

**Great Lakes Indicators: Exploring Alternative Approaches Through Stakeholder Input
Virtual Summit, February 23-24, 2021**

**Agenda, Breakout Room Assignments, Questions for Breakout Discussions,
and Case Study Descriptions (February 19, 2021)**

Zoom links for plenary and breakout sessions are included. Note the same meeting link will be used for all plenary sessions. Individuals are assigned to breakout sessions, with assignments indicated on p. 4. Breakout session questions are on p. 5, and case study descriptions on p. 6. The Meeting ID (which should not need to be entered separately for a session) is the numeric string at the end of the website. Passcodes are provided in case needed for breakout sessions. Note time slots below are EST. Meeting guidelines are on p. 7.

Plenary Sessions Meeting Link: <https://nwf-org.zoom.us/j/7348877110>

Day 1 – Morning, Tuesday, February 23, 2021

Time	Topic/Meeting Link	Facilitator/Notetaker
9:30 - 10:20 am	Plenary 1: Meeting link at start of agenda	
9:30 – 9:45 am	Welcome by CIGLR Acting Director	Tom Johengen (introduced by Michael Murray)
9:45 – 10:00 am	Introductions	Michael Murray
10:00 – 10:20 am	Summit overview and objectives	Michael Murray
10:20 – 10:30 am	Break and Transition to Breakout Rooms	
10:30 – 11:30 am (brief break mid-session)	Breakout Session 1: Identifying strengths and limitations of approaches used to develop and implement currently used Great Lakes indicators (questions below)	
	Breakout session 1a: https://nwf-org.zoom.us/s/96991177928 Passcode: 561117	
		Facilitator: Michael Murray
		Notetaker: Ashley Elgin
	Breakout session 1b: https://nwf-org.zoom.us/s/94876711445 Passcode: 253907	
		Facilitator: John Bratton
		Notetaker: Casey Godwin
	Breakout session 1c: https://nwf-org.zoom.us/s/92094355209 Passcode: 709956	
		Facilitator: Catherine Riseng
	Notetaker: TBD	
11:30 am – Noon	Plenary 2: Meeting link at start of agenda	
	Report-out, summary	Michael Murray, facilitators
Noon – 1:30 pm	Lunch break	

Day 1 – Afternoon, Tuesday, February 23, 2021

Time	Topic/Meeting Link	Facilitator/Notetaker
1:30 – 1:50 pm	Plenary 3: Meeting link at start of agenda	
	Alternative indicator development process – overview of issues	Michael Murray, SC
1:50 – 1:55	Break and Transition to Breakout Rooms	
1:55 – 3:10 pm (5-minute break mid-session)	Breakout Session 2: Identifying an alternative process for developing and implementing Great Lakes indicators (questions below)	
	Breakout session 2a: https://nwf-org.zoom.us/j/98469971489 Passcode: 036516	
		Facilitator: Michael Murray
		Notetaker: John Bratton
	Breakout session 2b: https://nwf-org.zoom.us/j/93032980785 Passcode: 435651	
		Facilitator: Casey Godwin
		Notetaker: TBD
	Breakout session 2c: https://nwf-org.zoom.us/j/95031576448 Passcode: 695734	
		Facilitator: Ashley Elgin
		Notetaker: Catherine Riseng
3:10 – 4:00 pm	Plenary 4: Meeting link at start of agenda	
	Report-out, summary, tee up case study session	Michael Murray, facilitators

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Day 2 – Morning, Wednesday, February 24, 2021

Time	Topic/Meeting Link	Facilitator/Notetaker
9:30 – 9:50 am	Plenary 5: Meeting link at start of agenda	
	Welcome, summary of work from Day 1, goals for Day 2 and case studies	Michael Murray, facilitators
9:50 – 9:55	Transition to Breakout Rooms	
9:55 – 11:10 am (5-minute break mid-session)	Breakout Session 3: Examine potential approaches to alternative process through in-depth exploration of several current indicators as case studies (questions below)	
	Breakout session 3a – Case study 1: Toxic chemical contaminants https://nwf-org.zoom.us/s/94678765464 <u>Passcode: 285760</u>	
		Facilitator: Michael Murray
		Notetaker: TBD
	Breakout session 3b - Case study 2: Nutrients and eutrophication https://nwf-org.zoom.us/s/92464300034 <u>Passcode: 651657</u>	
		Facilitator: Casey Godwin
		Notetaker: Catherine Riseng
	Breakout session 3c - Case study 3: Sea lamprey https://nwf-org.zoom.us/s/92187166436 <u>Passcode: 995688</u>	
		Facilitator: John Bratton
		Notetaker: Ashley Elgin
11:10 am – Noon	Plenary 6: Meeting link at start of agenda	
	Plenary report-out, summary, next steps, including for final report development Adjourn – Noon	Michael Murray, facilitators

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Breakout Room Assignments

Breakout Session 1

1a	1b	1c
Michael Murray*	John Bratton*	Catherine Riseng*
Ashley Elgin**	Casey Godwin**	Todd Brennan
Amy Brennan	Tom Gorenflo	David Bunnell
Sheyda Esnaashari	Donna Kashian	Gail Krantzberg
Lucinda Johnson	Val Klump	Paul Mathewson
James McKenna, Jr.	Elaine MacDonald	Katie Rousseau
Donald Uzarski	Kristy Meyer	Andrew Slade
Chris Winslow	Lars Rudstam	Alan Steinman
	Lizhu Wang	

Note: Volunteer notetaker needed for 1c.

Breakout Session 2

2a	2b	2c
Michael Murray*	Casey Godwin*	Ashley Elgin*
John Bratton**	David Bunnell	Catherine Riseng**
Todd Brennan	Lucinda Johnson	Amy Brennan
Sheyda Esnaashari	Donna Kashian	Tom Gorenflo
Val Klump	Elaine MacDonald	Gail Krantzberg
Kristy Meyer	Andrew Slade	Paul Mathewson
Katie Rousseau	Donald Uzarski	James McKenna, Jr.
Alan Steinman	Chris Winslow	Lars Rudstam
		Lizhu Wang

Note: Volunteer notetaker needed for 2b.

Breakout Session 3

3a	3b	3c
Michael Murray*	Casey Godwin*	John Bratton*
Sheyda Esnaashari	Catherine Riseng**	Ashley Elgin**
Donna Kashian	Todd Brennan	Amy Brennan
Gail Krantzberg	Val Klump	David Bunnell
Paul Mathewson	Kristy Meyer	Tom Gorenflo
Elaine MacDonald	Katie Rousseau	Lucinda Johnson
Donald Uzarski	Lars Rudstam	James McKenna, Jr.
Lizhu Wang	Alan Steinman	Andrew Slade
	Chris Winslow	

Note: Volunteer notetaker needed for 3a.

*: Facilitator

** : Notetaker

Questions for breakout sessions

Breakout Session 1

Identifying strengths and limitations of approaches used to develop and implement currently used Great Lakes indicators.

1. What are strengths and limitations of various approaches used to develop environmental indicators to date in the Great Lakes (including any not reviewed in the background document), considering factors such as
 - a. Technical/expert involvement and review
 - b. Stakeholder engagement
 - c. Objectives/intended use of indicators
 - d. Criteria – technical, stakeholder needs, etc.

Breakout Session 2

Identifying an alternative process for developing and implementing Great Lakes indicators.

1. What actions can be taken to engage a broader range of stakeholders/communities in indicator development/review efforts?
2. Are there additional objectives/intended uses that should be considered in selection/refining of indicators?
3. What are key criteria that should go into selection/refining of indicators?
4. Is it desirable to aim for indicators that can meet multiple purposes, including meeting technical criteria and stakeholder interests, vs. developing separate indicators for each purpose as needed?
5. Should indicator selection rely more heavily on consideration of conceptual frameworks, including relating management actions to ecological outcomes, and if so, how should this be done?

Breakout Session 3

Examine potential approaches to alternative processes through in-depth exploration of current indicators associated with three case studies.

1. Any individuals who have had experience working on some aspect of this case study issue (or a related issue) involving indicators can provide a very brief verbal summary.
2. Based on outcomes of Day 1, which additional objectives/intended uses (if any) and key criteria should be considered in indicator selection/refining for the case study?
3. Can any indicators meet multiple objectives, or might separate indicators be of greater value?
4. To what extent can conceptual frameworks be further used in indicator selection/refining, and how could they be particularly useful for this case study?
5. Are there any emerging threats or other factors that could interact with the indicator or underlying processes (e.g. climate change) and should be considered in how we develop/refine indicators for the case study?

Case Study Descriptions (Wednesday Morning Breakout Sessions)

Case study 1: Toxic chemical contaminants

As a stressor group with direct implications for both ecological and human health, toxic chemicals have been addressed through both types of indicators since the inception of State of the Lakes Ecosystem Conference/State of the Great Lakes (SOGL) indicators. Most emphasis to date has been on persistent, bioaccumulative and toxic (PBT) chemicals, including human exposure risks via fish consumption. The current Fish Consumption SOGL indicator has an emphasis on fillet levels of PCBs and mercury. The current Toxic Chemicals SOGL indicator encompasses five sub-indicators (including whole fish and herring gull eggs), addressing PCBs, mercury and other legacy chemicals, and certain chemicals of emerging concern (CECs, e.g. PBDEs, PFAS). Overall status and trends in the recent reporting cycle (2019) were mostly fair and unchanging. There are multiple issues to address concerning indicators for toxic chemical contaminants, including legacy vs. CECs; fish consumption vs. other exposure routes (e.g. drinking water); human health and ecological exposures and effects; equity and justice concerns with toxic chemical exposures; and environmental cycling aspects that can complicate linkages to management actions.

Case study 2: Nutrients and eutrophication

Nutrients, and their consequences for algal blooms and food webs, have been targeted by various indicators since the 1970s. Current indicators closely match the updated Lake Ecosystem Objectives and reflect the ‘feast or famine’ problem of too much phosphorus in certain areas and critically declining phosphorus in large areas offshore. These indicators for nutrients and harmful algal blooms are used to describe responses of the lakes to inputs from the watershed. In areas where excess nutrients lead to harmful algal blooms (HABs) and hypoxia these indicators are designed to be responsive to ongoing management activities and objectives but management options are more limited for abating declines in offshore nutrients. These indicators are an example of a program that has different objectives depending on location and this geographic delineation continues to shift over time.

Case study 3: Sea lamprey

Part of a successful sea lamprey control program with an annual cost of over \$28 million is monitoring of adult sea lamprey abundance and impacts (<http://www.glfc.org/status.php>). Adult sea lamprey population estimates are developed for each lake using mark-recapture studies conducted on index streams. Lake trout wounding or marking from parasitic sea lamprey attachment and trout abundance data are collected annually to generate lake-wide marking rates and population estimates. These indicators are used to independently assess abundance and impacts of sea lamprey, as well as effectiveness of sea lamprey control measures (e.g., lampricide application to streams) and progress of lake trout restoration programs including other measures such as stocking and habitat protection or restoration. This mature indicator program linked to specific management actions can serve as an example of how other indicator programs linked to stressors and associated management decisions can be developed and optimized over time.

Meeting Guidelines

We are hoping for an engaging, interactive, and productive summit, and plan to capture plenary sessions and breakout sessions via recordings, in order to have a complete record of discussions at the summit. We assume all participants will adhere to Zoom community standards (<https://zoom.us/community-standards>). We request participants adhere to the following guidelines, including pertaining to the Zoom platform:

1. All participants are expected to be respectful of others throughout the meeting, including ensuring that all participants have opportunities to contribute to discussions.
2. Please be punctual and attentive. We recognize some participants have conflicts for part of the summit, and ask that you introduce yourself if you arrive in the middle of a breakout session, and notify the facilitator (e.g. via chat or verbally) if you have to leave a breakout session early. If you have to arrive late or leave early from a plenary session, you can notify one of the facilitators via chat.
3. Video: We urge participants to have your video on when speaking, and if possible (i.e., no bandwidth issues), throughout each breakout session, to maximize engagement.
4. Audio: Please have your computer on mute unless speaking.
5. Raising hand: Please raise your hand if you would like to speak during plenary sessions. To do so, click on the Participants tab, and at the bottom of the panel on the right, you may see a raise hand icon. If it is not there, you can try clicking “More” icon, and click the raise hand icon if available. If not, you can click the thumbs up icon to indicate you would like to speak.
6. Chat: Participants are urged to use chat as appropriate (including sharing resources), though we aim to maximize verbal interactions during all sessions.