

Community Climate Conversations: Engaging and Empowering Local Action in a Changing World

Abstract

We examined how the Twin Ports Climate Conversations (TPCC), a community-based climate communication project, is influencing local climate awareness and response. A survey of TPCC participants and subsequent roundtable discussion event were used to explore program impacts, outcomes, and future directions. Results showed that the TPCC project has been effective at increasing awareness and facilitating contacts and may be leading to actions that range from information sharing to personal behavioral changes. Future directions include engaging new audiences and promoting more on-the-ground climate action. TPCC can serve as a model to help other communities start cross-sectoral climate conversations.

Keywords: [climate adaptation](#), [climate change](#), [climate communication](#), [climate mitigation](#), [community engagement](#)

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Introduction

Autumn 2019 was a time of high-profile climate change reporting. Both the Intergovernmental Panel on Climate Change report on the impacts of global warming of 1.5°C (Intergovernmental Panel on Climate Change, 2018) and the Fourth National Climate Assessment (U.S. Global Change Research Program, 2018) presented stark warnings regarding climate change consequences. In December, the outcomes from the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change highlighted the importance of staying within the 1.5°C temperature rise target and included planning for how to achieve this goal (Harvey, 2018). The convergence of these efforts is a reminder of the critical importance of climate action on multiple levels.

Community-based climate communication that increases local awareness and inspires action supports a foundation for addressing concerns and goals outlined in the above-noted scientific reports. Specific questions

regarding community-based climate informational needs and the cultivation of climate literacy are at the core of the study we report here. We present results of our investigation of a community climate communication program, focusing specifically on how such a program may be used to inform and encourage local engagement. Also, we report desired outcomes and future directions for the program.

Community-Based Climate Communication

Mosher and Dilling (2012) highlighted a broad role for climate communication, suggesting that "people in a democratic society are best served by actively engaging with an issue, making their voices and values heard, and contributing to the formulation of societal responses" (p. 169). This proposed role for dialogue is part of expanding community social capital, described as relationships, trust, and norms that individuals and groups can draw on to solve problems (Armstrong, Krasny, & Schuldt, 2018; McCoy & Scully, 2002). Doll, Eschbach, and DeDecker (2018) explored community dialogue in an Extension context and concluded that facilitated discussion is an effective educational strategy for addressing complex topics such as climate change. Climate Masters of Nebraska provides further inspiration regarding community-based communication efforts. Climate Masters is an Extension program that involves the use of climate education to help participants make informed changes to reduce greenhouse gas emissions (Pathak, Bernadt, & Umphlett, 2014).

Related to the notion of community-based approaches is the potential role of place attachment in motivating climate communication. Scannell and Gifford (2013) emphasized one's connection to a particular place as part of an understanding of climate change relevancy. One aspect of place affiliation as it relates to climate change is consideration of how our close-to-home experiences provide a gateway for climate understanding (Beery, 2018). For example, a recent study showed that Americans increasingly connect climate change with local weather events (Leiserowitz & Smith, 2017). Growing awareness of local climate change implications may be a sign that many people are thinking about climate change in new ways (Osaka, 2018). Beyond recognition, this shift may be signaling a greater willingness to take action on local levels (Beery, 2018). This trend toward greater local awareness of climate change directly relates to the work of local and regional outreach professionals. For example, Clifford and Monroe (2018) focused on climate communication within Extension, exploring diverse climate-related informational needs and promoting the cultivation of supportive learning environments to improve climate literacy. They concluded that regionally relevant and sector-specific information is critical for supporting increased engagement. We propose that the community climate communication program we describe herein may represent a model that can be used by Extension professionals in other communities to localize/regionalize difficult environmental challenges in meaningful ways.

Twin Ports Climate Conversations

In 2015, a group of concerned environmental professionals initiated a local approach to climate communication in the Lake Superior communities of Duluth, Minnesota, and Superior, Wisconsin (collectively known as the Twin Ports). In 2016, a monthly climate change presentation and discussion event, known as the Twin Ports Climate Conversations (TPCC), was initiated. The monthly gatherings are open to the public and bring together a mix of people interested in climate change. TPCC has served to highlight a variety of climate change-oriented topics with a critical emphasis on how climate change is affecting or will affect the Western Lake Superior region and the implications of these impacts. Table 1 presents details regarding

program organization, goals, discussion topics, and logistics.

Table 1.

Twin Ports Climate Conversations (TPCC) Organizational Structure, Goals, Sample Topics, and Participation and General Operational Information

Program element	Description
TPCC steering committee	Steering committee representatives are from the following entities: <ul style="list-style-type: none"> • 1854 Treaty Authority • Minnesota Department of Natural Resources, Lake Superior Coastal Program • National Institute of Applied Climate Science • University of Minnesota Sea Grant
Broad goals for TPCC	Goals are as follows: <ul style="list-style-type: none"> • Aid in improving climate communication skills for all. • Improve climate change-related data collection and sharing. • Motivate and support community-based adaptation efforts. • Increase climate change conversation in more sectors.
Sample TPCC topics	Topics addressed since 2016 include the following examples: <ul style="list-style-type: none"> • climate change and downscaling large data for regional projections • climate change and the health of wild rice • climate change and the Superior Highlands Forest • climate change and the urban forest • climate change and maple sugar production • climate change and public health • climate change and Northshore tourism and outdoor recreation • climate change and the Northshore fisheries

- climate change and hazardous algal blooms

Participation

A sign-in record is used to capture attendance/contact information of participants at each TPCC.

No official membership in the group is required, and anyone is welcome at the monthly gatherings.

Participant numbers vary from month to month, ranging from 25 to 50 participants.

A database of participant email addresses has been in effect since 2016 and comprises approximately 500 entries.

Location

Monthly TPCC gatherings typically are held at a central location in the Twin Ports, often at the Minnesota Pollution Control Agency in Duluth, but have been held at other public and private venues, such as the Environmental Protection Agency Midcontinent Division Lab, the Minnesota Department of Transportation offices, and the 1854 Treaty Authority offices.

TPCC gatherings have been held twice at a local taproom.

Climate change field trips have been arranged.

Schedule

TPCC meets monthly.

Participants meet for lunch and a presentation.

The impetus for TPCC was recognition of a perceived lack of climate change communication (and subsequent consideration of climate change implications) among local and regional environmental professionals. Simultaneous to the formation of the TPCC in 2015–2016, researchers from Yale and George Mason Universities found that few Americans acknowledged talking about climate change (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Rosenthal, 2016). Results indicated that more than half of those interested in the topic rarely or never talked about it (Leiserowitz et al., 2016). Although TPCC is not a direct response to this study, the underlying motivation was to engage the community in regular and ongoing climate communication. As members of the TPCC steering committee, we undertook the research presented in this article to understand better and further develop the communication effort.

Methods

Our research was exploratory and grounded in the TPCC goals (see Table 1). Further, the question of how to improve the climate conversation in ways that match community and professional interests/needs was a vital part of our effort. A community-based participatory research approach guided the effort (Grossardt & Bailey,

2018; Mussi, 2018). We used community-based participatory research methods in hopes of increasing community awareness regarding local implications for climate change mitigation and adaptation (Delafield et al., 2016). Our study involved two phases: a survey of TPCC participants and roundtable discussions for exploring the survey results in detail.

Survey

The first step in the research process was a survey of TPCC attendees. Having relevant expertise with previous community outreach surveys, we developed and reviewed the survey instrument using the online Qualtrics program. The question categories included participant demographics, participation outcomes, recommendations for ongoing program development, and program logistics (see survey questions in Table 2). We sent the survey to individuals on the TPCC contact list ($N = 500$) with an explanation of the purpose of the study. The email assured participant confidentiality, and reminders were sent to encourage participation (Dillman, 2000). Using the survey data, we calculated frequencies and percentages as part of our overall analysis to support a better understanding of the climate communication effort.

Table 2.
Study of Twin Ports Climate Conversations (TPCC): Survey Questions

Category and question/question topic	Question type
Category: Participant demographics	
Residence location: I live in. . .	Multiple choice
Attendance categories questions: Motivation	Multiple choice
Attendance categories questions: Regularity	Multiple choice
Professional focus: Occupational categories	Multiple choice
Category: Participation outcomes	
Have you made any professional contacts from your participation in TPCC?	Likert scale with 5 items
Have you obtained useful information to inform your professional work from participation in TPCC?	Likert scale with 5 items
Have you taken any specific action based on your participation in TPCC?	Likert scale with 5 items
Have you had any specific conversations about climate change based on your participation in TPCC?	Likert scale with 5 items
Category: Recommendations for ongoing program development	
What measurable outcomes do you think the TPCC should be working toward; check as many as appropriate.	Multiple choice
What climate change related community needs should be considered as TPCC continues or expands climate communication?	Multiple choice

Do you have a request or suggestion for a specific speaker? If yes, please provide his/her name and organization (if known).	Open ended
Do you have any program format suggestions for TPCC? If yes, please describe.	Open ended
Category: Program logistics	
Does the lunch hour presentation with Q&A format work for you logistically (both time and access)?	Likert scale with 5 items
Does the lunch hour presentation with Q&A format interest and engage you?	Likert scale with 5 items
Would you like to see more participatory/interactive sessions as part of TPCC?	Likert scale with 5 items
Would you participate in an occasional field trip for the TPCC, i.e., a climate change based excursion to a site within one hour of the Twin Ports?	Likert scale with 5 items
Two TPCC sessions were held at Bent Paddle Tap Room this past year. Is this a climate conversation setting that is appealing to you?	Yes/no

Roundtable Discussions

Following the analysis of the survey data, we held a roundtable discussion event (as part of the monthly TPCC schedule) to better understand the survey results. Our purposes with the roundtable event were to facilitate community participation in the analysis process and to gather additional information to guide TPCC planning. We presented survey data during the session, and participants, arranged in small groups, discussed the data. To guide the groups, we prepared who, how, where, when questions regarding who attends TPCC, how to strengthen attendance, location/time of day for TPCC events, and so on; however, we encouraged free-flowing discussions to allow expression of individual and small-group interests. At each table, a note taker guided by our research team captured the main ideas from the discussion. Afterward, we collected the notes from each table. We transcribed all the notes in one document and analyzed the data. The analysis consisted of our identifying themes using a three-step qualitative coding procedure known as constant comparison analysis (Strauss & Corbin, 1998). Initially, we used open coding to identify meaningful units of data from the entire transcription. Following the open coding, we organized additional data to group the units into categories or themes. In the final step, we identified themes addressing how best to support and develop climate communication.

Results

Survey Results

A total of 106 respondents participated in the survey. Of this group, 67 respondents (64%) reported their involvement as stemming from professional engagement. Of those not professionally motivated, 19 (18%) indicated that they were interested citizens involved in organized climate change action on some level, and 13

(12%) indicated that they were interested citizens not engaged in organized climate change action. The professional attendees represented a cross-section of community organizations (see Table 3). Forty-seven participants (60%) reported attending TPCC one to three times per year, 14 (18%) reported attending four to six times per year, and four (5%) reporting attending seven to nine times per year.

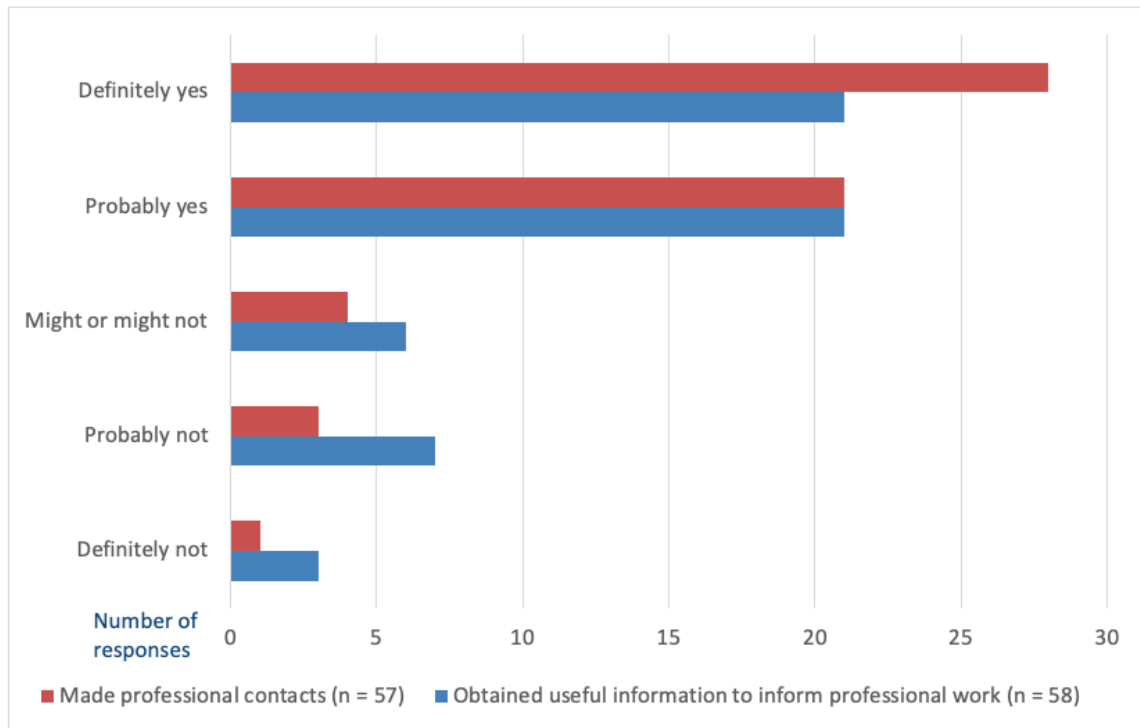
Table 3.
Organizations Represented as Identified by Survey Participants

Entity type	Participating entities
Governmental agency or organization	1854 Treaty Authority Carlton County Soil and Water Conservation District City of Duluth City of Superior Cook County Soil and Water Conservation District Environmental Protection Agency Lake Superior National Estuarine Research Reserve Minnesota Department of Natural Resources Minnesota Department of Health National Oceanic and Atmospheric Administration Office for Coastal Management St. Louis County U.S. Department of Agriculture
Higher education institution	Lake Superior College Minnesota Sea Grant Natural Resource Research Institute Oak Ridge Institute for Science and Education University of Minnesota Duluth
Nonprofit organization	Great Lakes Aquarium TakeAction Minnesota
Private business	Barr Engineering

Given the anticipated high level of professional attendees, as well as the focus on communication translating to action, we used two questions targeted at professional attendees to investigate the impacts of professional participation. The overall response regarding whether attendees made professional contacts from participation in TPCC was positive, with 42 respondents (72%) selecting "Definitely yes" or "Probably yes" (Figure 1). Similarly, regarding whether professional attendees had obtained information to inform their work through participation, the overall response was positive, with 49 respondents (86%) selecting "Definitely yes" or "Probably yes" (Figure 1).

Figure 1.

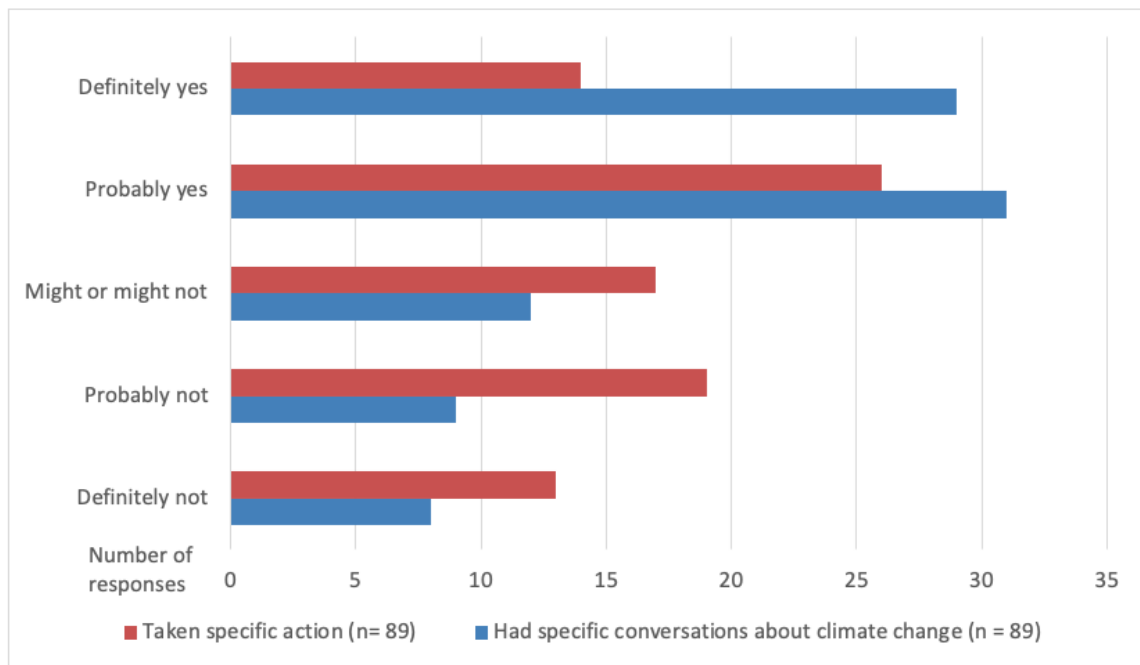
Respondent Views on Information Useful to Professional Contacts and Professional Work Resulting from Participation in Twin Ports Climate Conversations



With two other survey questions, we asked participants to consider TPCC outcomes or impacts. One question addressed whether respondents had taken action as a result of TPCC participation. Responses to this question were varied, with 14 respondents (16%) selecting "Definitely yes," 26 respondents (29%) selecting "Probably yes," 17 respondents (19%) selecting "Might or might not," 19 respondents (21%) selecting "Probably not," and 13 respondents (15%) selecting "Definitely not" (Figure 2). A question addressing whether participation at TPCC had motivated climate change conversations garnered a higher proportion of positive responses, with 60 respondents (68%) selecting "Definitely yes" or "Probably yes" (Figure 2).

Figure 2.

Respondent Indication of Taking Action or Having Specific Conversations About Climate Change Resulting from Participation in Twin Ports Climate Conversations



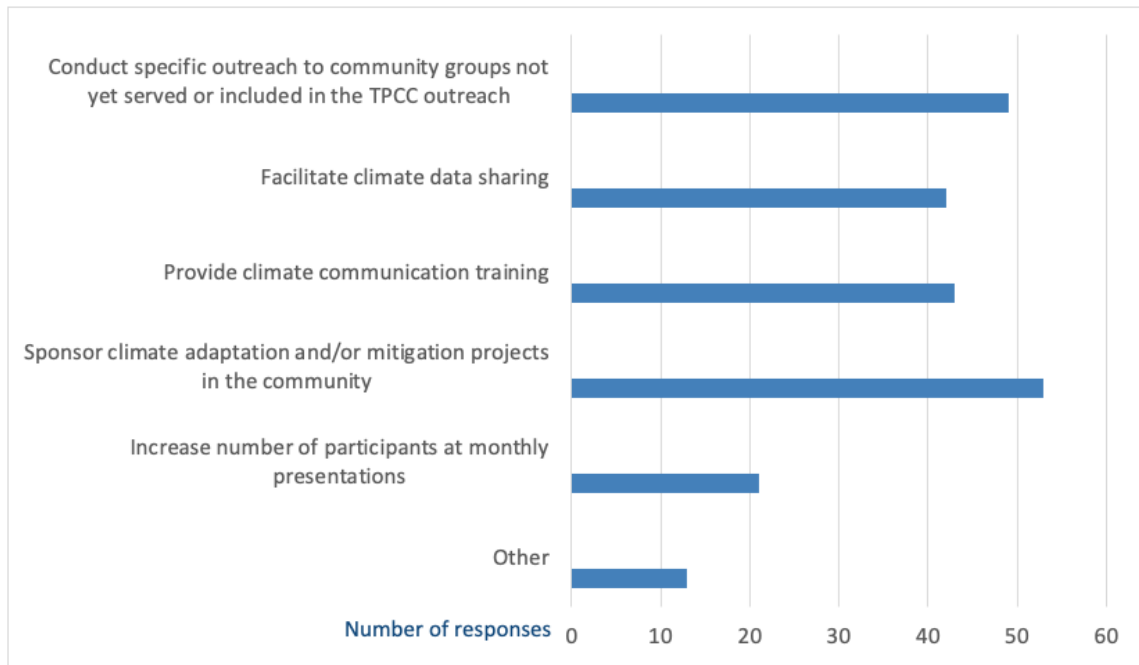
Concerning participants' having taken specific actions as a result of their TPCC participation, respondents in the "Definitely yes" group were asked via an open-ended follow-up question to provide examples of actions they directly attributed to TPCC involvement. The diverse responses included a range of actions. The following example responses provide a snapshot of how involvement has translated to action:

- "presented on climate and extreme storms to Duluth Chapter of American Society of Civil Engineers"
- "incorporated the information into my classroom curricula"
- "planting different trees"

Using two survey questions, we asked participants about desired program outcomes and relevant community needs. With one question, we asked respondents to consider measurable outcomes for TPCC; participants chose from a menu of response options and could choose multiple responses. Results ranged from 21 respondents prioritizing the outcome of increasing the number of TPCC participants to 53 respondents prioritizing the outcome of sponsoring climate adaptation and mitigation projects (Figure 3). We also asked respondents for their perspectives on community needs that they thought should be addressed by TPCC, again with multiple responses allowed. Responses to this question were quite evenly distributed, in part evidenced by the highest response of "All of the above" (Figure 4).

Figure 3.

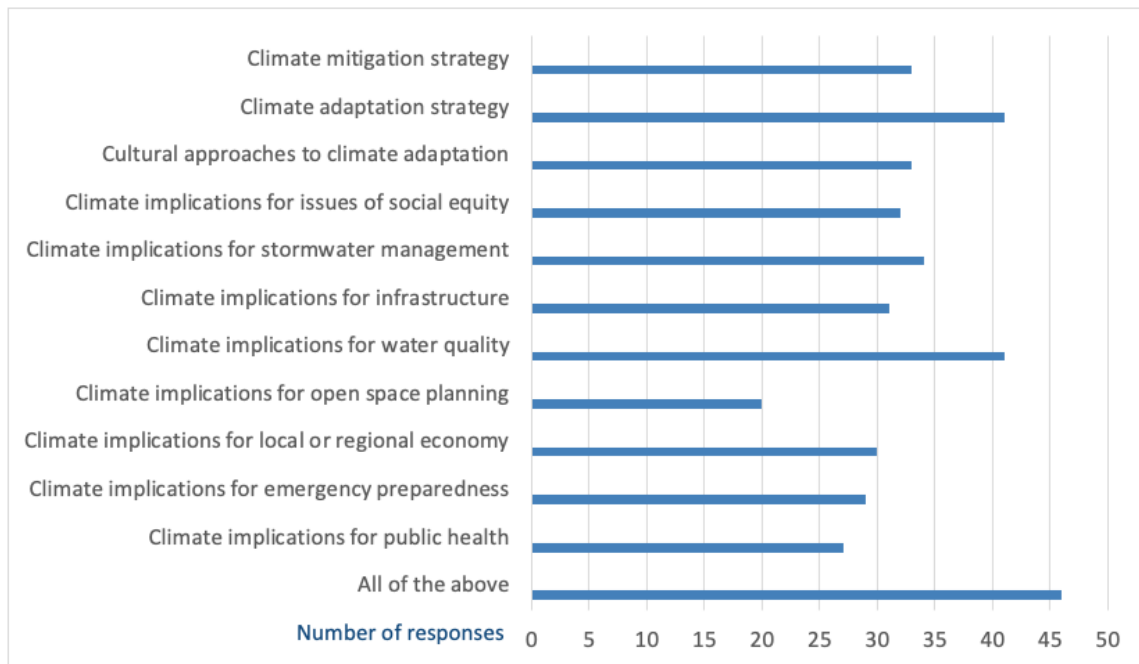
Respondent Priorities for Twin Ports Climate Conversations Outcomes (*n* = 221)



Note: Multiple responses were accepted.

Figure 4.

Respondent Identification of Climate Change–Related Community Needs (*n* = 397)



Note: Multiple responses were accepted.

An open-ended question requesting specific TPCC topic recommendations resulted in 26 responses, with many respondents providing multiple suggestions. The responses were diverse, as suggested by these examples:

- "youth efforts in climate change"
- "maintaining hope in the face of an overwhelming and extremely challenging subject"
- "more about climate and social equity"
- "impacts of water level changes to the coast and estuary"

An additional set of questions focused on setting, timing, and methods. Results showed mixed responses to the monthly lunch and presentation format question, with 26 respondents (34%) indicating that it works most of the time. Nine respondents (12%) indicated that it works about half the time, and 35 respondents (45%) reported that the timing works sometimes. Response to the question of whether the lecture-style presentation format engaged respondents was overwhelmingly positive, with 13 respondents (17%) selecting "Definitely yes" and 52 respondents (68%) selecting "Generally yes." Respondents also were open to other session types, including participatory sessions and field trips. With regard to whether sessions should be more interactive/participatory, 42 respondents (54%) indicated that they were definitely or probably interested in such a change. No respondents indicated that they definitely were not interested in a more active approach. Support for the idea of field trips was even higher, with 48 respondents (63%) indicating that they definitely or probably were interested in the use of field trips as a TPCC method. Support was generally high for holding TPCC events at local business venues, with 45 respondents (61%) favorable to the idea, 14 respondents (19%) unsure of how they felt, and 15 respondents (20%) unsupportive of the idea. An open-ended follow-up question yielded a list of 45 additional community sites for potential use.

Roundtable Results

Forty-eight people from the TPCC email list attended the roundtable discussion event. The small-group setting (six tables with eight participants each) encouraged an interactive session, with participant review of the survey results providing further insight into the TPCC process. Two key themes from the initial roundtable discussions are presented in Table 4.

Table 4.
Two Key Themes from Who, How, Where, When Discussion Questions

Theme	Examples from roundtable data ^a
Field trips	"really [would] like more field trips" "Lakewalk field tour, due to damage" [field trip suggestion] "field trip ideas: actionable opportunities that introduce things people can do" "offsite meetings are difficult for bus, bike, walkers" "field trip ride sharing/organizing"
Outreach to new audiences	"how to get those who are not paid to attend or [those for whom climate change is a] key interest" [i.e., appealing to the public vs. professionals attending as part of their jobs] "reach nonconformist groups . . . more than the soapbox group"

"interactiv[ity] would interest more diverse learners and students"

aContent of roundtable discussions.

We identified a cross-cutting theme, the interconnectedness of new sites and new audiences, in our analysis of the discussions of the who, how, where, when questions. Relevant data from the discussions emphasizing this cross-cutting theme included the following comments:

- "Field trips in the mix can draw different participants."
- "Take the show to a set audience—VA [Veterans Affairs] groups, homeowners, conservatives, hunting/fishing groups."
- "Host at UMD [University of Minnesota–Duluth] sometimes to get more students."

Roundtable groups also discussed methods/formats for encouraging interaction among participants. Ideas ranged from more group discussions to role-playing. As part of the roundtable discussions, we posed a final question centered on how to move forward and address community climate needs. After a review of the survey results, participants were asked individually to indicate their top three priorities. The results were varied and similar to the survey results. The top "needs" priorities identified by roundtable discussion participants were a climate mitigation strategy (16%), information on climate implications for the local or regional economy (16%), a climate adaptation strategy (12%), cultural approaches to climate adaptation (12%), and information on climate implications for infrastructure (10%).

Discussion and Conclusion

Results Summary

The results of our study indicate that the TPCC format is useful for increasing community discussion. Results suggest that participants (primarily a professional audience) are making new contacts and gaining valuable information. Results also indicate that participants are willing to explore new venues and methods and are interested in expanding the base of participation. Participants' willingness to provide input is an indicator of their engagement in the process. Our results suggest that Extension professionals may be able to use TPCC-type programming to provide parameters for community-based climate communication in their communities.

Limitations

Despite our effort to be inclusive of all potential participants, nonresponse error was present, given the noted fluid participation/open-access nature of the climate conversations. Whether participants participated in both the survey and roundtable discussions was not investigated. An overall participation rate for the entire research effort is difficult to calculate and lies somewhere between 21% and 31% of the TPCC mailing list (106–154 participants total). Nonetheless, the number of participants and sectors represented in the study (as indicated in Table 3) suggests a diverse professional make-up of participants.

The TPCC Model

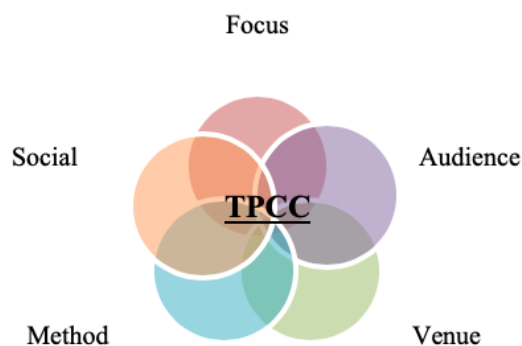
An update from the previously noted Yale/George Mason University climate communication research (Leiserowitz et al., 2016; Leiserowitz et al., 2018) indicated that only about one in three Americans (35%) discuss global warming with family and friends "often" or "occasionally." This increase of only 9% since March 2015 is slow progress given the daunting need for timely climate action. This slow progress supports the need for efforts such as TPCC in the Western Lake Superior region and its adaptation for use in other communities. Results show that participants, regardless of professional status, are having conversations outside TPCC, beyond the monthly gathering itself. This finding appears to directly address the concerns highlighted in the Yale/George Mason University studies.

Overall, our findings suggest that TPCC provides an opportunity for participants to network, learn, collaborate, and, possibly, take action. TPCC provides for dialogue as a part of expanding community social capital that the community can use to solve problems (Armstrong et al., 2018; McCoy & Scully, 2002). Such an opportunity highlights parameters for other communities to consider when developing community-wide discussions regarding climate change or other environmental topics. Foundational to TPCC is a welcoming environment, where the public can gather to focus on and discuss a locally/regionally important issue over time and from multiple perspectives. The TPCC model, shown in Figure 5, defines the integral aspects of the program.

Figure 5.

The Twin Ports Climate Conversations (TPCC) Model

Focus	Audience	Venue	Method	Social
Multiple perspectives on climate change (a variety of adaptations and mitigation topics) with a local/regional focus.	Public, open to all interested community members; largely professional attendees. No costs to inhibit attendance.	Regular site (to support consistent participation) with occasional use of additional sites based on interest or site-specific presentation.	Regular monthly meeting, largely lecture format with prepresentation inclusion of community news and postpresentation topic discussion. Field trip opportunity; participant interest in a variety of methods.	Lunch time gathering. Thirty minutes of community lunch prior to each presentation.



Looking Forward

Future efforts of the TPCC steering committee should address expanding the TPCC audience, meeting community needs/priorities around climate communication, and improving the communication-to-action progression. The top response of "All of the above" to the survey question *What climate change related community needs should be considered as TPCC continues or expands climate communication?* appears to indicate broad community interests and multiple needs regarding future climate communication. The possibility of integrating different topics and new audiences in the future supports a creative path forward. For example, a possible presentation about Duluth's new electric buses (or a field trip to the transit center complete with a bus ride) could focus discussion on a climate mitigation strategy and implications for water quality. This example might also provide an opportunity to expand format and outreach. As another example, a discussion of how tax-forfeit land in Duluth can be used to manage stormwater in light of climate change projections would be useful. Such a presentation could address the topics of climate adaptation strategy, climate implications for stormwater management, and open space management. Through creative planning, current and future TPCC organizers can integrate ideas in interesting and locally relevant ways. This direction is in line with the work of Thorn et al. (2017), who encouraged Extension professionals to experiment with delivery methods in pursuit of those most likely to promote specific climate action.

Climate Action

Just what explicitly constitutes a climate action emerged as a critical question in the TPCC research process, reflected in survey responses and roundtable discussions. The roundtable discussion question of whether specific actions have resulted from participation at TPCC underscores the challenge of determining causation—that is, a direct link between attendance at a presentation and subsequent specific activity or behavior. The steering committee's hope that the conversations and increased awareness percolate into decision making supports the idea of implementation of the TPCC model as a crucial step in a complex information-to-action progression. Environmental educators have moved away from simple assumptions that information alone is sufficient to promote environmental action (Armstrong et al., 2018). Instead, educators are "taking into account audience identities, emotions, beliefs, and values, and incorporating notions such as trust, trusted messengers, and framing for collective action" (Armstrong et al., 2018, p. 96). The TPCC model may be one platform for integrating both information and these other social elements/community values to create space for useful community climate change discussions. As noted in our introduction herein, active engagement with the climate issue contributing to the formulation of a societal response is a part of the progression of climate communication (Mosher & Dilling, 2012). Implementation of the TPCC model may be a way to provide a simple guide to help other communities start cross-sectoral climate conversations and support climate action at a critical time. Such effort may be useful for other Extension professionals considering climate conversations in their communities and may support community conversations around other significant environmental challenges.

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