nutrients that would help you understand and/or address your concerns?

Are you confident in the questions/priority areas currently being proposed?

What would add to your confidence?

Do you have specific locations that you feel need work? Where and Why?



Environment and
Climate Change Canada
Environnement et
Changement climatique Canada

www.stateofthebay.ca



State of the Bay

LOWER FOOD WEB

Speakers: Bo Bunnell, Aisha Chiandet

Your Name (if desired): _____ Contact info: _____

Please see the program for the pre-identified research and monitoring priorities.

(USE BACK AS NECESSARY)

What changes have you seen in algae and mussels in your area of the Bay in the past 5, 10, 20 years? Do you have any questions about these changes?

Have you noticed any changes in what fish are eating and/or aquatic insect abundance? Where, and how? What questions do you have in this regard?

Are you confident in the questions/priority areas currently being proposed?

What would add to your confidence?

Do you have specific locations that you feel need work? Where and Why?



State of the Bay

FISHERIES

Speakers: Arunas Liskauskas, Aaron Pamajewong

Your Name (if desired): _____ Contact info: _____

Please see the program for the pre-identified research and monitoring priorities.

(USE BACK AS NECESSARY)

What changes have you noticed about the fish in your area and/or that you're interested in? (Types, ease of catch, what they're eating, nutrition, flavour, location, abundance?)

Have you noticed changes in the health of the fish? Where and what kind? Time of year?

What types of questions do you have about fish populations in nearshore Georgian Bay waters and offshore? Do you have specific locations that you feel need work? Where and Why?

Are you confident in the questions/priority areas currently being proposed? What would add to your confidence?



State of the Bay

CHEMICAL CONTAMINANTS

Your Name (if desired): _____ Contact info: _____

Please see the program and wall posters for the pre-identified research and monitoring priorities.

(USE BACK AS NECESSARY)

What concerns do you have about chemical contaminants?

Are there specific areas you are concerned about? What information would you want and for which locations?



Environment and
Climate Change Canada
Environnement et
Changement climatique Canada

www.stateofthebay.ca



State of the Bay

HABITAT & SPECIES

Your Name (if desired): _____ Contact info: _____

Please see the program and wall posters for the pre-identified research and monitoring priorities.

(USE BACK AS NECESSARY)

Do you feel that the watershed and nearshore habitats have been, and are being, adequately assessed? What additional work might you want to know about?

What land use activities concern you with respect to habitats?



Environment and
Climate Change Canada
Environnement et
Changement climatique Canada

www.stateofthebay.ca

