Introduction and Background

Water, a critical resource for ecosystems, economies, and communities, faces increasing threats from global population growth and urbanization, leading to escalating concerns about water scarcity (Boretti & Rosa, 2019; The Water Cycle, 2023). This study explored water conservation initiatives as a strategy to protect freshwater sources for current and future generations. Despite the recognized importance, engaging communities and landowners in these initiatives often encounters resistance or indifference (Conservation, 2023; Cooper et al., 2022).

Amidst growing recognition of the photographic imagery's power to mobilize communities around global issues, this research investigates the potential of photographic imagery to enhance participation in water conservation initiatives.

Previous studies have explored how visual imagery influences environmental engagement on a broader conservation scale. Young (2021) examines the role of photography and social media in facilitating grassroots movements and collective action, particularly among underprivileged groups. Salazar et al. (2023) focused on the impact of positive versus negative imagery, finding that negative visuals were more effective in capturing attention and promoting action. San Cornelio et al. (2024) looked at how environmental influencers use Instagram imagery to reshape narratives around the climate crisis and engage citizens.

While these studies have provided valuable insights into the impact of visual imagery on environmental engagement, they predominantly focus on specific types of imagery (e.g., positive vs. negative) or platforms (e.g., Instagram). In contrast, this study offers a broader investigation by exploring a combination of factors—including the content (e.g., people, animals, landscapes), composition, quality, color, and medium (photo vs. video)—to assess how different visual elements influence engagement in conservation initiatives, specifically concerning stakeholders' local rivers and watersheds. This study builds on prior research by incorporating a more comprehensive analysis of visual communication in the context of environmental conservation.

Photographic imagery transcends cultural, linguistic, and educational barriers, offering a unique means to communicate complex environmental issues and inspire action (Dsouza, 2022; Jacobson et al., 2007). This study aims to bridge the gap between scientific endeavors and public engagement through innovative artistic expressions.

Freshwater ecosystems are crucial for survival, yet they are rapidly declining due to human activities that degrade habitats and water quality. With freshwater species populations plummeting and significant losses of wetland ecosystems since 1970, there is an urgent need for effective conservation measures (Freshwater Ecosystems, 2022; National Geographic, 2021). The United Nations estimates that by 2050, nearly 6 billion people will face clean water scarcity (Boretti & Rosa, 2019), highlighting the critical need for sustainable water management.

Community and organizational initiatives are vital in addressing these challenges, yet there remains a significant gap in participation and policy enforcement. This study focused on the Illinois River Watershed, a critical area where conservation initiatives could significantly impact water quality and availability. The research explored how photographic imagery and artistic collaboration can improve stakeholder engagement and policy implementation, offering new strategies for conservation communication and participation. Figure 1 shows an illustrated map of the river and its watershed.

Figure 1

Illustrated Map of the Illinois River Watershed

Note. From Environmental Protection Agency. (n.d.). *EPA in Arkansas: Water in Arkansas.* EPA. https://www.epa.gov/ar/water-arkansas

This qualitative study utilized photographic imagery in the form of photos and videos to explore the disconnect between conservation organizations and stakeholders, particularly focusing on water conservation in the Illinois River Watershed. The research aimed to assess how photographic integration in communication strategies can enhance stakeholder engagement and participation in conservation efforts. The specific research questions are:

- RQ1. How can photographic interventions improve engagement of stakeholders with water conservation initiative?
- RQ2. What is being done to improve public understanding?
- RQ3. In what ways can photographic imagery help build a stronger emotional connection to water sources, thereby enhancing retention levels and increasing willingness to participate in conservation initiatives?
- RQ4. How do positive vs. negative types of photographic imagery affect people's willingness-to-participate?
- RQ5. How do other aspects of image content affect it?

The role of photo and video in enhancing engagement in water conservation is multifaceted and subjective. This qualitative study captured a wide range of perspectives from stakeholders such as landowners, conservation organization members, and policymakers, which enriched the understanding of photographic contents impact (Keats, 2009). Photographic interventions like photos, videos and illustrations presented through various formats such as exhibitions and workshops, have been shown to catalyze behavioral change in environmental advocacy (Gubrium et al., 2014; Sommer & Klöckner, 2021).

These interventions not only enhance comprehension of water conservation efforts (Sungkajun & Seo, 2019) but also evoke strong emotional connections to water sources, potentially driving behavior more effectively than cognitive understanding alone (Renowden et al., 2022). The findings from this study could lay the groundwork for a new theoretical framework on strategically using photographic imagery to communicate water conservation initiatives effectively.

Theoretical Framework

This study employed the Theory of Planned Behavior (TPB) and Affective Disposition Theory (ADT) to explore how photographic imagery could enhance engagement and participation in water conservation initiatives.

Theory of Planned Behavior

The TPB provided a robust framework for understanding the cognitive and motivational factors that influenced individuals' intentions and behaviors towards water conservation (Mastandrea et al., 2019). This study examined how photographic imagery impacted the TPB's components by bridging the gap between intentions and actions, thereby fostering a stronger commitment to conservation efforts. Photographic imagery influences attitudes by visually portraying the benefits of water conservation, such as clean water sources and vibrant ecosystems, which enhances perceived positive outcomes and leads to more favorable attitudes (Gabriel, 2021; Joffe, 2008). It also shapes subjective norms by demonstrating community support for conservation behaviors and affects perceived behavioral control by presenting these behaviors as achievable (Adnan et al., 2019; Vermeir & Verbeke, 2008).

Imagery in TPB

Imagery's role within the TPB framework extends to emotionally resonating with individuals, thereby making the benefits of conservation more salient. It also communicates that water conservation was a valued behavior within communities, encouraging individuals to align with these norms. The integration of photographic imagery helps to visually communicate the practicality and desirability of conservation behaviors, encouraging more informed and intention-driven actions (Renowden et al., 2022; Yuriev et al., 2020).

Affective Disposition Theory

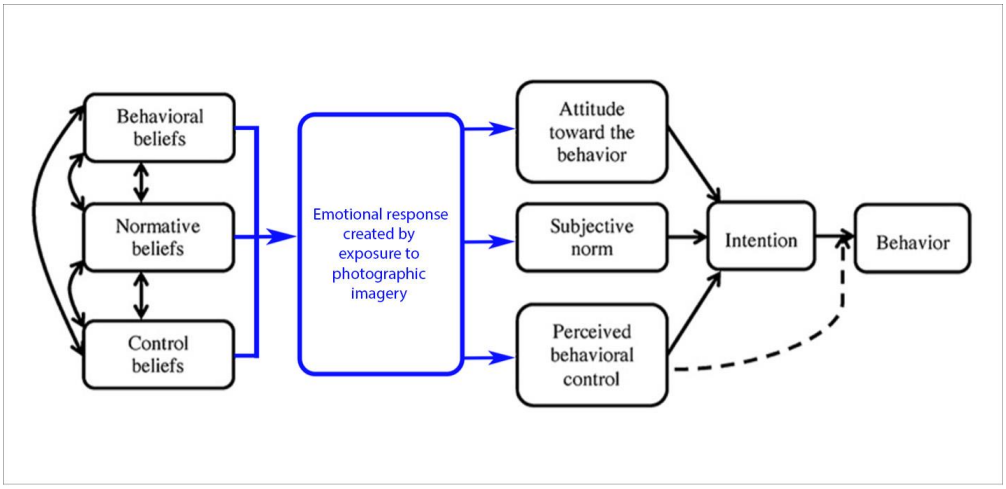
ADT complements TPB by suggesting that attitudes and behaviors could also be driven by emotional reactions to stimuli (Zillmann & Cantor, 1977). In the context of water conservation, ADT posits that emotional resonance with photographic imagery depicting ecological benefits could enhance cognitive attitudes towards participating in conservation efforts. This theory explains how photographic imagery could evoke positive emotional responses, fostering a deeper connection to conservation efforts and enhancing individuals' affective dispositions towards engaging in these activities (Raney, 2020).

By integrating these theories, we aimed to improve the understanding of how photographic imagery can influence both the cognitive and emotional dimensions of engaging

stakeholders in water conservation. This theoretical framework underscores the potential of photo and video to not only inform but also emotionally engage individuals, driving meaningful participation in conservation initiatives. Figure 2 is a modified model of TPB, incorporating the exposure to photographic imagery and its effect on intention and behavior.

Figure 2

Breakdown of TPB Constructs with Emotional Response



Note: An updated version of TPB model with the addition of the influence of emotional response created from the exposure to photographic. Additions are in blue. Original model from Yuriev et al., (2020). Pro-environmental behaviors through the lens of the theory of planned behavior: A scoping review. *Resources, Conservation and Recycling*, *155*, 104660. https://doi.org/10.1016/j.resconrec.2019.10466

Methods

Design of the Study

We conducted the study in two phases. The first phase involved direct personal interviews with subjects until the point of data saturation, which was reached when no new themes, perspectives, or insights emerged from additional interviews. At this stage, responses became repetitive, with participants largely reiterating information that had already been expressed, indicating that further data collection was unlikely to yield novel findings. There were 27 usable interviews that included 17 males ranging from ages 21 to 80 and ten females ranging from ages 30 to 60. All subjects were Caucasian. We followed these interviews with a pair of focus groups of nine subjects each. The subjects ranged from ages 21 to 72 and were all Caucasian.

While we made efforts to recruit a diverse sample, the participants in this study were predominantly Caucasian. This demographic composition reflects the reality of the stakeholder groups engaged in local river and watershed conservation efforts, including landowners, environmental organization members, and conservation initiative participants. While this

homogeneity may limit the generalizability of the findings beyond this specific demographic, it provides an accurate representation of the individuals currently involved in these initiatives within the study region.

Acknowledging this limitation, the study remains valuable in understanding the perspectives of those who are actively shaping and participating in conservation efforts. Future research could expand recruitment strategies to engage a broader range of participants, particularly those from underrepresented communities, to explore how diverse perspectives might influence conservation engagement and responses to photographic imagery.

We used a case study approach (Patnaik & Pandey, 2019) to examine how the local community, including landowners, stakeholders, recreational river users and conservation organization committee members, respond to photographic imagery interventions (Chua et al., 2020). The study provided insights into how different forms and combinations of photographic imagery resonate with various audience segments in this community (Fernández-Bellon & Kane, 2020).

Through observations and analysis of participant responses to interview questions and focus group prompts, we assessed the emotional and cognitive effects of the photographic imagery intervention on participants. The evaluation of participant's attitudes toward using photographic imagery as a marketing tool was vital in determining photographic imagery effectiveness in motivating stakeholders to participate in conservation initiatives (LaMorte, 2022). The evaluation also involved interpreting how photographic imagery influenced stakeholders' understanding of water conservation and triggered emotional connections to local water sources (Perryman et al., 2019). The Affective Disposition Theory shows that if photographic imagery can resonate on an emotional level with people, it may strengthen their attitudes and encourage a behavioral change in favor of participating in these conservation opportunities (Renowden et al., 2022).

We analyzed themes within the case studies, drawn from personal stories, anecdotes, and narratives from subjects. These themes provided a nuanced understanding of how photographic imagery influences subjects' perceptions and triggers emotional connections to water sources. A thematic analysis of these interviews and focus groups helped unravel the underlying motivations, emotions, and behavioral shifts engendered by the photographic imagery interventions (Braun & Clarke, 2022).

We report there are no competing interests to declare.

Participants

The selection of research subjects for this study was a meticulous process, conducted in collaboration with the Northwest Arkansas Land Trust and the Illinois River Watershed Partnership. Initially, we developed a comprehensive list of potential participants targeting individuals with significant stakes in the Illinois River and its watershed. This included local stakeholders, conservation organization members, and policymakers with influence over watershed management.

We thoroughly vetted each candidate to ensure they met specific criteria such as landownership within the watershed, engagement in recreational activities there, employment in relevant conservation organizations, or roles in governmental policymaking affecting the watershed. Those qualifying were invited to participate in in-depth interviews and focus groups. After reaching data saturation from the interviews, two focus groups were conducted to enrich

the perspectives gathered, aiming to encompass a broad range of relevant experiences and viewpoints for the study's objectives.

The University of Arkansas-Fayetteville Institutional Review Board approved this study (Protocol # - 2310497707). Its status is exempt.

Demographics

The participants of this study represented a variety of perspectives because of the difference in the subjects' ages, genders, education, and connection to the river. The demographics were self-reported by the participants during the interviews.

There were 13 people who identified primarily as conservation employees, 11 primarily as landowners, three primarily as river users and one person who identified equally as landowner who participated in the study. The following table details the demographics of the study's participants to provide context for the results of the study, pseudonyms for participants were given to protect the anonymity of the participants. The subjects we ultimately recruited were individuals deeply invested in environmental preservation, water sources, and conservation efforts holistically. Demographics are reported in Table 1.

Table 1

Demographics of Study Participants

Name (Pseudonym)	Gender	Age Range	Connection to River
Elvis	Male	20 - 30	Conservation Organization Employee
Dolly	Female	50 - 60	Landowner
Ringo	Male	50 - 60	Landowner
Jimi	Male	30 - 40	Conservation Organization Employee
Joy	Female	40 - 50	Conservation Organization Employee
Madonna	Female	30 - 40	Conservation Organization Employee
Randy	Male	50 - 60	Landowner
Tate	Male	40 - 50	Conservation Organization Employee
Aretha	Female	60 - 70	River User
Bowie	Male	30 - 40	Landowner / COE
Ozzy	Male	40 - 50	Conservation Organization Employee

Alanis	Female	50 - 60	Landowner
Phil	Male	50 - 60	River User
Tina	Female	40 - 50	Landowner
Bruce	Male	40 - 50	Landowner
Etta	Female	50 - 60	Landowner
Van	Male	60 - 70	Conservation Organization Employee
Elton	Male	40 - 50	Conservation Organization Employee
George	Male	30 - 40	Conservation Organization Employee
Lionel	Male	30 - 40	Conservation Organization Employee
Enya	Female	50 - 60	Landowner
Amy	Female	40 - 50	Conservation Organization Employee
Judas	Male	40 - 50	River User / Sustainable Landscape Architect / CEO
Steven	Male	40 - 50	Conservation Organization Employee
Cyndi	Female	30 - 40	Conservation Organization Employee
Kenny	Male	70-80	Landowner
Rob	Male	60 -70	Landowner

Data Collection

Interviews and focus groups allowed for a deep examination of participants' thoughts, feelings, and experiences with photographic imagery and how its usage within conservation provokes emotional connection; or not. Qualitative methods enabled a rich exploration of the complex motivations and perspectives that may influence engagement with conservation efforts. Furthermore, it provided an opportunity to understand the cultural, social, and environmental contexts in which photographic imagery and land conservation intersect, in turn, fulfilling objective of bridging the gap between the arts and sciences. Both photographic imagery and

conservation evoke emotions, and it would be difficult to quantify people's personal experiences through numerical data.

Additionally, a qualitative approach permitted participants to share their stories and narratives. This allowed us, after a holistic examination of the data, to report using our own storytelling skillset. This, in turn, provided a compelling way to communicate the significance of photographic imagery in conservation efforts as well as a broader look into environmental stewardship at large (Nasheeda et al., 2019).

Interviews

To augment the qualitative exploration, we conducted in-depth interviews with a diverse range of stakeholders, including landowners, conservationists, recreational users, and individuals who have engaged in water conservation initiatives. These semi-structured interviews provided a platform for participants to elaborate on their experiences, emotions, and perceptions (Soe & Yeo-Chang, 2019). By studying the interactions between photographic imagery and water conservation, the interviews unraveled the mechanisms through which photographic imagery fosters understanding and emotional resonance, subsequently influencing participation (Xiaowei & Zainuddin, 2023).

In the interviews, participants did not view photographic imagery directly; rather, discussions centered around their theoretical use and personal experiences with imagery. Participants were asked about their preferences regarding various aspects of photographic representation, including color versus black and white, video versus still photography, aerial versus ground-level perspectives, and positive versus negative portrayals. Additionally, they reflected on the influence of amateur versus professional photography, the inclusion of text on images, and the subject matter itself—whether it featured people, wildlife, scenic landscapes, or combinations thereof.

Participants also shared personal experiences regarding imagery that had influenced their engagement in conservation initiatives. Questions explored which photos or films about conservation had left a lasting impression on them, as well as what types of imagery had evoked strong emotional responses. These insights were crucial in shaping the subsequent stages of the study.

One of the purposes of these interviews was to refine and develop the photographic material that would later be used in focus groups. The actual presentation of photographic imagery took place in the two focus groups that followed the interviews, where participants directly engaged with images designed to foster discussion and assess their impact on conservation-related attitudes and actions.

We conducted interviews over the phone and via virtual meeting platforms such as Microsoft teams and/or Zoom (Shapka et al., 2016). Subjects were contacted through email, recruited at conservation-based events, or asked to participate by conservation organization committee members. The snowball approach was also employed, wherein some participants who met the selection criteria referred friends, neighbors, or family members to the study (Parker et al., 2019). While this method was useful in reaching individuals actively engaged in conservation efforts, it also contributed to the homogeneity of the sample, as referrals tended to come from within existing social and professional networks. As a result, all participants identified as Caucasian, which may limit the generalizability of the findings to more diverse populations.

However, this demographic composition accurately reflected the primary stakeholders in local river and watershed conservation efforts within the study area. While snowball sampling may have introduced a selection bias by reinforcing the characteristics of the initial participant pool, it also ensured that the study captured the perspectives of those most actively involved in these initiatives. Future research could employ targeted recruitment strategies to engage a broader range of participants and explore how diverse backgrounds may influence conservation engagement and responses to photographic imagery.

To build trust with each participant, we opened the conversation by sharing experiences of his personal life and his connection to photographic imagery, with which subjects may be able to identify with. This aided us in connecting and communicating with the participant (Mueller, 2019).

All interviews were recorded verbatim, and transcriptions provided the first major set of data for the study (Adeoye-Olatunde & Olenik, 2021). In addition, we recorded written notes during the interview sessions that provided insight into themes that emerged throughout the conversation.

The interview questions that were used for the investigation were created to directly inform the study's research questions. They probed the impact of photographic imagery on stakeholders' understanding of water conservation and emotional connections to water sources. The questions, shaped by concepts in the literature related to the persuasive potential of photographic imagery (conceptual framework), were guided by the Theory of Planned Behavior and Affective Disposition Theory.

Focus Groups

Focus groups constituted another vital facet of this study, facilitating dynamic discussions among participants who have engaged with photographic imagery interventions (Winter et al., 2020). Experienced moderators led the focus group discussions, ensuring a conducive environment for open and candid exchanges. The discussions were guided by semi-structured prompts that explored participants' experiences and perceptions of the photographic imagery interventions, the emotional connections formed, and the subsequent influence on their willingness to participate in conservation initiatives. The focus group questioning route was strategically crafted to explore how photographic imagery impacts stakeholders' perception of water conservation and willingness to participate in conservation initiatives (Goldsmith, 2021; Von Sommoggy et al., 2020). These prompts, as with the interview questions, were shaped by the study's conceptual and theoretical frameworks.

These group interactions provided a forum for participants to share their perspectives, engage in collective reflections, and express the emotional and cognitive impacts of photographic imagery interventions (Lambert & Loiselle, 2008). The focus group setting encouraged participants to build upon each other's ideas and articulate a communal understanding of how photographic imagery stimulates emotional connections and engenders active involvement in conservation initiatives. During these focus groups, multiple combinations of imagery, video, and text were used to ignite these deep discussions.

We applied principles of media aesthetics, including color theory, composition, typography, and visual hierarchy, to the selected imagery (Zettl, 2017). For example, color theory was used by incorporating vivid colors, neutral palettes, and black-and-white images to evoke different emotional responses. Composition varied between amateur photos, which lacked

advanced techniques, and professionally composed images that used the rule of thirds, natural lighting, and leading lines. Typography was applied by showing images with and without text to assess its impact on viewer interpretation. Visual hierarchy was created by presenting images in specific sequences to guide participants' focus. These design choices were aimed at enhancing emotional engagement and examining the persuasive power of imagery in conservation efforts.

The photographs and videos aligned with informative messaging that were designed to resonate with the target audience on an emotional and psychological level (Jones & Lee, 2022). To do this correctly though, we needed to understand the target audience's characteristics, preferences, and existing attitudes toward water conservation. We accomplished this through interviews, followed by focus groups where the imagery was presented and discussed.

Chosen images and video were visually striking and were created to evoke emotions and capture the essence of water conservation - the positive effects of participating and the consequences of not. We used high-quality and low-quality photographs and video, sometimes paired with meaningful text, to tell compelling stories that conveyed the importance of water conservation (Goldsmith, 2021; Von Sommoggy et al., 2020). We also used contrasting colors and placement to draw attention to key messages or calls to action. Content was kept simple and easy to understand by avoiding clutter and unnecessary distractions. Any text or captions were concise and reinforced the main message (McGrath 2021; Zettl, 2017). These media were used to spark discussion in the focus groups.

In the focus groups, both positive (e.g. images depicting healthy land stewardship practices) and negative images positive (e.g. images depicting unhealthy land stewardship practices) were used to gauge emotion, reaction, and desired action moving forward (McGrath, 2021). Our analysis of subjects' reactions determined if a positive image highlighting the beauty of the river would inspire people to want to keep it beautiful or if it would cause them to believe nothing more needs to be done. Negative images depicting scenes such as death of ecosystems and loss of land would also be used. The intention behind the negative photos was to gauge if participants would be encouraged to try and save what's being lost or if the images portray the situation as too late.

PhotoVoice. By utilizing select photographs participants were able to reflect upon and explore the reasons, emotions, and experiences that guide their thought processes (The Howard League, 2016). We incorporated PhotoVoice by having focus group subjects bring in up to three photos showcasing what the watershed means to them. This led to a group discussion on the content of each image. According to the PhotoVoice website (2023), the concept is "both a form of creative expression and a way to record facts" (par. 2). The PhotoVoice approach provided participatory visual tools to help subjects describe realities and communicate perspectives (Gotschi et al., 2009).

The insights collected from focus group discussions enriched the study's exploration of the emotional and cognitive impact of photographic imagery interventions on water conservation initiatives (Boamah et al., 2022). By facilitating collective reflections and interactions, focus groups provided a deeper understanding of how individuals' emotional connections are fostered and translated into willingness to participate in conservation efforts. The collaborative nature of focus groups ensured that a multitude of voices contributed to the narrative, painting a holistic picture of the role of photographic imagery in driving transformative engagement (Lambert & Loiselle, 2008). Focus group discussions were video-recorded to ensure accurate capture of participants' contributions (Adeoye-Olatunde & Olenik, 2021).

Analysis

Interview and Focus Group Analysis. We utilized thematic coding through NVivo 11 to analyze interview data. The analysis followed Kathy Charmaz's approach to generate the "bones" of the analysis, which involved open coding to identify and label concepts, axial coding to connect codes, and selective coding to understand category relationships (Charmaz, 2014; LaiYee, 2022). The focus group data underwent a rigorous content analysis process as defined by Hsieh and Shannon (2005), which emphasizes a systematic classification of coding and theme identification. This process included recording discussions, note-taking, summarizing data, and verifying emerging themes with participants to ensure accuracy and reliability (Krueger, 1998). We carefully considered the unique group dynamics of focus groups to allow categories to emerge directly from the data (Moretti et al., 2011).

Comprehensive Thematic Analysis. Thematic analysis involved an iterative process, initially reviewing data from interviews, focus groups, and PhotoVoice activity to identify recurring patterns and insights. This preliminary analysis led to the categorization of core subjects and concerns voiced by participants (Hays & McKibben, 2021; Lester et al., 2020). Each category was refined by coding specific segments, continually comparing, and adjusting themes to align with the research questions and the strength of the data.

To further validate emerging themes and enhance analytical rigor, we introduced preliminary findings from the interviews and discussed them at the beginning of the focus groups. We then asked participants to reflect on these themes, providing an opportunity to confirm, refine, or challenge initial interpretations. This process served as a form of member validation, ensuring that the themes accurately represented participant perspectives and experiences. Additionally, selective coding was employed to integrate categories, facilitating a comprehensive understanding of how the distinct elements within the data interconnected and contributed to the central themes (Fernández-Bellon & Kane, 2020; Paterson et al., 2020).

Results

The results of this study, prefaced with participant demographics, highlighted the significant impact of photographic media on conservation efforts examined in this case. Key themes in the findings include storytelling through real-world imagery, the use of visuals to transcend linguistic barriers, the use of "Before and After" imagery, a balanced approach to positive and negative imagery, and emotional responses like nostalgia.

Impact of Storytelling Through Real-World Imagery

Participants shared transformative experiences following exposure to impactful documentaries. For instance, Elvis detailed a significant shift towards vegetarianism after watching a documentary on the meat industry, motivated by environmental concerns. Similarly, Dolly's experience with the documentary "Fantastic Fungi" illustrated the power of high-quality documentaries to alter perceptions and encourage a symbiotic relationship with nature.

The mention of the film "Artifishal" by another interviewee Ringo illustrates how specific conservation topics, such as the fight to save wild salmon, can engage audiences deeply and provoke a thoughtful consideration of human impacts on wildlife:

I have definitely seen films that have made me question what other information that I may have had. There's one out there about salmon in the Pacific, Northwest and the whole hatchery industry and the cage rearing of salmon in the ocean. Basically, makes it a very negative presentation. So, it makes it makes you question whether you ever want to eat something that's cage reared, so-called sustainable kind of things.

Overcoming Language Barriers Through Imagery

Photographic imagery was crucial in engaging diverse audiences, enabling them to perceive and react to conservation issues without the constraints of language. As George noted,

I'm just thinking of the cliche, an image is worth 1000 words, but it doesn't necessarily have to be when the when the viewer sees it, you would see it and interpret it in your own language. You know a language that may be foreign to you that you feel like you don't understand it because you can't read what's on there but if you just have the image itself with knowing you know language on it, then it's then a person you know, the observer can interpret it in their native language and see it that way.

This characteristic made imagery useful in conveying messages globally, allowing observers to interpret content in their native language and within their own contexts, free from the barriers that textual content might present. The use of imagery facilitated a broader understanding and fostered inclusivity in environmental education. Jimi echoed this sentiment highlighting that imagery has the potential to capture attention and convey messages to individuals regardless of their language proficiency:

Imagery has absolutely the potential to grab the attention even if you know if, if there are no words on there, imagery could cross that boundary and reach someone who was not an English speaker.

Current Engagement Strategies in Conservation

A variety of strategies are currently employed in and around the Illinois River watershed to engage the public in conservation efforts, utilizing the impact of visual-based multimedia content. Organizations leverage interactive resources, social media, community events, and educational workshops to connect with and educate the community. Stevie said her organization developed her own interactive story map:

The state story map was the basically the fourth service project where they were looking at drinking water sources across the state, and it's just it's a lot of just basic information about where and how we get our water and it's interactive. So, if you look, you can click on your area, your water system and this is a of course a picture of the link that has a link to this page so you can click on the link. There's bubble that your area is in, and it should tell you your water system how many people it serves and then you can get some more information about land use etcetera.

When asked if she has seen or participated in image-based engagement initiatives, Madonna, an employee of a conservation organization, described her organizations use of social media:

> *So, we did like a vocabulary series every week during pick up where you play along, and we had a different picture for that promoting that week's event. We also do a series, "Did you know?"*

Notably, "Before and After" imagery serves as a powerful visual tool in demonstrating the tangible results of conservation actions, thereby encouraging public support and participation. Freddie described how his organization utilizes this tactic to raise funds from local policy makers, encourage landowners and show the public what can be accomplished:

> *We use before or after type pictures of what we're trying to accomplish. So, with county judges, we're showing, you know, really pictures of unpaved roads. I mean, they know what they're looking at and with landowners, we're showing, you know, steep eroding banks to nice, vegetated recreation corridors.*

Elvis explained, these educational efforts aim to inspire and motivate the public to take action. He said, "*Me and some of the other biologists on staff are known to go and give talks to the public. Something we get asked to do regularly is give courses."*

Emotion Created from Imagery

This study uncovered profound influences of emotional responses to photographic imagery in conservation, with nostalgia identified as a potent emotional driver. Emotional engagement with imagery, ranging from the nostalgia evoked by memories of natural settings to the immediate impact of emotionally charged visuals, played a critical role in fostering conservation efforts Dolly described the sentiment imagery can play and underscored the powerful role of emotions in guiding human behavior:

> *I think photographic imagery has a lot of impact. I think it, yeah, it gets you. It gets you in your hephotographic imagery and mind very quickly, be it negative or be it positive. I think photographic imagery is very, very, very powerful.*

Elvis brought up the concept that emotional engagement is not one-size-fits-all but can be highly individualized based on one's experiences and values:

> *You need to pull out the emotion, but you need to find the right angle to do it because not everyone is necessarily emotionally connected to wildlife or conservation, or whatever it may be that they might be emotionally connected to - their land or the recreation that they get to do on that land, like hunters."*

Throughout the interviews the following specific themes emerged and served as a foundation for the imagery that was presented during the two focus groups. These themes were

"Positive vs. Negative," "Before and After," "Photo vs. Video," "Video Content," "Video Length," and "Billboard Messaging."

Positive vs. Negative Content

The findings indicated a complex interaction between positive and negative imagery in conservation messaging. Positive imagery often inspired hope and proactive engagement, while negative imagery, though impactful, sometimes led to despair and inaction. Landowner, Tina, who has a career in marketing, stated: "*When it's so big and bad, it gets me anxious because I feel like I have nothing that I can contribute to it. I need more information about how I personally can help."*

Landowner and active conservationist Bruce said, "I *am more motivated towards positivity."* This dichotomy supports the principles of affective disposition theory, highlighting the emotional influence of visual content on conservation behaviors. Participants expressed a preference for content that combines emotional impact with actionable information. Elton, an employee of a conservation organization said he believes, "*You can state an issue, or a problem say hey we have this issue here but if you don't focus on here's the solution, here's what we would love you to do. It creates a sort of paralysis."*

Before and After Comparisons

Comparative imagery, showing "before and after" scenarios, was found to be highly effective in illustrating the tangible impacts of conservation efforts. Such visuals not only demonstrated the consequences of environmental neglect but also the potential for positive change through concerted conservation actions. Billy stated, "*You could take a picture of this is what it looked like before and this is what it looks like after, and that will tell an immediate story for you.* Elvis explained documenting the progress of conservation projects through photos was crucial for both reporting to funding agencies and for engaging the broader public:

> *Well, I want to show them, you know, pictures of before and after or while it was in progress so that the agency that funded us can see the work we did. So, pictures are important for us in that regard as well, especially for me when writing my reports.*

Preferences Between Photo and Video Content

Preferences for photo versus video content were varied, reflecting the diverse ways individuals engage with and process information. Photos were generally favored for their ease of consumption and ability to coexist with textual explanations, while videos are preferred for their dynamic and immersive qualities. In his interview, Bowie said, *"I'm more of a picture person than video. I'd rather scroll than stop and watch your video*." Jimi touched preference for video: "*I feel like videos are better, but I also think that everyone's attention span is so short that the sort of video edit has to be thought out pretty well."*

General Video Content and Video Length

The study also highlighted specific attributes that enhance the effectiveness of video content in conservation messaging. Short, compelling videos are preferred due to the general public's limited attention span. Participants emphasized the importance of making every second count, using engaging visuals and sounds to draw viewers in quickly and maintain their interest. Billy and Lionel both said definitively, *"no more than 30 seconds."* George's perspective mentioned a preference for swift engagement that can spark interest and potentially encourage viewers to seek further information:

> *I've got a short attention span, so it'd be pretty quick. You know, like a 5 to 10 second snippet I think but you know, if something's interesting, I may click a link or something to see to see more about it.*

Billboards in Conservation Marketing

Perception of billboards among participants were generally negative, with many viewing them as visual pollution that detracts from natural landscapes. Bruce's outlook on billboards was blunt and to the point, *"I think they're an ugly eyesore. So, I think they just, I think they just ruin what you should be looking at."* Despite a negative perception, there was recognition of the potential for billboards to be effective if they employ striking visuals with minimal, impactful text. The discussion also highlighted concerns about the environmental impact of billboards, such as LED displays affecting nocturnal wildlife, and the broader implications for conservation messaging. Judas said, "*If it's an LED billboard, then there's a whole issue with what it's doing to the nighttime ecologies"*

The nuanced perspective of billboards suggests that, although not preferred, they can be a pragmatic tool in conservation efforts if designed thoughtfully, focusing on provoking thought and engagement through minimalistic and striking visual content. When asked about billboards, Jimi said:

> *I feel like they're not as effective as you know, just using a social media platform. Either use bold words to get attention or use a picture with some smaller words and a logo. I would go with more imagery and as few words as possible.*

Discussion

Conclusion

In conclusion, the findings of this study align closely with the cognitive and motivational constructs of the Theory of Planned Behavior (TPB) and Affective Disposition Theory (ADT). Through the extensive methods employed, such as interviews and focus groups, the research revealed that photographic imagery serves as a powerful medium in shaping attitudes, subjective norms, and perceived behavioral control as described in the TPB (Gabriel, 2021; Joffe, 2008). By visually representing the positive outcomes of water conservation, such as cleaner water sources and thriving ecosystems, the imagery fosters favorable attitudes and strengthens the perceived effectiveness of conservation behaviors. These cognitive shifts are complemented by ADT

(Zillmann & Cantor, 1977), where the emotional resonance of imagery evokes affective dispositions toward water conservation, enhancing personal connections to water sources and inspiring behavioral commitment (Spiegel, 2020; Wang et al., 2023). Stakeholders reported that photographic interventions not only communicated the practicality and desirability of conservation efforts but also helped overcome perceived barriers, making conservation behaviors appear more achievable (Foyet & Louis, 2023). This integrated approach underscores the dual cognitive-emotional impact of photographic imagery, supporting more robust participation in water conservation projects, as suggested in environmental communication literature (Kals et al., 1999; Zhang et al., 2022; Zhou & Wang, 2022).

This research provided critical insights into how audiences emotionally respond to different types of imagery, shedding light on the emotions attached to various visual representations of water conservation (Balliett, 2020, Kolandai-Matchett et al., 2021). The study examined audience reactions to formats such as before-and-after comparisons, positive versus negative framing, and photography versus video, uncovering preferences that influence engagement and motivation. The findings also highlighted demographic differences in how imagery is perceived, revealing which visual strategies resonate most with specific audience groups. By identifying these patterns, the study offers practical recommendations for local organizations to refine their strategic marketing efforts, ensuring their visual messaging is as effective as possible in inspiring conservation action. These insights contribute to a deeper understanding of how photographic and video imagery can be leveraged to enhance public engagement and drive behavioral change in water conservation efforts.

Limitations

This study's limitations were primarily due to time constraints and limited funding, which restricted the exploration of emerging themes and the inclusion of key participants, particularly major landowners along the Illinois River. These constraints affected the depth of engagement, and the diversity of perspectives captured. In particular, the participants who were recruited could be characterized as highly motivated stakeholders; therefore, the conclusions of this study should be consumed with this context in mind. Future research would benefit from extended timelines and enhanced funding to ensure a broader and more representative participant pool.

Practical Implications

To enhance conservation initiatives, it is crucial to integrate local engagement, innovate in storytelling, and use photographic-based media strategically (Shivajirao, 2023). Effective practices include creating short, high-quality visual content, especially employing "before and after" imagery to highlight clear contrasts and success stories, thus inspiring action (Rivero-Gutiérrez, 2024; Spilker et al., 2022; Wright et al., 2023). A balanced approach to both positive and negative imagery is essential for effectively presenting environmental challenges and encouraging participation (Verduyn, 2020).

Feedback-informed adjustments and educational initiatives regarding photographic imagery-based strategies are necessary to ensure the relevance and impact of conservation messaging (Kurdi et al., 2022). Engaging diverse audiences requires content that resonates on an emotional level and is disseminated across multiple platforms, incorporating user-generated content and interactive social media efforts (Zhang et al., 2021; Yuan, 2023).

Finally, the use of impactful visuals on billboards should be carefully considered to minimize visual pollution and maximize message effectiveness, aligning with strategic placements and environmental ethics (Chmielewski, 2021; Adam et al., 2022; Wasserbauer, 2023).

Recommendations for Future Studies

Elaborated Design with a Broader Cross-section of Stakeholders

While our study provided valuable insights into the perspectives of individuals deeply committed to environmental conservation, it also highlighted the need for a more targeted examination of the farmer and landowner demographic. A deeper dive into this demographic subset, particularly those primarily engaged in agricultural activities, would offer a complementary perspective.

Quantitative Study on Imagery in Conservation Engagement

Future research on conservation imagery could employ experimental designs to measure the effectiveness of different visual strategies in influencing engagement and behavior. For instance, studies could analyze social media analytics to track engagement rates (likes, shares, comments) on posts featuring various imagery types, such as before-and-after environmental restoration photos versus abstract conservation-themed visuals (Wal, 2023). A/B testing could compare the impact of static images versus video content on message retention and willingness to take conservation actions (Saarikoski, 2016). Surveys and longitudinal studies could assess attitude shifts by measuring participants' perspectives on conservation efforts before and after exposure to specific imagery, using Likert-scale ratings or pre- and post-test comparisons (Pearce et al., 2020). Additionally, eye-tracking technology could be utilized to examine which visual elements (color schemes, composition, presence of people or wildlife) draw the most attention and elicit stronger emotional responses (Väisänen et al., 2021). Combining these quantitative approaches would provide clearer insights into how imagery influences public perception, engagement, and conservation behavior over time.

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