State of the Kawartha Lake Symposium Fall 2020

Final Report by:

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Department: FRSC

Term: FALL/WINTER 2019/2020

Date of Submission: May 2020

Project ID: 4886

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STATE OF THE KAWARTHA LAKES SYMPOSIUM – FALL 2020

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FRSC 4890Y Trent Community Based Research

Host Organization: Kawartha Conservation

Faculty Name: Forensic Science

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April 2nd, 2020

Abstract

Kawartha Conservation, a local not-for-profit agency requested the assistance of a Trent University student to assist in researching information for an upcoming symposium, being held in Fall 2020. The goal of the symposium is to engage with stakeholders who share a common interest in the health of waterways in the Kawartha Lakes region. Through reviews of published and grey literature and review of websites by the student, a distribution list was collaboratively created by the agency and the student. A five-question survey, to determine priority areas, was designed. The survey received ethics approval from Trent's Department of Forensic Science. The survey was then distributed in the winter of 2020 and analysed to inform the content and agenda for the future symposium. The five areas of greatest interest were: Water Quality, Watershed Land Use and Development, Climate Change, Invasive Species and Fisheries. These topics will be used to design the agenda for the conference. Conference locations were investigated, and an appropriate venue was secured that ensured equity of access and participation from the diverse target population. Measures of success were determined for the survey and registration targets were determined. Lessons learned and opportunities for future research questions were explored. Discussion about the value of collaborative community-based research, from the perspective of a student, is included.

Keywords: Kawartha Lakes, symposium, community-based research, Trent University

Introduction & Background

Kawartha Conservation approached Trent University to seek assistance from a student to conduct community-based research to aid them in planning and executing a symposium to enable knowledge translation and networking opportunities. The audience would include scientists, government officials, cottage/lake associations, academic institutions, conservation authorities, stewardship organizations and citizen scientists, lay people, and Indigenous communities. The student would assist them in answering the following questions:

1. What individuals, organizations and agencies are actively studying the Kawartha Lakes?
2. What projects are they undertaking and what are their key findings?
3. What are their upcoming priorities?

Conservation Ontario represents Ontario's 36 conservation authorities, including Kawartha Conservation. (1) Mandated by Conservation Ontario, Kawartha Conservation is a local non-profit, watershed management agency, established in 1979 (1). A watershed is a body of land that separates waters flowing to other waterways like rivers, lakes, basins, or seas (1). Kawartha Conservation is responsible for the Kawartha watershed that extends from Lake Scugog in the Southwest and Pigeon Lake in the east, to Balsam Lake in the northwest and Crystal Lake in the northeast (1). This area is a total of 2,563 square kilometres. This project will focus on the Kawartha Lakes system, which does include but also extends greatly beyond Kawartha Conservation's jurisdiction, including: Balsam Lake, Cameron Lake, Sturgeon Lake, Scugog Lake, Pigeon Lake, Buckhorn Lake, Chemong Lake, Lower Buckhorn Lake, Lovesick Lake, Ston(e)y/Clear Lake, Katchawanooka Lake and Rice Lake.

Kawartha Conservation has strategic goals in five key areas: Protect, Conserve and Restore, Discover, Optimize Service and Connect and Collaborate. Their vision is: A sustainable watershed with clean and abundant water and natural resources assured for future generations. Their mission is: To be leaders in integrated watershed management and conservation. And, their focus is: Outstanding water quality and quantity management, supported by healthy landscapes through planning, stewardship, science and education (1). This project is necessary to help with the key areas of conserve and restore and connect and collaborate, and also aligns with their mission, vision and focus (1). The health of the Kawartha Lakes is of paramount importance to this region for a variety of reasons including tourism, sport fishing, municipal water supply, recreation and environmental health (1). An in-person symposium is planned for the fall of 2020, which will gather key stakeholders and help educate and raise awareness on current issues the lakes are facing and collaboratively explore appropriate next steps that could be undertaken.

The purpose of this project is to bring together key stakeholders, people who have a vested interest, in the Kawartha Lakes region. This group includes government officials, First Nation communities, cottage/lake associations, academic institutions, conservation authorities, stewardship organizations and citizen scientists. The symposium will provide a platform for parties to discuss and share research they have conducted regarding the health of the lakes. This will be accomplished by organizing an in-person, one-day symposium to facilitate face to face discussions. The sharing of this information will allow stakeholders to understand what

interventions have improved lake health and what efforts have not been helpful. When information is shared in this way, it helps ensure that future efforts will be focused and relevant which will ultimately lead towards effectively managing the aquatic health of the Kawartha Lakes.

One of the first steps needed in this project was a broad review of published and grey literature to determine what local research was currently being conducted as well as what previous research had been done. This was accomplished by Google searching and by using resources available through Trent University library including Omni academic search tool. Search terms used included Kawartha Lakes as well as each of the names of the individual lakes, Balsam Lake, Cameron Lake, Sturgeon Lake, Scugog Lake, Pigeon Lake, Buckhorn Lake, Chemong Lake, Lower Buckhorn Lake, Lovesick Lake, Ston(e)y/Clear Lake, Katchawanooka Lake and Rice Lake. This exercise revealed the following:

The non-profit group Environment Council for Clear, Ston(e)y and White Lake are currently working towards making their lake healthier (2). They are tackling this issue by preserving and restoring natural shorelines, protecting significant wetlands and preventing pollution of waterways from septic systems (2). A representative(s) from this group would be an ideal delegate to this symposium as they can bring their practical expertise to the discussion, sharing how the efforts they are spearheading are improving the health of the lakes. These initiatives would be of interest to other attendees as these issues and potential solutions could also be implemented in their areas. The representative from Environment Council for Clear, Ston(e)y and White Lake will also be able to learn from other delegates, what is being done in other lakes to combat these same issues. There will also be supports for volunteer ‘citizen scientists’ such as identification of training opportunities for new bio-monitoring protocols i.e. benthic.

The non-profit group Kawartha Lake Stewards worked together with Fleming College in 2018 to determine the health of Pigeon, Lovesick and Ston(e)y Lakes based on their dissolved oxygen levels, phosphorus levels, pH and conductivity (3). The dissolved oxygen must be at an acceptable level In order for a lake to sustain aquatic life (3). Based on results from this study, both Lovesick and Ston(e)y Lakes have adequate levels of dissolved oxygen, but Pigeon Lake

was considerably lower than the accepted value (3). This research could be replicated in the other core Kawartha Lakes to determine a baseline value for the health of all lakes in the region. A representative from the Kawartha Lake Stewards should attend the symposium to disseminate the results from this study to the other stakeholders and encourage other groups to consider repeating this research in the other nine core Kawartha Lakes in order to build the body of research and allow for comparison.

A study done by the department of Biology at Queen's University looked at changes in algal production over the last several hundred years in Cameron Lake, Pigeon Lake and Ston(e)y Lake (4). Knowing how the algal production changed helped determine baseline conditions that can be used for future comparisons (4). This study could be repeated for the remaining core lakes. If some of the lakes had similar algal productions, it may show how closely related these lakes are and could help determine if these lakes have undergone the same external factors that led to a change in algal productions.

A study done by the Department of Biology at Queen's University looked at competitive black bass fishing in Pigeon Lake, Chemong Lake and Buckhorn Lake (5). When fishing tournaments are held that are catch and release, the anglers can assist with mark and recapture studies of fish (5). The study also mentioned that anglers are more than willing to help the researchers as they want to ensure sustainable fish populations(5). Currently many of the core Kawartha Lakes are voicing concerns about the decrease in the populations of walleye in the lakes (5). If a catch and release fishing tournament was held, anglers could help researchers determine an approximate population size of walleye in the lakes. This could be an area of conversation at the symposium and discussion could take place as to whether this is something that could be repeated with walleye in the core Kawartha lakes.

The County of Peterborough is currently working collaboratively with Curve Lake First Nations to monitor the walleye populations and water quality in Chemong Lake's eastern shoreline (6). They will be doing this by testing the water quality with data-logging equipment, collecting walleye eggs and doing conduction nighttime monitoring where they will be counting the number of walleyes observed (6). Disappearing walleye is an issue seen across a few of the Kawartha Lakes (6). If determining the population through these methods is effective, other core

Kawartha Lakes concerned with the walleye population could repeat this study. Also, discussions could take place to determine if utilizing anglers in a catch and release walleye fishing tournament could be beneficial and complement and or reinforce the data from this study (5).

The non-profit group, Scugog Lake Stewards are monitoring the lake's water chemistry and biology (7). An identification guide has been created for this lake to help with identification of aquatic plants found (7). Invasive species may negatively affect the lakes as they could change the chemistry of the lake (7). Also, if an invasive species takes over, it may kill off a native plant causing the life cycle of the lake to change (7). It could be useful to make a guide for each lake to help identify invasive aquatic plants; this could then be distributed to the community members so they could help monitor the invasive aquatic plants present in the lakes. At the symposium, stakeholders could talk about current invasive aquatic plants and determine if a guide would be helpful in monitoring these species. Additionally, this group is working with The Ontario Ministry of Natural Resources and Forestry, on a project to help combat the missing walleye (7). They are doing this by trying to rehabilitate abandoned walleye spawning sites (7). A "Walleye Watch" program has also been put into place where the citizens of Scugog Lake watch for spawning walleye in the early spring and report locations to a central data collection centre (7).

An invasive virus, CyHV-3, has been found infecting the invasive common carp population in Scugog Lake, Buckhorn Lake, Rice Lake and Balsam Lake causing these fish to rapidly die (8). This article highlights how issues affecting part of a watershed can easily drain into other parts causing them to also face these issues (8). This could be an area of conversation at the symposium.

This review identified applicable research being conducted locally in the Kawartha Lakes region. One of the biggest issues with research is disseminating it to the appropriate audiences outside of the academic realm. These projects would be useful for the audience of the symposium to learn about and are projects with which they may wish to align. This research indicates that there is a need for a symposium of this nature and that there is likely to be interest in meeting to discuss areas of common concern with the various stakeholders. Kawartha Conservation is a respected leader and is an excellent organization to spearhead this initiative.

Methodology

The student conducted a broad literature review to determine who is actively studying and/or managing water resources on the Kawartha Lakes. This included researching what has been done in the past, what research is currently being conducted and if there are any gaps that could inform future research activities and/or action items. This literature review identified relevant topics and experts who would be reliable presenters for the symposium. This was accomplished by Google searching and by using resources available through Trent University library including Omni academic search tool. Search terms used included Kawartha Lakes as well as each of the names of the individual lakes, Balsam Lake, Cameron Lake, Sturgeon Lake, Scugog Lake, Pigeon Lake, Buckhorn Lake, Chemong Lake, Lower Buckhorn Lake, Lovesick Lake, Ston(e)y/Clear Lake, Katchawanooka Lake and Rice Lake. This also identified groups and organizations that have a vested interest in these topics, and provided information for the initial stakeholder list. The goal was to compile a diverse list in order to have a wide range of participants with interest in the topic. The distribution list, compiled collaboratively with names provided by the student and the host organization and approved by the planning committee ended up including 82 names and had representatives from lake associations, conservation agencies, cottage associations, government officials, university professors, and Indigenous groups. A spreadsheet was used to capture the relevant information necessary to enable effective communication with these stakeholders moving forward.

In order to verify that the areas discovered would be of interest to the target audience, a five-question survey was designed collaboratively, with input from the planning committee from the symposium. Open ended questions were selected to ensure that participants would be able to provide topics and information that the planning committee may not have considered. This survey was composed of short answer questions, and matrix questions using an interactive slider scale. The survey was designed on Qualtrics and the link was sent out to stakeholder's emails. The Qualtrics program was selected because it has a user-friendly interface, experience and set-up (9). Qualtrics also allowed the user to complete the survey on their mobile devices (9). Additionally, Qualtrics provided raw data that could be exported as either a .sav file or a .csv file (9). Qualtrics is a tool that assisted in the collection and analysis of data from the survey that was distributed. Since the student had not had the opportunity to use Qualtrics before, they reviewed

demos and instructional videos to ensure an adequate understanding of how best to use the product and to gain an ability to craft the questions effectively so that the program provided the information sought.

Qualtrics generated two different links to the survey. One link was for people on the existing distribution list and this link was unique for them and could not be completed more than once, so could not be shared. This was to prevent the same person from completing the survey more than once. The second link generated, was a generic link and could be accessed by anyone. There was some confusion and people provided their unique link to others, however since it can only be completed once, it caused some issues with people being unable to complete the survey. This added additional work for the survey administrators who had to clarify the situation. Since the survey was available for completion for several weeks, a reminder email was sent to people on the distribution list in order to encourage the maximum number of responses. Greater response numbers helped ensure that the information captured was more representative of the needs of the target population. The analysis features built into Qualtrics provided graphs, which made the information more easily understood than through the use of words (9). The short-answer questions required more hands-on analysis, but using key words and grouping of similar responses enabled analysis of this valuable information. The survey gathered sufficient information about what potential attendees of the symposium wished to discuss and learn about at the event. This information was critical to ensure that the event planned meets the attendee's expectations and addresses areas of concern. The survey covered ongoing projects, key findings, and upcoming priorities to inform the agenda of the symposium, which is being held in the fall of 2020.

Qualtrics is able to separate responses from any identifying information which encouraged people to answer the survey truthfully and prevented analysis bias on behalf of myself, as all responses were given equal consideration. Another way biases were minimized was by ensuring the questions were structured in a way that was not leading. The approved questions are included in Appendix A.

Prior to sending out the survey, ethical approval for the project was received from the Forensic Science Department at Trent University. The research project, including the completed

list of survey questions, was reviewed by the ethics board to ensure the research being conducted was ethical and met the standards outlined by Trent University. Confidentiality is a key consideration in planning the event and began with the online survey utilized to determine key areas of interest among the stakeholders. Safeguards were embedded to ensure that the results were shared in aggregate and anonymity was maintained. Email distribution lists used BCC, blind carbon copy, in order to maintain confidentiality of the recipients. Once the survey and ethics application were approved, the survey was sent out electronically, as a link in an email to all the stakeholders on January 13, 2020. The stakeholders were encouraged to provide the link to others who may have an interest in the topic. The stakeholders were given two weeks to complete the survey, with a deadline for submission of January 27, 2020. A reminder email was sent out to the stakeholder distribution list on January 24, 2020, three business days before the end of the survey, in an effort to encourage the recipients to complete the survey.

It was determined that the symposium will take place in the fall of 2020. The student had significant involvement with the Planning Committee and took the lead on taking minutes and scheduling monthly meetings. The most pressing issue to decide was where and when the event should be held. Potential venues were investigated and recommendations were made to the planning committee. Based on the information provided, the committee selected Trent University as a venue as it met the criteria outlined in the paragraph below. Stakeholders who received the survey will be encouraged to register for the symposium and any other people that have been recommended through the survey responses will be added to the stakeholder distribution list and will also be contacted to ensure the event and registration details are brought to their attention.

When planning an event, it is important to create an inclusive event where all attendees feel welcome and valued and measures should be incorporated to protect the host agency for the symposium. There are several things that should be incorporated and considered when selecting a venue for an event. The venue should be a barrier free facility, as outlined by the Accessibility for Ontarians with Disabilities Act, which ensures all attendees with physical limitations can easily access the event. Gender neutral washrooms would be a bonus, as it would also ensure that nobody feels discriminated against because of their sexual orientation. Food allergy information will be collected from registrants to reduce risk of adverse events. Financial liabilities will be

decreased by ensuring liability insurance coverage for the event and signed contractors with presenters.

It is also important to create an agenda that is inclusive and welcoming. Ensuring that an "us and them" scenario is avoided is of paramount importance. All attendees should feel that they have something to contribute to the conversation and should not feel intimidated by academics or political attendees. Homeowners, Indigenous groups, tourism operators, students and other interested people should all be able to understand the material being presented and all presenters should be encouraged to use plain language when disseminating their information. Clear actionable next steps or things to consider ought to be embedded into the conclusion of each presentation. Land acknowledgement will be integrated into the opening of the symposium. Food allergy information will be collected from registrants to reduce risk of adverse events. Financial liabilities will be decreased by ensuring liability insurance coverage for the event and signed contractors with presenters.

There will be many measures of success for this project. Here are some of the specific, measurable, actionable, realistic and timely metrics that will be used. Kawartha Conservation is a not for profit organization and it is imperative that this symposium stay on budget. A realistic budget will be created and adhered to, and success will be realized if the event breaks even and stays on budget. Since the preservation of the environment is important to the host organization and to attendees, the committee will work with the venue to ensure that the carbon footprint generated by the event is minimal. Single use containers will be avoided where possible and compostable disposables will be preferred. The planning committee may also wish to consider using satisfaction surveys to glean information from attendees to assist with planning future events.

Results

The distribution list, compiled collaboratively with names provided by the student and the host organization and approved by the planning committee included 82 names and had representation from lake associations, conservation agencies, cottage associations, government officials, university professors, and Indigenous groups. The survey was distributed to 82 people They were also encouraged to provide the second, generic link for the survey to other interested parties. In total, 44 responses were received, which translates into a response rate of 52% of the original distribution list. Our goal was to have a minimum of 50%, and we surpassed this goal. According to industry standards this equates to an excellent response rate, making the survey results reliable (9). Questions had to be answered sequentially, and participants were not allowed to revisit a previous question.

Question One: Are you or your organization actively collecting information that is relevant to the management of the Kawartha Lakes?

The analysis of this question revealed that most respondents are involved in collecting information about water quality. This was the highest common response. The next most common information collected was about species at risk, invasive species and water levels, which all had similar numbers of responses, although they were mentioned only half as frequently as water quality. This shows that water quality could be a uniting issue that could easily interest the target audience. It also indicates that their information could also be centrally submitted, analysed and stored to provide region-specific data.

Question 2: What are your organization's top 3-5 upcoming management, monitoring, and/or research priorities?

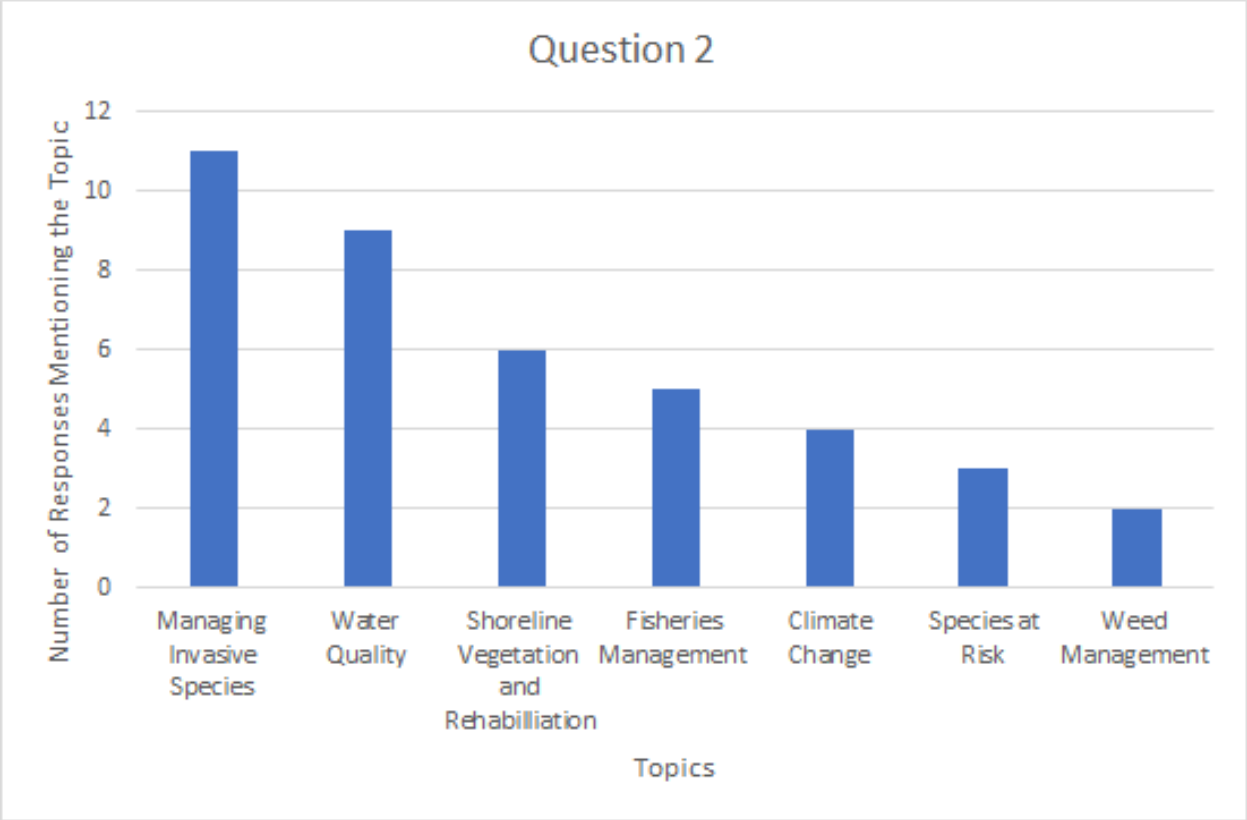

Figure 1: This data shows that managing invasive species and water quality were of highest concern to the respondents.

This question was asked to determine what was of concern to the stakeholders. The results show that managing invasive species and water quality were of highest concern. This indicates that some time during the symposium should be dedicated to these issues, and this recommendation was communicated to the planning committee.

Question 3: Please rank these topics in order of importance to your research program or organization's mandate.

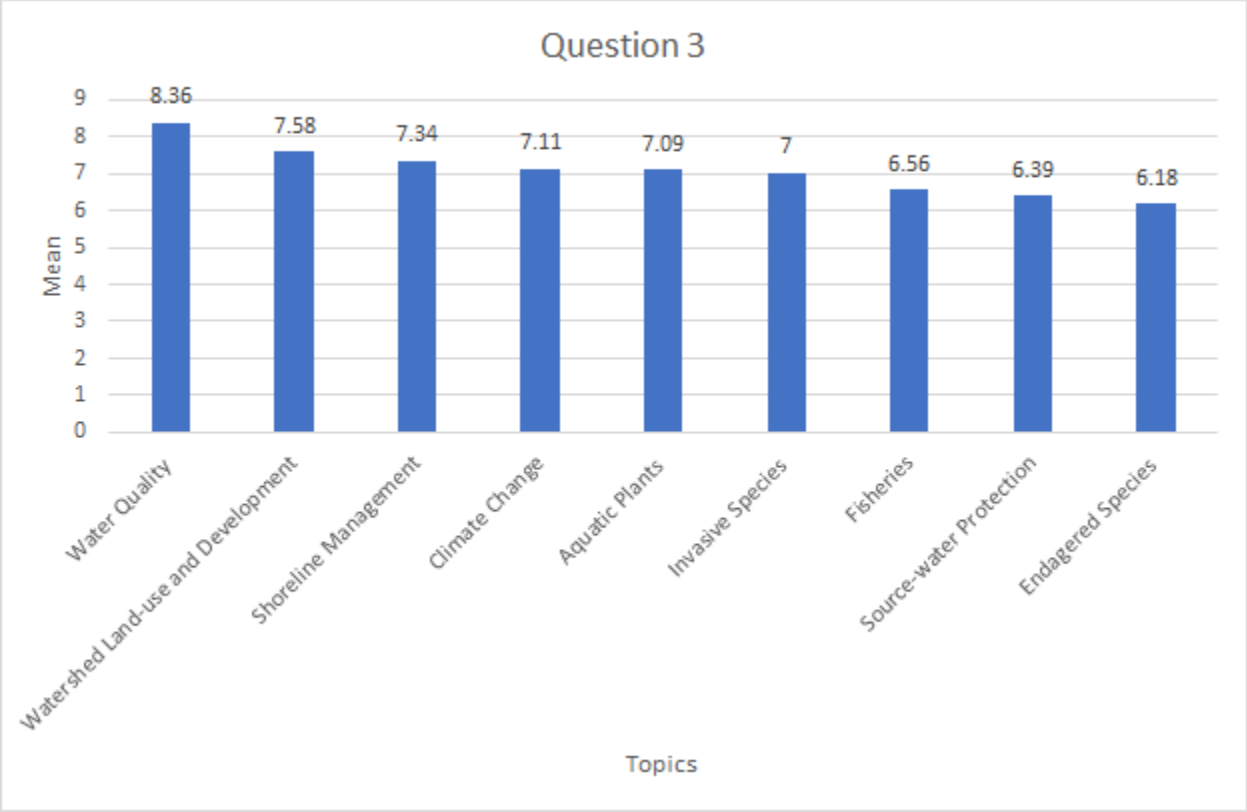

Figure 2: Results from Question 3

This question was asked to help verify responses given in the previous two questions. This graph shows that the categories selected were of similar importance to the stakeholders and indicates that the planning committee and the student have a good understanding of the issues and concerns of stakeholders around water health in the Kawartha Lakes region. Water quality came out on top, which is consistent with the information gleaned in the previous two questions. Since none of these topics were of little interest to the stakeholders, any of these topics could be incorporated into this, or future, symposiums.

Question 4: Do you know of any subject matter experts in the above topics that you would like to hear from? If so, please provide their name and contact information below.

This question provided 15 names, including 7 names that were provided by two different respondents and included various university professors and government scientists. Their areas of expertise encompassed shoreline restoration, climate change, ecological restoration, invasive aquatic plants, sustainable uses of fresh water fisheries, wild fish populations, conservation biology, wetland rehabilitation and surface water specialists. These names were provided to the planning committee for the symposium and may be considered as speakers for this or future events.

Question 5: Please provide any other comments you think may be relevant to the planning of this symposium.

This was not a mandatory question and many people chose not to provide an answer. From the responses received, the question revealed useful information for the planning of the symposium. Climate change was mentioned twice, as was the importance of having updates from all organizations/agencies/associations. Networking was also mentioned as being a critical component. Indigenous land acknowledgement was also something mentioned by more than one person. It is imperative that these elements be incorporated into the agenda for the symposium to ensure people derive value from attendance.

Discussion and Conclusions

The survey information was very valuable and the congruence between answers was encouraging. Since the questions were presented in sequential order and respondents were unable to revisit the previous questions, the fact that similar responses and rankings were evident in the first three questions add face value to the findings. The first two questions did not have topics embedded into the questions, so the fact that the topics listed in question 3 had already been identified as issues, without any prompting, provides confirmation of the pressing issues. Water quality is an issue for many of the issues and is a part of their mandate. An opportunity exists for Kawartha Conservation, government bodies/agencies, academia or citizen coalitions to collect, combine, analyse, synthesise and distribute the water quality information for the region. This would assist in providing a baseline for the health of the lakes in the region and could be used to

establish benchmarks and best practices to improve water quality. It will also build on data collected previously and build the body of evidence in this field.

Question 2 reveals that future opportunities exist around managing invasive species. It is important that Kawartha Conservation considers what their role might be in educating stakeholders and in collecting data around the existence of invasive species. Best practices around managing invasive species should be on their radar, as successful management of invasive species is good for the health of the watershed.

It is interesting to notice that although invasive species was considered to be of highest importance in question 2, it was ranked number seven out of 10 in question 3. It is possible that there was confusion between invasive species and aquatic plants. If the responses from invasive species and aquatic plants were combined, then that response would have had the highest response by a large margin. Kawartha Conservation might wish to investigate further, perhaps through another survey or through remote or in-person town hall meetings to determine what people think of when they hear the term invasive species-is it fish or plants. Future surveys could benefit from clear definitions of what is meant by terms like invasive species, aquatic plants, weed management, shoreline vegetation, etc. Ambiguous terms, with more than one interpretation, should be avoided and common definitions need to be communicated.

One limitation I faced with this project is that there is no way to force someone to complete a survey. Everyone who completed the survey was entered into a draw for a $25 Tim Horton's gift card but that was not enough incentive for some, as of the 82 people who received the survey only 44 people completed it. This translates to 52% of the people who received the survey, completed it. At first, I believed this was poor engagement but upon researching acceptable survey response rates, it was discovered that a response rate between 35-40% is considered the benchmark a researcher should aim for meaning the response rate to our survey was above average and is acceptable (10). Another limitation was since the survey was anonymous; it was impossible to tell what the demographic of people who filled out the survey. If the survey was replicated in the future, it would be advantageous to include a couple of short demographic questions, to determine if the responses mostly came from government employees or from cottage associations. After interpreting all the results and speaking with the other

members of the symposium planning committee we assume that it is likely the majority of the responses were from cottage associations. We came to this assumption because water quality was repeatedly mentioned, and members of the planning committee confirmed that water quality is a major concern of cottage associations currently.

Despite these limitations my host and I are quite pleased with the outcome of the survey. Kawartha Conservation had a strong gut feeling of what was important to the various stakeholders, but was not able to quantify this information. By having an understanding of what is currently being researched in the region, and by reaching out to the target audiences they were able to have reputable information to inform their decisions. The responses from the survey helped to provide concrete evidence of what is of interest in this geographical area. The survey allowed us to determine appropriate topics that the attendees want discussed at the symposium and we believe because we took the time to carry out this research the event will be well attended.

The concept of community research was new to me. I am thankful that I had the opportunity to be involved in this course. It was a great chance for me to synthesize knowledge that I have gained throughout my educational career and to be able to apply it to a real-life issue that is of interest to me and to the community that I now call home. I believe this model is mutually advantageous for both the not-for-profit agencies that are able to apply and for the students who are qualified for this course. I value the experience. It is unfortunate that the COVID-19 outbreak prevented our ability to have the Celebration of Research in person. It would be great if we were able to share the posters virtually, so others can see the results. I have learned many transferable skills through completing this project and also realized how many skills I had gained that could be useful in this context. The importance of maintaining accurate records, learned through my forensic courses, was of paramount importance in completing this project. Through planning an event, I realized the complexities that need to be considered, and will never attend another conference without realizing all the behind the scenes elements that make it successful. Being actively involved in the Planning Committee provided an opportunity to develop skills including taking minutes for meetings and setting up in-person and teleconference meetings. Trent University and the Trent Community Research Centre should be

commended for this innovative education model and other educational institutions should look for ways to foster collaborative research in their own communities using similar processes.

I look forward to attending the symposium in the fall in order to see the completion of the planning and effort that was put into the symposium. I believe it will be an excellent opportunity for knowledge exchange, networking and celebrating the excellent research and initiatives being undertaken in the Kawartha Lakes.

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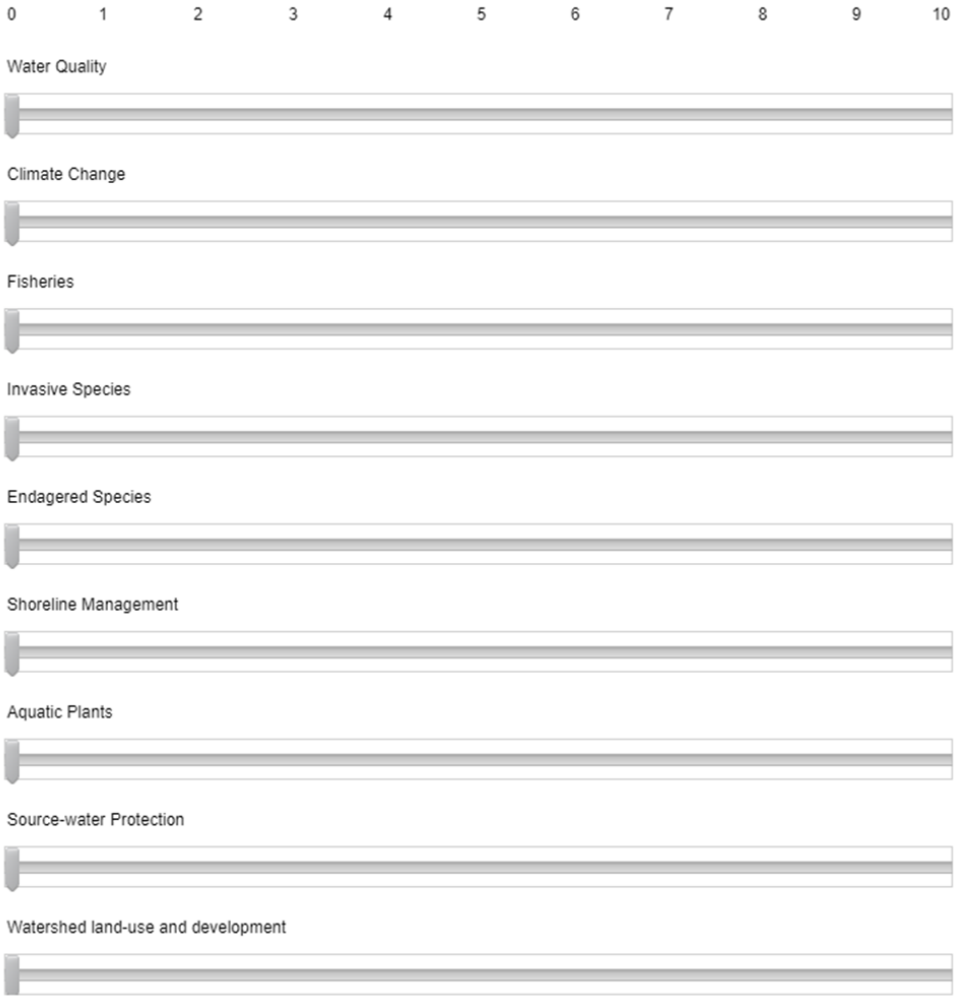
Appendix A

1. Are you or your organization actively collecting information that is relevant to the management of the Kawartha Lakes?

2. What are your organization's top 3-5 upcoming management, monitoring, and/or research priorities?

3. Please rank these topics in order of importance to your research program or organization's mandate (1 being least important and 2 being more important than 1, etc.).



4. Do you know of any subject matter experts in the above topics that you would like to hear from? If so, please provide their name and contact information below.

5. Please provide any other comments you think may be relevant to the planning of this symposium.