A decolonized approach to community based, cumulative effects monitoring

Presenting author: E. Ho
Co-authors: M. Servos, S. Courtenay, A. Trant, D. McCarthy, C. Mcleod, and R. Miller

In this research, we examined the social-ecological context of the Grand River watershed, Southern Ontario's largest watershed, to enable a water quality monitoring program to be designed and implemented at the mouth of the River in Lake Erie's eastern basin. As Canada moves towards a mandate for reconciliation with Indigenous communities, ignoring the challenge of bringing together different ways of knowing – a common practice in water quality monitoring – is no longer acceptable.

I am a non-Indigenous researcher who co-created this project with local practitioners and Indigenous persons to explore opportunities for strengthening knowledge learned from water quality monitoring. Unfortunately, because of our history, initializing a relationship between Indigenous and non-Indigenous entities in the form of research is automatically linked, to some, with imperialism, colonialism, bad memories, and distrust; therefore, a co-creative approach based in decolonizing methods is required if meaningful, long-term relationships are to be built.

In the top left quadrant of the poster, under the heading *Reconceptualising water quality monitoring*, you will see a summary description of current practice and existing aspirations to monitor for cumulative effects, followed by the research gap – that community and Indigenous knowledges are not formal components of current monitoring in the Grand River watershed. Finally, an overview of our proposed approach, community-based cumulative effects monitoring, is introduced. In the lower section of the poster, we highlight a collaborative activity and a process framework that may enable the design and implementation of such a monitoring approach.

As part of this work, we sought to try new ways to engage community and Indigenous voices in the practice of water monitoring and management. One approach involved youth from Six Nations of the Grand River in the development of a virtual art exhibit, linked at the bottom of this poster, that demonstrates the youths' relationships with water. Two of the 30 pieces of work that comprise the *Grand Expressions* virtual art exhibit are shown on this poster, both of which were created by Ashley Cattrysse. Ashley is one of 12 artists involved in this research, most of whom wrote short stories to accompany their artwork. The painting on the upper right quadrant of this poster, titled *Water Keeper*, and its story are found on pages 20 and 21 of the virtual tour linked at the bottom of the poster; whereas the lower painting, titled *Our Timer*, is presented and described on pages 3-5. A list of principles and values to guide water quality monitoring and management was created from a combination of the youths' stories and values described by practitioners who were interviewed in another part of this work.

In the lower right quadrant, you will see a section titled *Collaborative watershed analysis*. In a December 2020 workshop with water scientists and managers, participants suggested that visualizing social-ecological system features may be key to achieving a common understanding and constructive discussion of cumulative effects. One suggestion that emerged – which will be applied in future research – was to implement a collaborative watershed analysis process, which

is essentially a long-term, group systems mapping exercise. Though this process hasn't been fully developed yet, we propose it might look something like this:

1. Verify the problem. This means ensuring different ways of observing and identifying problems are considered.
2. Define the system's spatial and temporal boundaries based on the observed effect and its 'valued component', which is the thing we care about and want to maintain or achieve.
3. Consider which combinations of interactions may be at play. This would include identifying potential stressor-effect relationships and understanding the influences of environmental conditions on the observed effect and/or the valued component.
4. Collaboratively create a systems map or visualization to illustrate interactions, including potential management responses where possible.
5. Modify visuals over time as complex interactions are better understood.

The idea behind a collaborative process like this is that a more complete, holistic understanding of the issues of discussion may be achieved when forming a visualization using different people's experiences and knowledges. This exercise is likely to reduce conflicts during discussions in which different observations may point to different conclusions about a specific phenomenon. Our practitioners also suggested that this type of exercise may be useful to implement alongside predictive modelling as it brings different perspectives, or ways of knowing, together to literally build a concrete version of the system being modelled.

Finally, five years of research culminated in the development of a process framework that outlines an approach through which a community-based cumulative effects monitoring program can be designed and implemented. This process framework is accompanied by an organizational chart that is not shown on this poster, which suggests potential roles for various collaborators who may implement the process shown here. As you progress through the process framework, you will see these roles italicized outside the boxes and referenced via white block arrows.

The process of designing a monitoring program starts at the black box in the top left corner, which notes that a community champion or champions initially convene and may involve others who may contribute expertise or who may have authority in the area. This is the main difference of this process framework compared to conventional monitoring, that community members lead the process. Essentially, this represents a shift in responsibility for freshwater resources, from being entirely the domain of government agencies – including conservation authorities, which are watershed management agencies unique to Ontario – to being a responsibility shared with empowered community members and groups. It is not meant to completely replace existing monitoring approaches, but to supplement them.

The first step after community champions convene is to develop a common worldview. This is where a process like collaborative watershed analysis, described above, may be useful; however, it is likely this kind of activity would be ongoing at least through the first two or three steps of the process framework. You can follow the solid black arrows and numbered boxes through the rest of the process, recognizing the two concurrent boxes that are numbered 2a and 2b. The broken line arrows represent potential iterations of this process, which is not linear. The process is based on adaptive management, with 5-year reviews of the entire program represented by the

light gray background, and biannual check-ins of a subset of steps represented by the dark gray background. Shorter iterations involve status updates and addressing operational challenges, while longer iterations consist of a review of goals, success criteria, alignment with management, and more. Ideally, all activities are guided by a set of principles and values like the list we created from the youth's stories and practitioner interviews. In addition, a lengthy stakeholder and rightsholder identification and classification process will have been completed early on. Because of this, we recommend a 2-year initial design phase – steps 1 through 4 – which will mostly involve relationship-building and establishing a common mindset for all.

More information about the research described on this poster is provided in three publications and four draft manuscripts. Feel free to contact me using the email at the bottom for more information. Thank you for visiting our poster!