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RESEARCH ARTICLE

The effect of engagement in private lands research on landowner conservation knowledge, attitudes, awareness, and behavioral intentions

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ABSTRACT

Landowners and scientists often interact during conservation research projects on private lands, creating the opportunity for impactful outreach efforts. However, this potential has received little attention in the literature. This is particularly true for situations where landowners interact with researchers, but do not actively participate in data collection (a "traditional research" model that contrasts to participatory science projects). In this paper, we explore and compare the effects that engaging landowners in traditional versus participatory science research has on landowner conservation knowledge, attitudes, awareness, and behavioral intentions. We find similar effects across both treatment groups, with involvement leading to greater knowledge, increased awareness, more positive attitudes, and/or more behavioral intentions regarding conservation among participants. However, landowners reported limited tangible behavior change during our study. Our results suggest that engaging with landowners during private lands research may be valuable to conservation, but further research is needed on how to optimize these interactions.

KEYWORDS

Behavioral intentions; citizen science; conservation behavior; hellbender; participatory science; private property

Introduction

Increasingly creative and expansive approaches to conservation such as the 30 × 30 movement which seeks to preserve 30% of the world's land mass by 2030 (Dinerstein et al., 2019) have underscored the growing recognition that publicly held lands alone are not enough to achieve conservation goals (Cortés Capano et al., 2019; Kremen & Merenlender, 2018; Stolton et al., 2014). Perhaps the most compelling argument for considering private lands in conservation planning is the sheer magnitude of private land ownership. Many countries do not have sufficient public land to meet their conservation goals and must therefore incorporate private lands into their initiatives (e.g., Dreiss & Malcom, 2022). Furthermore, what public lands do exist are not a random sampling of the world's biomes (Hoekstra et al., 2005). Instead, they tend to protect areas that are higher than average in elevation, have less productive soils, and are farther from human infrastructure than unprotected lands (Joppa et al., 2009; Scott et al., 2001). Finally, many species and ecosystems (such as freshwater systems; Abell et al., 2007; Hermoso et al., 2015) also cross between jurisdictions, and thus require a landscape-scale approach that spans multiple levels of ownership.

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Means of encouraging private lands conservation are diverse and can range from regulatory measures, such as those found in the Endangered Species Act, to supporting voluntary action, like providing resources to landowners interested in native prairie restoration (Kamal et al., 2015). Voluntary conservation measures are in many ways preferable, as they can, among other benefits, enhance intrinsic motivation (DeCaro & Stokes, 2008) and encourage the persistence of conservation behaviors after formal commitments have ended (Dayer et al., 2018). However, encouraging voluntary action can be challenging, as, among other barriers, landowners must recognize the need for action, accept that they can be part of the solution, and have the knowledge and resources to address the problem (Schwartz et al., 1997).

Personal contact (in-person or via other means such at phone conversations) is often identified as the most effective means of encouraging conservation behaviors (Ryan, 2009; Shindler et al., 2009; Toman et al., 2006), but cost and time restrictions limit the extent to which it can be employed. For this reason, identifying and capitalizing on preexisting opportunities for contact could be valuable to conservation goals. One such opportunity is conservation research on private property (Green et al., 2022b; Lutter et al., 2018). Research on private lands is increasingly common (Smith et al., 2022) and will likely continue to grow in frequency to support private land conservation efforts (Burger et al., 2019; Dreiss & Malcom, 2022). The resultant interactions between researchers and landowners may influence landowner cognitions and behaviors regarding conservation.

Substantial previous research on engagement of the public in research has focused on participatory science projects (also known as community or citizen science) where members of the public volunteer their time to participate in scientific research through data collection and/or analysis (Crall et al., 2013; Evans et al., 2005; Forrester et al., 2017, Green et al., 2022b; Toomey & Domroese, 2013). These studies suggest that involvement in research can increase participants' knowledge, encourage positive attitudes toward conservation, and/or inspire more conservation-oriented behaviors (Crall et al., 2013; Evans et al., 2005; Forrester et al., 2017, Green et al., 2022b; Toomey & Domroese, 2013). These effects can also extend beyond participants themselves, through interpersonal sharing with others in their social network (Forrester et al., 2017; Green et al., 2022b). However, most prior research on participatory science has involved volunteers seeking out participation in the project. These strongly conservation-oriented participants may have had little room for change or may have been predisposed toward environmental behavior (Brossard et al., 2005; e.g.; Crall et al., 2013; Forrester et al., 2017; Overdevest et al., 2019).

Another common format for private lands research that has, in contrast, seen very little research attention is a more traditional model of private lands research where scientists collect data on private property and interact with the landowners, but the landowners themselves are not involved in data collection (Asase et al., 2022; Carr & Hazell, 2006; O'Brien et al., 2021). In this study, we explore the effect of both participatory science and participation in traditional private lands research on the cognitions (knowledge, awareness, and attitudes), behaviors, and behavioral intentions of landowners actively recruited from a rural watershed in southwestern Virginia. We focus on changes regarding behaviors and cognitions about conservation in general as well as activities to support water quality within their watershed in particular.

Methods

Between 2019 and 2022, we explored the effects of engagement in research on landowners while undertaking an ecology research project focused on eastern hellbender salamanders (*Cryptobranchus alleganiensis alleganiensis)* in a rural southwest Virginia creek. The creek's watershed suffers from high sedimentation and substrate instability (Hanlon et al., 2009) and has been identified as a watershed of high conservation value due to the large number of threatened and endangered species it harbors (VDGIF, 2015). For this reason, our study focused on cognitions and behaviors directly relevant to stream health. In particular, we focused on fencing livestock out of the creek and allowing shrubs and trees to grow along the streambank.

The average resident of the counties where this study occurred is over the age of 65, educated to the completion of high school or receipt of a GED, and makes below the national median income (U.S. Census Bureau, 2019). This makes them representative of landowners that can be more difficult to reach for conservation programs (Prokopy et al. 2019; Baumgart-Getz et al. 2012). Our study had three stages including initial interviews with landowners to gain a baseline understanding of their perspectives on conservation, three years of engaging those landowners to varying degrees in research, and then follow-up interviews to assess what, if any, effect the involvement might have had on their behaviors and cognitions. We chose to pursue a qualitative approach as this would enable us to better understand the nuances in landowner perspectives and enable more emergent findings. A previously administered survey (O'Brien et al., 2021) contained questions relevant to this project and highlighted the need for the additional clarity that could be gained from qualitative research to understand landowner cognitions.

The initial round of interviews took place in the spring of 2019 and involved 37 landowners. These landowners came from a pool of 108 individuals who agreed to be contacted on the previous survey which was distributed to all landowners in the creek's watershed (O'Brien et al., 2021). We attempted to contact landowners by phone no more than four times before considering them no longer available for the project. We were unable to reach 45 of the original 108 individuals; another seven individuals were no longer interested in participating, four agreed to participate but we were unable to arrange an interview, and 15 were ineligible for participation due to other causes (e.g., the property was owned by a corporation, the landowner was ill, etc.) Landowners were asked if they would consider participating in an ecological research project as well as participating in the interview.

We utilized demographic information from the past survey to test for response bias in our interview participants. A Wilcoxon test revealed that those who refused the interview or who were unavailable for interviews were not significantly different from those who consented to the interview in terms of sex, age, education, property size, or years living on the property. (In all cases $p \geq .411$). All initial interviews were conducted in person by the lead author save one, which was done over the phone with a landowner who was unable to meet in person. Interviews were semi-structured, and our questions focused on the landowners' attitudes toward conservation and the creek on their property (see O'Brien, 2023 for interview script). The interview script was reviewed by other social scientists at Virginia Tech prior to its utilization. We also asked landowners about any conservation activities they were doing or planned to do on their property. We were interested in landowner

cognitions and behaviors regarding conservation in general as well as stream conservation in particular, so all questions were open-ended.

After interviewing all landowners involved in the project, we divided them into three groups (Figure 1) using a purposive approach (Guest et al., 2013). We attempted to ensure, to the greatest extent possible, that each treatment group had similar gender ratios and age distributions. Factors such as property suitability for the hellbender research project also influenced to which treatment group landowners were assigned. Our first treatment group (hereafter the "traditional science group") consisted of 10 landowners who were engaged in an ecological research project where we came onto their property to study the aquatic eastern hellbender salamander (*Cryptobranchus alleganiensis alleganiensis*). We interacted with these individuals several times per year through phone/e-mail contacts to let them know we were coming to their property ($\overline{X}$ = 6.2 phone conversations, range = 2–9) and had in-person conversations with them while conducting our ecology research ($\overline{X}$ = 5 conversations, range = 1–12). During these conversations, we made small talk and discussed our research and conservation whenever it fit naturally into the conversation (e.g., if a landowner asked why there weren't as many hellbenders in the creek anymore, we discussed some of the causes of population declines, such as siltation, and potential solutions, like riparian buffers). We also invited these landowners to join us in the creek to see our work. Throughout the period of engagement, we took detailed notes on our interactions with the landowners including what the interaction involved, landowner comments and behaviors, and our perception of the interactions.T

The second group (hereafter referred to as the "participatory science group") consisted of 10 landowners who were engaged in a participatory science project collecting water quality data from a stream on their property to inform the hellbender project. To represent the most common participatory science experience (which often as limited engagement with scientists(Sullivan et al., 2009), we did not interact in-person with the participatory science group at all beyond an initial meeting with them during which we taught them the water

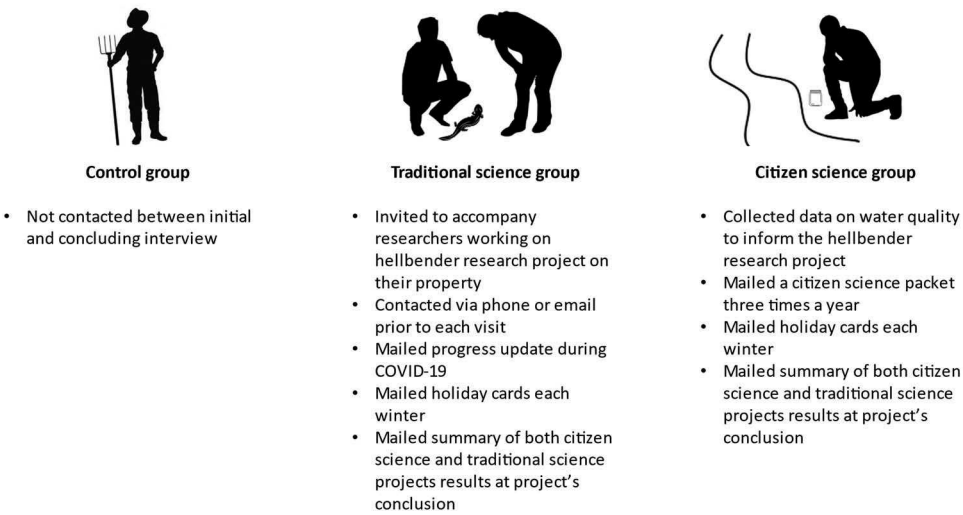

Figure 1. We divided landowners into three treatment groups including a non-participants, a traditional science group, and a citizen science group.

monitoring procedures, but we mailed them packets three times a year containing water monitoring materials, instructions, and a data sheet which they mailed back to us (O'Brien, 2023). We also mailed these landowners postcards two weeks after each packet reminding them to fill out the packet or thanking them for doing so. Landowners occasionally included questions or comments in the citizen science packets they mailed back to us, and when this occurred, we responded either on the postcard or on the next citizen science packet. Occasionally, these comments and our responses provided an opportunity to discuss conservation-oriented management of freshwater systems. A final group of 17 landowners (hereafter referred to as "non-participants") were interviewed prior to and after the three-year project, but they were not otherwise engaged in research or contacted by the researchers in any way.

We sent holiday cards each winter to both the participatory science and traditional science group thanking them for their participation, and, during a year-long period when we were unable to meet in-person with landowners due to COVID-19 restrictions, we sent landowners in the traditional science treatment group a short photo essay showing what we had been working on and updating them on our progress. We also explained our findings regarding the creek's water quality and provided a list of behaviors they could consider adopting that would improve the water quality in the creek including fencing livestock out of the creek and allowing trees and shrubs to grow along the bank. This was not sent to the participatory science group, as their engagement was not impacted by COVID-19. At the conclusion of the project, we sent a mailing to both the traditional science and the participatory science groups detailing the results of our findings from both projects and suggesting related conservation actions (focusing on fencing livestock out of the creek and allowing trees and shrubs to grow along the bank) that landowners could undertake.

At least one month (4–14 weeks) after the final mailing was sent out, we contacted landowners in all three treatment groups to request follow-up interviews. The interviews were conducted by an individual not involved in the ecological research to limit the effect that the interviewer's presence had on landowner responses. We interviewed a total of 20 individuals, including seven individuals in the traditional science group, eight individuals in the non-participants, and five individuals in the participatory science group. Three of our initial interviewees passed away between the initial and follow-up interviews (one in each treatment group), eight could not be reached, and six declined to participate (four from the non-participants and one from each of the other two groups. The landowner in the engagement group who declined had recently lost her spouse). During the interviews, we asked landowners open-ended questions about their perspectives on conservation, any changes in their perspectives that had occurred over the past three years, and if there were any conservation behaviors they had done previously or planned to do in the next three years. After asking landowners about general conservation behaviors, we also asked about the conservation behaviors we specifically addressed in the packets we mailed (fencing livestock out of the creek and/or allowing trees and shrubs to grow along the streambank). We also asked landowners in the traditional and participatory science groups if they had learned anything from participating in the project and if they had talked to friends or neighbors about the ecological study (See O'Brien, 2023 for a full list of interview questions).

The lead author transcribed the interviews using Inqscribe and then first inductively and then deductively coded them using MAXQDA software. As is common in social science

Table 1. Codes used in interview analysis. Not all codes were relevant to both the initial and follow-up interviews, so each code is classified as utilized in coding the initial interview (I), follow-up interview (F) or both (B).

Source	Parent code	Child code 1	Child code 2	Description	Interviews coded
Deductive Schwartz et al. (1997)	Norm activation theory	Awareness of consequences	Yes	Awareness that the behavior of landowners living in the watershed influences water quality in the creek	B
			No	Lack of awareness that landowner behavior influences water quality in the creek	B
			Change	Change in awareness of the consequences of landowner behavior	F
		Acceptance of responsibility	Yes	Recognition that their personal behavior influenced the water quality of Coper Creek	B
			No	Lack of recognition that their personal behavior influenced the water quality of Coper Creek	B
			Change	Change in recognition that their personal behavior influenced the water quality of Coper Creek	F
		Personal norms	Personal norms	Internalized sense of conservation's value	I
Deductive Ajzen (1991)	Theory of planned behavior	Attitude	Positive	Positive attitude toward conservation	B
			Negative	Negative attitude toward conservation	B
			Change in attitude	Change in attitude toward conservation	F
		Subjective norms		How those important to landowner perceived conservation	I
		Perceived behavioral control	Efficacy	Perceived ability to make a difference in Copper Creek's water quality	B
			Lack of efficacy	Perceived lack of ability to make a difference in Copper Creek's water quality	B
			Control	Perceived ability to undertake conservation behavior and perception that improving water quality was "up to them"	B
			Lack of control	Lack of perceived ability to undertake conservation behavior and perception that improving water quality was "up to them"	B
Inductive	Learning	Hellbenders	Hellbenders	New knowledge about hellbenders	F
		Water quality	Water quality	New knowledge about water quality (e.g., stream chemistry)	F
		Scientific techniques	Scientific techniques	New knowledge about scientific techniques (e.g., water quality testing, hellbender population	F

(*Continued*)

Table 1. (Continued).

Source	Parent code	Child code 1	Child code 2	Description	Interviews coded
				monitoring)	
		Stream management	Stream management	New knowledge of stream management (e.g., the value of riparian vegetation)	F
Inductive	Sharing research			Sharing research with family, friends, or neighbors	F
Inductive	Conservation Behaviors	Behavioral intentions	Yes	Plans to undertake conservation behavior in the future	B
			No	No plans to undertake conservation behavior in the future	B
		Behaviors	Yes	New conservation behaviors as a result of participation	B
			No	No new conservation behaviors as a result of participation	B

research (e.g., Haywood et al., 2016), the lead author coded all interviews. She also coded the field notes taken during engagement with landowners at this time and kept reflexive notes throughout the coding process. During inductive coding, the lead author did two rounds of coding. The first served to identify themes as well as to establish codes. Codes were based on the behaviors and cognitions of interest going into the project, as well as emergent concepts. The second round of coding served to refine the codes and ensure that they were evenly applied across all interviews. For our deductive coding, we created parent and child codes based on two relevant theories which were designated prior to the inductive coding. The first of these was the theory of planned behavior, which posits that behavioral intentions are influenced by attitude toward the behavior, assessments of how others would perceive the behavior (i.e., subjective norms), and perceptions of control and efficacy surrounding the behavior (Ajzen, 1991). The second was norm activation theory, which suggests that behavioral intentions are driven by personal norms which are activated by a combination of the awareness of the consequences of the behavior, acceptance of responsibility for them, and environmental beliefs (Schwartz et al., 1997). Relevant codes from these findings were then used to code the second round of interviews, and we added additional codes to reflect the concepts newly assessed in the follow-up interviews (Table 2). We compared responses across treatment groups to assess the effect of different levels of engagement on landowner knowledge, attitudes toward conservation, awareness of conservation issues, behaviors, and behavioral intentions. We used the pre-interviews conducted with landowners in all three treatment groups to confirm that landowner perspectives had or had not changed when it was not clear from the post-engagement interview content itself.

Results

We found similar changes in cognitions and behavioral intentions in both the traditional and participatory science landowners and limited change in the control group, suggesting that the two forms of engagement influence landowners and do so in a similar way. Landowner conservation behaviors showed little change in any group during the period of engagement. Quantitative summaries of interview findings can be found in Table 2.

Table 2. The number of individuals who discussed each observed outcome from participation in their respective group (participatory science, traditional science or control). We do not report the number of individuals in the non-participants who shared their experience of participating in research or the result of the research with their social network because we did not ask about this in their interviews.

Outcome	Participatory science ($n = 5$)	Traditional science ($n = 7$)	Control ($n = 8$)
Increase in knowledge	4	5	2
Increased awareness of conservation concerns	3	3	0
Behavioral intentions regarding conservation	2	2	1
Lack of perceived behavioral control	4	1	1
Shared experience participating in the research or findings from the research	2	6	N/A

One of the few changes that clearly occurred across all three groups of landowners was an increase in knowledge. This occurred both as a result of participation in the project (for the traditional and participatory science groups which discussed learning from interactions with researchers and mailed project summaries) and through learning more on their own (for all three groups), particularly via internet searches. Landowners who learned more on their own primarily did so at the start of the project or immediately following the initial interview. Landowners in the group that did not receive any engagement beyond interviews discussed learning more about hellbenders, while landowners in the participatory science and traditional science groups discussed learning about a broader array of topics including hellbenders (primarily in the traditional science group), water quality, scientific techniques, and stream management.

Moving beyond simple knowledge acquisition, landowners also explicitly discussed a change in their awareness of and attitude toward water quality concerns as a result of participation in the project. As a landowner from the participatory science treatment group said of his growing awareness "Before it didn't really bother me to see a stream and somebody had trashed it, but now I think … they're hurting people and animals, and that's a very bad thing … I notice the environment more and particularly the streams and the water." What caused this change to occur in some landowners and not others was not entirely clear, but may in part have been due to differences in their initial awareness and concern. Some landowners were sufficiently aware of the conservation issues we focused on in this project that they may have had little room for change in the anticipated direction, while others were unconcerned or sufficiently confident in their assessment of the stream's health that they did not lend much significance to the information we shared with them. Landowners with some background knowledge of conservation, stronger conservation values, and interest in learning showed the greatest change. Although we did not ask landowners specifically about their attitudes toward stream fencing and growing riparian buffers, some landowners did talk about more positive attitudes toward having trees and shrubs grow along the streambank.

For some landowners in the traditional and participatory science group, the change in perspective that came with participation inspired an intention to change their behavior related to stream water quality. For example, a landowner in the participatory science group said, "I have more respect for this little stream on my property. Before I didn't think a lot about it, but now I want to protect it, just like a field that I would care for … I'm protective

of that little stream as long as I'm able get down there." Landowners in these two groups also talked about planting or maintaining trees along their streambank. Some landowners also discussed conservation-related behavioral intentions not pertaining to stream health, such as installing solar panels. One landowner in the non-participant group also discussed new conservation behavioral intentions that were not clear from the initial interview. Although nearly all change discussed by any treatment group was aspirational, one landowner in the traditional science group mentioned that she had asked the person who leases her land not to spray the bushes next to the creek because she was concerned that the chemicals could harm the hellbenders.

Landowners also discussed a lack of perceived behavioral control in the face of environmental challenges to the creek (Ajzen, 1991). One participatory science landowner said, "I don't like the way things is done, but I can't change it. I mean I don't like pollutants in the water. There's just a lot of things that's going on that I don't agree with, but I don't have no control over that." In some cases, this barrier to action appeared to have grown with increased awareness of the water quality issues in the creek. Some landowners also showed a reluctance to acknowledge that they might have a role in the poor water quality in the watershed, focusing on a nearby wastewater treatment plant or neighbors' land management when issues of water quality came up.

In addition to personal impacts from the research, landowners also discussed sharing, or were observed sharing, their experience participating in the research and the results of the research with their social network. For example, a landowner who was well connected in the community said "I would go to the library and make copies of [the results mailings] and send them to [one of my neighbors]. I made sure that they could read it." The same individual invited neighbors to come observe the research taking place on her property and mentioned talking to friends about the results of the study. In some instances, this sharing through the social network led to changes in the perspectives of individuals not actively involved in the research. For example, one individual in the non-participant group reported discussing the research with a neighbor who was in the traditional research group. The non-participants individual mentioned that learning about the research through his neighbor had increased his (the control individual's) trust in science, saying:

> I always actually believed in [science], but I was more impressed when you guys came over and started doing stuff . . . . And not only that, but my neighbors, I talk to a lot of my neighbors and stuff and, you know, they're pretty much in agreement [about science] . . . especially because everything that you guys are trying to do.

Although the specific subject matter of the research projects differed (with the traditional science group focused on hellbenders and water quality and the participatory science group focused on more in-depth water quality assessment), participants in both groups seemed equally interested in their particular research project. Both groups shared a strong concern about water quality and interest in the ecological health of Copper Creek.

Discussion

This study represents one of only a few studies of the effects of engaging landowners in more traditional private lands research (e.g., Lutter et al., 2018) and is the first to our knowledge to compare traditional engagement to engagement in participatory science. Our

findings suggest that biological conservation research on private lands may be a valuable means of influencing conservation knowledge, attitudes, awareness, and behavioral intentions among private landowners. Furthermore, these effects may extend beyond the directly engaged landowners to their social networks.

The effects we detected appear to be similar whether the type of engagement is participatory science or more traditional research. This is somewhat surprising given the significance of personal contact identified in previous studies (Ryan, 2009; Shindler et al., 2009; Toman et al., 2006). However, it is possible that the limitations to our engagement caused by the COVID-19 pandemic reduced this difference between the two treatment groups. Additionally, because we communicated with participatory science landowners to some extent via the datasheets, postcards, and mailings, we may have provided sufficient personal contact that this effect was minimized.

One of the most consistent changes we observed was an increase in knowledge that resulted from participation in the project, which aligns with findings from other participatory science research (e.g., Evans et al., 2005) and extends them to more traditional science engagement as well. Landowners from both treatment groups discussed learning about a wide breadth of topics including scientific methods, land management, water quality, and hellbenders. Our finding that many landowners did independent research very early on in the project indicates that long-term engagement is not always required to inspire this behavior.

While some landowners reported increased concern about conservation issues and intentions to shift their behaviors following participation in the project, participants tended to avoid taking personal responsibility for stream degradation. Leading behavioral theories e.g., Norm Activation Theory, (Schwartz et al., 1997), and the Theory of Planned Behavior (Ajzen, 1991); emphasize the importance of several factors to behavioral intentions including attitude toward a behavior, awareness of the consequences of the behavior, beliefs about personal responsibility, perceived ability to affect a desired outcome, and perceptions of how others would perceive their actions. Our results suggest that for landowners that exhibited new conservation behavioral intentions as a result of the research, changes in attitudes toward the behavior and increased awareness of consequences may have had a role. However, we found that even when researchers share actionable conservation steps with landowners (as we did with all landowners through our mailings and additionally with some landowners through personal conversations), participation in conservation research did not always encourage feelings of behavioral control or acceptance of responsibility. In some instances, our suggested conservation behaviors were less relevant given the landowner's use of the property (e.g., not all participants had livestock), but even for those whom the suggestions were relevant, we observed limited behavior change. Although we attempted to reduce the extent to which participants were strongly conservation-oriented at the initiation of our study by actively recruiting participants from an underrepresented demographic, we nonetheless had several participants who may have had little room for attitude change in the anticipated direction. Future research may be able to better reduce this effect through a different sampling approach. Our study did not provide insight on the effects of participation on perceptions of how others would perceive landowner actions.

We found that landowners shared their experience of participating in the research as well as the results of the research with their social network. This finding suggests that engaging landowners in research may have a larger-than-expected impact on a community,

particularly since peer-to-peer communication has been identified for its importance to conservation action (Schubert & Mayer 2012). The community in which we were working is small and many residents have been in the area for a long time and have extended family in the community which may have facilitated the community effects we found. However, sharing research experiences with friends and neighbors has been identified in previous studies of private lands research (Green et al., 2022; Lutter et al., 2018), suggesting that it may be a more common aspect of private lands research.

Although our study indicates that there are benefits to be gained from engaging landowners in private lands research, there is much that remains to be learned about the current state of private lands research engagement and its effects. For example, it would be valuable to explore the effects of engagement on perceptions of how others would perceive conservation behavior since our study did not clarify this (Ajzen, 1991; Schwartz et al., 1997). Additionally, it would be useful to know more about what current traditional science engagement looks like and the extent to which this engagement may also influence the researchers' own perspectives on private landowners and private lands conservation. A larger sample size would also lend more confidence to our findings. Finally, our research did not deal with a federally listed species which can complicate landowner relationships with conservation (Lueck & Michael, 2003). The extent to which private lands research of endangered species would yield similar or different results to those found in our study merits further investigation.

The push for increased private lands conservation has shone a spotlight on the need for more peer-reviewed conservation research on private lands, and the potential to harness the resultant engagement with landowners to encourage conservation could be greatly beneficial. We found that such engagement has the potential to influence landowner knowledge and awareness of conservation concerns as well as influencing landowner attitudes toward specific conservation behaviors such as growing riparian buffers. The form that this engagement takes could be as minimal as calling landowners prior to each visit to inform them of the impending visit. This contact provides an opportunity to share updates, build relationships, and it is a chance for the landowners to ask questions and express concerns. In a world that requires increasingly creative approaches to conservation, opportunities that capitalize on preexisting occasions for conservation outreach should not be overlooked.

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