Storytelling in precarious landscapes: Insights from a photovoice project in rural Appalachia

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Abstract

The impacts of the coronavirus pandemic in the small central Appalachian town of Rainelle, West Virginia cannot be understood separately from the broader human-environment relationships of this place. These relationships are grounded in landscapes that hold tremendous natural beauty alongside the scars of coal and timber extraction, and which now face increased risk of flooding because of the changing climate those extractive industries helped create. Too often, stories of this place lack attention to this complexity because they do not account for the perspective and knowledge of the people who live and make their livelihoods there. This paper details findings from a photovoice project in Rainelle that captured life in the small town in Fall 2020, through the lenses of nine town residents. Their photos tell a story not just of the height of the pandemic in rural America, but also of what happened when the pandemic intersected with ongoing efforts to recover from a devastating flood in 2016 and decades of socio-economic hardship before that. The results show that photovoice is an effective method by which political ecologists can facilitate the telling of stories by and with research participants, while also offering insights for how we might envision more just climate futures with people not typically part of conversations about climate change, such as those from the precarious landscapes of rural Appalachia.

Keywords: Photovoice, storytelling, Covid, flooding, Appalachia, West Virginia

Résumé

Les impacts de la pandémie de coronavirus dans la petite ville centrale des Appalaches de Rainelle, en Virginie occidentale, ne peuvent être compris séparément des relations homme-environnement plus larges de ce lieu. Ces relations sont ancrées dans des paysages d'une immense beauté naturelle, aux côtés des cicatrices de l'extraction du charbon et du bois, et qui sont désormais confrontés à un risque accru d'inondations en raison du changement climatique que les industries extractives ont contribué à créer. Trop souvent, les récits sur ce lieu ne prêtent pas attention à cette complexité car ils ne tiennent pas compte du point de vue et des connaissances des personnes qui y vivent et y gagnent leur vie. Cet article détaille les résultats d'un projet photovoice à Rainelle qui a capturé la vie dans la petite ville à l'automne 2020, à travers les lentilles de neuf habitants de la ville. Leurs photos racontent non seulement l'ampleur de la pandémie dans l'Amérique rurale, mais aussi ce qui s'est passé lorsque la pandémie s'est croisée avec les efforts en cours pour se remettre d'une inondation dévastatrice en 2016 et des décennies de difficultés socio-économiques qui l'ont précédée. Les résultats montrent que la photovoix est une méthode efficace par laquelle les écologistes politiques peuvent faciliter le récit d'histoires par et avec les participants à la recherche, tout en offrant également un aperçu de la manière dont nous pourrions

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envisager un avenir climatique plus juste avec des personnes qui ne participent généralement pas aux conversations sur le changement climatique. comme ceux des paysages précaires des Appalaches rurales.

Mots-clés: Photovoice, Storytelling, Covid, Inondations, Appalaches, Virginie occidentale

Resumen

Los impactos de la pandemia de coronavirus en la pequeña ciudad de Rainelle, en el centro de los Apalaches en el estado de Virginia Occidental, no pueden entenderse aparte de las relaciones más amplias entre humanos y medio ambiente en ese lugar. Estas relaciones se basan en paisajes que albergan una tremenda belleza natural junto con las cicatrices de la extracción de carbón y madera, y que ahora enfrentan un mayor riesgo de inundaciones como resultado del cambio climático que esas industrias extractivas ayudaron a crear. Con demasiada frecuencia, las historias de este lugar no prestan atención a esta complejidad porque no toman en cuenta las perspectivas y el conocimiento de las personas que viven y ganan sus vidas allí. Este artículo detalla los hallazgos de un proyecto de fotovoz (*photovoice*) en Rainelle que capturó una idea de la vida en la pequeña ciudad en el otoño de 2020, a través de las lentes de nueve residentes de la ciudad. Sus fotografías cuentan una historia no solo de la crisis de la pandemia en las zonas rurales de Estados Unidos, sino también de lo que sucedió cuando la pandemia se cruzó con los esfuerzos para recuperarse de una devastadora inundación en 2016 encima de décadas de dificultades socioeconómicas. Los resultados muestran que la fotovoz es un método eficaz mediante el cual los ecologistas políticos pueden facilitar la narración de historias por y con los participantes en la investigación. Al mismo tiempo que ofrecen ideas sobre cómo podríamos imaginar futuros climáticos más justos con personas que normalmente no forman parte de las conversaciones sobre el cambio climático, en paisajes precarios como los de los Apalaches rurales.

Palabras clave: Fotovoz, Narración, Covid, Inundaciones, Apalaches, Virginia Occidental

1. Introduction

Like everywhere, when the coronavirus pandemic began in Rainelle, West Virginia (WV), it was not a disaster that occurred in isolation but rather one that intersected with a particular socio-environmental context. In this case, the pandemic arrived in a small rural community struggling with ongoing recovery from a large flood that had occurred in 2016. On June 23 of that year one storm delivered nearly 25% of the state's average annual rainfall in under 24 hours (Caretta *et al.*, 2021). What are normally small creeks rapidly rose high enough to tear homes from their foundations, with accounts of one crashing into a bridge and bursting into flames. The flood killed 23 people, destroyed hundreds of homes and businesses, and caused an estimated $1 billion in damage across several WV counties (Di Liberto, 2016; Shinn & Caretta, 2020). Despite an influx of state, federal, and non-profit assistance after the flood, many of the most devastated small towns, like Rainelle, struggled to make a complete recovery because they were already suffering from decades of decline of the regional coal and timber industries (Lilly, 2021; Shinn & Caretta, 2020). It would be impossible to fully understand how the story of the pandemic played out in this region of central Appalachia without accounting for this broader socio-environmental context.

Soon after the pandemic started, flooding events in WV began to draw media attention, as the state was thrust into the center of a national dialogue on climate change (Flavelle, 2021; Herscher *et al*., 2021). A narrowly held Democratic majority in the US Senate gave WV Senator Joe Manchin, well known as a centrist Democrat, disproportionate power to determine the future of legislation designed to improve infrastructure, promote economic development, and cut carbon emissions (e.g., The Build Back Better Act and Inflation Reduction Act (IRA)). While the IRA eventually passed in 2022, the power of Manchin in shaping this piece of legislation brought new (and largely negative) attention to a state that has suffered from decades of under investment, while also bearing the brunt of the consequences of extractive industries (Gaventa, 1980; Scott, 2010). The media stories often framed WV as the "heart of Trump country" (MacFarquar, 2016), and while this may be an accurate analysis based on votes alone, the political story of WV is much more complicated (Harris & McCarthy, 2020; Harris & McCarthy, 2023). It is one tied to complex human-environment relationships grounded in a landscape that holds tremendous natural beauty, alongside the scars of extractivism, and which now faces increased risk of flooding as a result of the changing climate that those extractive industries helped to create. Too often, stories of this place lack attention to this complexity because they do not account for the perspective and knowledge of the people who live and make their livelihoods there.

This article details findings from a photovoice project in Rainelle that was designed to capture life in this small town during the Covid pandemic, through the voices and lenses of the town's residents. A total of 850 photos were taken by nine participants over the course of five months in Fall 2020. These photos were taken by ministers, city council members, parents, retirees, and small business owners. Coupled with the narratives that emerged from interviews and a focus group, they tell a collective story not just of the height of the pandemic in rural America, but also of what happened when the pandemic intersected with ongoing efforts to rebuild and recover from the 2016 flood, or what one participant called the "double whammy" of disasters.

The article also answers recent calls to deepen attention to storytelling in political ecology, especially in the context of climate change (Harris, 2021, 2022). I argue that photovoice is an underutilized method by which we can effectively facilitate the telling of stories by and with our research participants. Moreover, by telling such stories from "the heart of Trump country," I show the value of including voices that are not typically part of conversations about climate change, especially as we begin to envision more just climate futures for the extractive landscapes of rural Appalachia.

2. Photovoice as a tool for storytelling in political ecology

The need for storytelling

The methodological foundations of political ecology were built in rural regions of the Global South (Blaikie & Brookfield, 1987; Watts, 2013[1983]), with an emphasis on ethnographic modes of inquiry focused on critique (Perreault, *et al.* 2015; Braun, 2015). Over time, political ecologists expanded regionally, both to urban areas (Swyngedouw & Heynen, 2003; Heynen *et al.*, 2006) and the Global North (McCarthy, 2002; Schroeder *et al.*, 2006), but methodological tools have remained largely qualitative in orientation, and the focus on critique remains (Braun, 2015). This remains true even as political ecology has somewhat diversified its approaches through greater integration with fields such as Land Change Science (Turner & Robbins, 2008) remote sensing (Ferring & Hausermann, 2019), GIS (Nyantakyi-Frimpong, 2019), environmental science (Forsyth, 2014), critical physical geography (Lave *et al.*, 2014), and others. Conceptually, while political ecology has long integrated feminist approaches (Rocheleau *et al.*, 1996; Elmhirst, 2015; Sultana, 2021), there is recent and growing attention to intersections with Black, Indigenous, and Queer traditions of thought that have themselves long engaged with storytelling methods about issues of environmental justice (Pulido & De Lara, 2018; Arsenault *et al.*, 2018; Moulton, 2022; Moulton *et al.*, 2021). Houston and Vasudevan (2018, p.244) argue that storytelling related to environmental justice dates back at least as far as Rachel Carson's (1962) *Silent Spring* and that it is "a particular form of political intervention that envisions socio-ecological transformation and produces more hopeful futures by narrating the environment as intimately connected to human wellbeing." Harris (2022, p.13) argues that further drawing on such storytelling approaches would allow political ecologists to ask important questions that move past "what changes are occurring" toward a deeper understanding about "what meanings people might attach to those changes."

While human geographers have long engaged in storytelling in a variety of forms (Cameron, 2012), and political ecologists have some history of engaging in the role of narratives and discourse in environmental governance (Fairhead & Leach, 1995; Kull, 2000), we have largely overlooked direct engagement with storytelling (Harris, 2022). This is a missed opportunity, as storytelling can be particularly useful for understanding environmental changes that are already happening, or in places facing uncertain socio-environmental futures, such as Appalachia (Harris, 2021). Indeed, a growing body of work integrating science and the arts that illustrates how engagement with a changing climate can facilitate new imaginings of climate futures (Kirksey *et al*., 2013; Kirksey, 2014) and Harris (2021) argues that storytelling is a particular art form that political ecologists can use to assist with envisioning these futures. Drawing on existing work in geography and cognate fields, storytelling is understood here as the narratives people use to articulate their embodied place-based knowledges and experiences (Cameron, 2012; Houston & Vasudevan, 2018). As Cameron (2012, p. 547) says, "Stories express something irreducibly particular and personal, and yet they can be received as expressions of broader social and political context, and their telling can move, affect, and produce collectivities."

Storytelling in this sense also presents a critical way to bring new voices into dialogues about climate change by helping to break down the expert-novice dynamic that can exist when using more typical research methods. This is critical to effective work on climate change because as Harris (2021, p.332) argues "...in light of increasing resistance to expert knowledge on topics like climate change, political ecologists should adopt more creative, experimental methods for building new forms of knowledge, especially in regions, and with people, key to issues central to our work." Such approaches to research are particularly relevant in a place like WV, where people can be resistant to conversations about climate change, even while they are vulnerable to its impacts.

It is important to note that this resistance is not rooted in overly simplistic stories of conservative politics, disgruntled miners, or climate denial. Rather it is the product of a complex socio-environmental history of corporate exploitation that has pitted workers against their own environments, in part by aligning cultural identity with jobs in the coal mining industry (Harris & McCarthy, 2023). Recent scholarship has highlighted how this particular history is now manifesting in contentiousness around plans for sustainable energy transitions in Appalachia due to "the disruption that the transition entails to lives, livelihoods, and lifestyles" (Hess *et al*., 2021, p. 11). Scholars have highlighted the important role civil society actors (Hess *et al*., 2021) and labor unions (Abraham, 2017) will need to play if support is to be developed among Appalachians for such transitions, as well as the risk that even if these transitions are successful, they will continue to exploit workers in the region (Harris & McCarthy, 2023).

This raises important questions about how to engage Appalachian communities in dialogues about climate change and its potential solutions. Such conversations would need to expand beyond typical renderings of this region as a "sacrifice zone" and honor complex socio-environmental histories that have long shaped lived experiences and cultural identities tied to particular livelihoods. For example, Rice *et al*., (2015, p.254) draw from research in southern Appalachia to show the importance of including "people's everyday experiences of climate change and diverse ways of knowing climate..." They argue for increased attention to place-based meanings and culturally specific understandings of climate change that are grounded in people's lived experiences in places that are both social and natural and imbued with cultural and historical meaning (Rice *et al*., 2015). This includes attention to stories passed down through generations, experiences with changing weather patterns, and memories of extreme weather events like floods.

By making room for these types of knowledge and experiences in our research, we can simultaneously expand what counts as climate knowledge and include more people in productive conversations about climate solutions, even when they are skeptical of traditional climate science or politically charged conversations about possible solutions, such as energy transitions. As seen from the findings in this paper, the method of photovoice presents one promising methodological tool for political ecologists to effectively facilitate research participants telling their own stories and contributing knowledge about changing environments. Indeed, Harris (2022, p.10) argues that methods like photovoice show how attention to story is a particularly effective way to bring traditionally marginalized communities into research, by inverting ideas of expertise and allowing communities to "take on key roles in knowledge generation and as authors of their own story."

Photovoice as a tool for storytelling

Photovoice is a participant action research methodology that empowers participants to share their lived experience as well as visions of the future by capturing images of their own choosing. It has been shown to be a more powerful tool for digging deeper into stories than possible through interviews alone (Adams & Nyantakyi-Frompong, 2021). The method was originally defined as "a process by which people can identify, represent, and enhance their community through a specific photographic technique" (Wang & Burris, 1997, p.369). Developed by Wang and Burris in the 1990s, photovoice was designed as a participatory research method that drew on documentary photography, feminist theory, and critical consciousness theory to add a more participatory component to existing methods of photo elicitation (Powers & Freedman, 2012; Kong *et al.*, 2015), often with the explicit goal of catalyzing change within participating communities (Wang *et al.*, 1998). At its core, it has three main goals: to enable people to record their own perspectives and knowledge, to promote dialogue, and to reach policymakers (Wang & Burris, 1997). Thus, the method is not just about taking photos, but a critical component is the promotion of dialogue among participants, often in focus group type settings which allow them to share and reflect on the photos, resulting in raising collective consciousness about an issue and allowing a larger story to emerge (Bell, 2008; Powers & Freedman, 2012).

The goal of photovoice is often to empower community members with a visual tool to collectively voice their concerns to a broader audience, including policy makers, to influence change (Bell, 2008; Powers & Freedman, 2012; Davis *et al.*, 2020). Participants in photovoice are not those typically in positions of power but rather tend to be from traditionally marginalized communities (Bell, 2008; Powers & Freedman, 2012; Latz & Mulvihill, 2017; Harris, 2018). Using photovoice centers them as experts and co-researchers (Davis *et al.*, 2020), rather than research subjects, and gives them the power to decide which photos to take to communicate their knowledge, perspectives, and experiences (Wang & Burris, 1997; Beh *et al.*, 2013; Kong *et al.*, 2015; Latz & Mulvihill, 2017; Masterson *et al.*, 2018).

While traditionally used as a method in public health, photovoice is increasingly valued in environment-related research. In the first known literature review on photovoice research used in such studies, Powers and Freedman (2012) found that the method was an underutilized and valuable tool for research that promotes social justice in relation to environmental concerns. While geographers have long used visual materials in research on socio-environmental topics, Margulies (2019) notes that they have relied on them more to create representational objects rather than as an active process through which to collect rich data. These authors argue that using photovoice in the study of more-than-human geographies can be a collaborative research approach that "can be used to capture that which evades textual description." Adams and Nyantakyi-Frompong (2021) found increasing interest among geographers in using photovoice in studies related to health and vulnerability to climate change (e.g., Berrang-Ford *et al.*, 2012; Labbe *et al.*, 2017; Garcia *et al.*, 2019). Of particular importance for this article, they conducted a photovoice-based political ecology project on the intersections of flooding and social vulnerabilities in Ghana, in which they used the method to show how adverse physical and mental health impacts of flooding intersected with vulnerabilities related to gender, age, housing, class, and income (Adams & Nyantakyi-Frompong, 2021).

Also of particular relevance to this paper is the work of Bell (2008, 2013, 2015), who conducted a photovoice study from 2003-2004 with a group of women in the coal-mining town of Cabin Creek, WV. Bell (2008, p. 38) found that the use of photovoice facilitated an evolution in participants' understanding of community needs from an "individualistic view of problems to an awareness of the structural roots of many issues" and that this provided participants with the experience of feeling listened to and respected, often for the first time. Bell found that photovoice was also an effective community organizing tool, as it prompted participants to become more civically engaged, including through communication with elected officials (Bell 2008). This was particularly important in Central Appalachia, a region where many residents have learned to remain "silent about the great injustices they face" (Bell, 2008, p. 47). As such, photovoice provides an underutilized opportunity for researchers to facilitate storytelling that centers the narrative of those who are living in changing climates, in Appalachia and beyond.

3. Case study and methods

Rainelle, West Virginia

Rainelle, the case study for this project, is located on the Western edge of Greenbrier County, in southeastern WV. The county is home to 35,155 residents, with a population of 1,250 in Rainelle (Data USA, 2019). As of 2019, the median household income in the town was $28,125, with 36.1% of the town's residents living below the poverty line (*ibid.*), in part due to decades of decline of the timber and coal industries (Shinn, 2020). In this way, Rainelle is a microcosm of communities throughout Appalachia with long histories of resource extraction and the precarious landscapes it creates. As evidence of this, a 2021 federal report analyzing pathways to revitalizing "energy communities" identified 60 priority regions across the US in need of federal investment and ranked the region where Rainelle is located first on this list (IGWG, 2021). At the same time, Rainelle has also been deemed a "bellwether" for communities with high flood risk across the US (Hersher *et al.*, 2021).

Like many communities in WV, Rainelle was established during the boom of extractive industries and is situated along a narrow river valley at the base of steep mountainsides (FEMA, 2016; Caretta *et al.*, 2021), and storms over this region tend to be of high intensity and short duration (Bonnin *et al.*, 2006; Caretta *et al.*, 2021). As a result, the town is especially vulnerable to riverine flood impacts, as seen during the 2016 flood. However, previous research on the social impacts of the 2016 flood in Rainelle revealed a more complex story than the one commonly told about Appalachia, one of vulnerability co-existing with resilience rooted in a strong sense of place and community (Shinn, 2020). This project returned to Rainelle to examine how these dynamics of vulnerability and resilience operated in the context of a very different type of disaster, the Covid pandemic.

Photovoice as pandemic methodology

This project was designed to allow participants to document their lived experiences during the Covid pandemic in rural WV using the method of photovoice. Participants were recruited using snowball sampling based on relationships built during previous research in Rainelle. An effort was made to recruit a cross-section of residents, including attention to gender, age, and socioeconomic status. Of note, Rainelle is 97% white and so recruitment did not focus on race or ethnicity. Potential participants were contacted by phone to discuss the project, with a total of 22 people expressing interest in participating and 18 ultimately deciding to do so. Of these, half withdrew from the project before taking photos, mostly as a result of realizing they did not have the time to do so once the project was underway. Of the nine remaining highly engaged participants, all were white, 2 were women, 7 were men, they ranged in age from their early forties to late eighties, and represented a cross-section of professions, including local business owners, city council members, stay-at-home parents, and retirees.

The pandemic resulted in necessary tweaks to the method to ensure everyone's safety. While these tweaks often felt like challenges, they also offered a unique opportunity to collect rich qualitative data in a time when face-to-face research was not possible. As we all emerged from the height of the Covid pandemic and began to consider the impacts it had on our research, there remains an opportunity for reflection on lessons learned that might improve our methodological practices moving forward, including how we consider the safety of ourselves and those who participate in our projects. This is especially true for sites of disruption or conflict. As such, the pandemic methods used in this project are detailed here to offer insights for how photovoice can be adapted to be at once empowering and conducted at a safe distance, when necessary.

Most notably, much of what would typically have been done in person was done by mail and over the phone and the originally intended timeline for focus groups and photo exhibits was substantially delayed. In July 2020, after agreeing to participate by phone, participants were sent a packet that contained: an introductory letter to the project with detailed instructions; an IRB-approved research consent form (two copies); an IRB-approved photography ethics form (two copies); return envelopes for IRB forms; a list of photography tips; one small digital camera with case, power cord, and instruction manual; return packaging for cameras; and, small notebook and pens for recording thoughts. Once IRB documents were signed and mailed back, participants began taking photos. The prompt for photos was left purposefully broad, asking them to capture "sources of hope and sources of hardship related to the pandemic," but it was stressed they could take photographs of anything they chose, as long as they adhered to the photography ethics form they had signed (e.g. not taking identifiable photos of people without explicit permission). It was stressed that these did not need to be perfectly composed, but rather the goal was to get a snapshot of their experience during Covid.

Participants were given the general goal of taking at least 10 photos a week over 10 weeks. In the end, they took between 29 and 236 photos each, for a total of 850 photos. Several participants asked to keep the cameras for longer than 10 weeks, which they were encouraged to do, with all cameras returned by the end of December 2020. While participants were encouraged to record thoughts about photos in the notebook provided, no one shared these. During the project, each person participated in a series of two to four check-ins with a member of the research team, as well as one final semi-structured interview over the phone or Zoom once the cameras were returned. During check-in calls, participants were asked how the project was going in general, to discuss any photos of note, and the research team provided updates on our project timeline, which was continuously delayed as the pandemic stretched on longer than originally anticipated. Semi-structured interviews asked participants to reflect on their overall experience with the project, whether documenting the impacts of Covid changed their understanding of or feelings about the pandemic or Rainelle in any way, photos that stood out or surprised them, and any themes that emerged as they were taking photos.

A focus group was held in Rainelle in June 2021, when it was deemed safe to do so in an outdoor setting. The focus group began at 10 AM and lasted for four hours, including lunch. A total of seven of the nine participants were able to attend. All 850 photos were printed and brought to Rainelle to facilitate conversation and collective reflection on major themes that emerged from the project. After a brief welcome and introductions, each person was given hard copies of their photos and they were asked to spend some time going through them and to identify 3-5 to discuss with the group. Most of the morning was spent discussing these photos, as participants shared stories, found common themes between their photos, and also points of difference in their experiences and perceptions. We kept track of notes on large sheets of paper and by the end of the morning had begun to identify several themes, which are discussed in the findings below. Finally, everyone chose photos of their own to include in the exhibits.

During lunch, which was provided for participants and catered from a local restaurant, several participants played music for the group on the instruments they had brought with them for the event, including one participant performing songs he wrote about the flood and the pandemic. Phone conversations were held with the two participants who were not able to attend after the focus group concluded to provide a summary and get additional feedback. Recordings of the focus group and all interviews were transcribed and then uploaded into Atlas.ti for analysis. A grounded coding approach that built on themes identified by project participants was used to identify several themes related to the topics of Covid, flooding, Rainelle, and the photovoice method; each of which had several sub-themes.

Using the input from focus group participants, a selection of 30 photographs representing those themes was selected to be shown in two exhibits, one at the public library in Rainelle in May 2022 and one held on the West Virginia University campus from September to November 2022, the latter of which also has a virtual component.[2] One of the intended outcomes of photovoice is for the project to impact others, usually during photo exhibits (Latz, 2017). Both physical exhibits had opening events with music and storytelling by participants. Thee WVU and the online exhibit included anonymous narrative quotes from participants that correspond to the photos. Finally, each participant received a professionally framed copy of a photo of their choosing as a token of appreciation for their participation in the project. All physical photos were returned to Rainelle in November 2022, where they were given to a local nonprofit to share and display as they choose.

4. Findings: The "double whammy" of disasters

The results from this photovoice project tell the story of life during Covid in Rainelle, in ways that are similar and unique to the broader national context of the pandemic. What is perhaps most unique about life in this small town during Covid is how the pandemic intersected with the ongoing impacts of the 2016 flood, as made clear in photos, interviews, and the focus group. Findings below are organized around the themes that emerged from the focus group and through a grounded coding approach, including several narrative quotes and related photos to allow the story to be told, to the extent possible, through the voices and lenses of the participants themselves.

Small town life during a global pandemic

One of the most common themes to emerge from the research was how the impacts of Covid looked and felt differently in the context of a small town, in both positive and negative ways. During the June 2021 focus group one person explained:

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[2] The virtual exhibit can be viewed at: https://a-double-whammy3.webnode.page

> When I go to Kroger [grocery store], I know every face I see. I know every single person I see. I've known them and have known them my entire life. So, if somebody dies in this town, all of us know them. We know their family. We know their mama. You know what I mean? It means something. All of us grieve. … if you hear your neighbor died of Covid… it's more impactful in a town where there's just not that many of us.

TOWN OF RAINELLE
WEST VIRGINIA
"A Town Built To Carry On"
- John Raine

Photo 1: A Town Built to Carry On.

Someone else responded, "We're all so closely related." This deep sense of community connection had real impacts for people during the pandemic. Some participants spoke of getting sick with Covid and being cared for by others (Photo 1). As one man described:

> While I had the Covid, I was alone. The first evening or two, there was a knock on the door, and I opened the door and here was the owner of [nearby restaurant] and he had a big bag of food…. every evening he would come and bring me food… man, I appreciated that.

However, other participants discussed how living in a place where you knew everyone made the pandemic more difficult in some ways. One woman, who told us her disabled child "would not survive Covid" said:

> I don't know about y'all, but I was angry during Covid… I'm going to Kroger just trying to get the stuff that we need to live for a few weeks and there's people in there just doing whatever they please and… spreading it around and the cases are going up, up, up… Meanwhile, I'm having to set up a DNR for my child, because my fear was that she would catch it and be in the hospital without me.

CHURCH SERVICES CANCELLED
UNTIL FURTHER
NOTICE

Photo 2: Canceled until Further Notice.

Other participants agreed that it was difficult to see neighbors they had known their entire lives ignoring or dismissing the dangers of the pandemic. Whether it was a positive or negative experience, these things felt personal to people as a result of living in a small community.

Pandemic politics and isolation in a small town

In interviews and focus groups, participants described the mental and emotional tolls of the pandemic in ways that resonate with universal experience of it: the impact of school closures and working from home, the inability to hold funerals for loved ones, a loss of hope, and the fear and depression resulting from isolation. This was especially true for participants who had active communities in which they could no longer participate, like church (Photo 2). One participant showed the group an image of empty church pews, and another discussed a photo of a sign of a church closure, telling us:

> God's a very important part of my life… It's hard not being with your brothers and sisters in church fellowshipping together. I know you can watch TV and see preaching and stuff on there, but you can't ask that TV a question.

Another said, "For a lot of people, church is their community and to have that ripped away from you like that, it creates such a feeling of isolation." To which someone added, "Right, that isolation thing is important too because we're isolated here in Rainelle, pretty isolated from the outside world." In this way, these universal experiences played out in very localized ways.

VOTE
Rainelle Supports
TRUMP
PENCE
2020
KEEP AMERICA GREAT
TRUMP PENCE
GRAND OPENING

Photo 3: Political Rally.

Some of these negative experiences were the result of the pandemic becoming politicized, as it was throughout the country. As one man explained, there were two things he would not discuss with friends, "Covid or politics." Multiple participants took photos of a Republican political rally that took place before the 2020 presidential election in downtown Rainelle (Photo 3). One person explained how they were particularly fascinated by the truck selling merchandise saying, "We thought it was super interesting that we were under the lockdown, and everyone was getting sick and they're down here selling political merchandise…it was really surreal."

Multiple participants were business owners who had to enforce mask wearing in their places of work, putting them in an uncomfortable position. As one explained:

> I have a sign up of course on my business that says, "please wear your mask before entering", you know, but you can't force them to. We don't say anything if they're not, but I keep mine on. I'm the only one here that wears one.

One participant explained how the signage was not effective, saying, "People still refuse to wear masks. They still go to places when they shouldn't. They still had to be told to wear a mask." Another described how someone confronted her about wearing a mask at Kroger. She said, "I thought, how dare this guy, I'm trying to protect my kid and it's a joke to him, like, he wants to talk about politics, and you know what I mean?" Another participant described that in Rainelle:

> The majority of people in the beginning of [the pandemic] ... were in total denial. They simply did not believe that it was a thing. They believed it was related to politics… There was a sense of rage, that everything was canceled.

For some, the consequences of this denial further increased the sense of fear of the pandemic. One person explained that because her husband worked with people who thought Covid was "a hoax," they were constantly on alert that he might bring the virus into their home, where they had a high-risk family member. While no place was immune from the politics of the pandemic, these dynamics were particularly difficult to navigate because of the close-knit community dynamics described above. This is particularly evident from the story of the first person known to have died of Covid in Rainelle. She was a long-time employee of the city and close to many people in town.[3] While this loss was difficult for many, it was also complicated by her own denial of the pandemic. A participant who was particularly close to her explained:

> I saw her on the Saturday before she got sick in Walmart… and she had her mask on down below her nose. We joked about it and I said "You better keep it over your nose..." She said, "I hate these masks." She kept telling me that on the election, this would all go away. Well, she got it on election day. And she spent a month on a ventilator, and you know, she just couldn't make it… She was special. I don't think there's any way to replace her to tell you the truth.

Economic hardship in Rainelle

One thing that was agreed on by all participants throughout interviews, the focus group, and as captured in their photos is that Rainelle was in a state of economic decline long before the Covid pandemic (Photo 5). It was common for people to tie this to the overall decline of extractive industry jobs in the last few decades, and to (not unrelated) increases in addiction and drug use. As one participant said in an interview when discussing a photo of a beautiful vista looking down on town, "Rainelle looks better from a distance" (Photo 4).

In the focus group, residents reminisced about growing up in a town with a bustling main street with busy stores that have now been boarded up for years, and in some cases, decades. As one person explained:

> Coal mining is a thing of the past here, when I was growing up, my dad could walk to work to the mines. But there aren't any mines around here now. The only place there is for people to work is Kroger, Dollar General, convenience stores, you know, McDonald's and stuff like that.

While no one disagreed with this sentiment, not everyone agreed on the economic toll of the pandemic in Rainelle. Some participants described how they felt Covid did not greatly impact Rainelle economically, in part because they were already not doing well. One participant said:

> You can't hardly tell that the virus is down here because we didn't have nothing to start with. We didn't have an economy here to start with, except the extractive resources, you know, the timber and the coal.

Another explained, "most everybody in Rainelle were either… on retirement or they get a welfare check or…work jobs that were considered vital." Another explained that people who did get laid off were able to "draw that extra $600 a payday, $600 a week. So that was $2,400 extra dollars a month." In this person's opinion, "everybody had a lot of money, especially during the first part of the pandemic."

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[3] This person had initially agreed to participate in the project before deciding she was too busy to do so.

Photo 4: The view from above.

VETERAN'S MEMORIAL PARK
COMING SOON
"Run for the Wall"
RENT LEASE
304-667-9384

Photo 5: For Lease.

However, not everyone had the same experiences with federal and state assistance. While some were dubious about the necessity of every person receiving relief money, a parent explained how grocery bills went up with their kids home from school and even while they had never qualified for food stamps below, the EBT cards sent out to parents to cover lunch "made a big difference to my family because of the all the money that we're spending on groceries."

In some cases, employees of local businesses explained how government assistance supported the local economy in positive ways. One person said of the local shop where they have worked for several years, "We had our biggest month ever in March [2020]. I mean it was unbelievable." Another participant who owns a local store confirmed, "I had a good year," and later he told our focus group that 2021 was on track to be the best year in the nearly 100-year history of the business. When asked why sales went up, he attributed it to people being home more and wanting to finally tackle long-standing house projects, as well as having stimulus checks that allowed people to buy things they may not have otherwise purchased. Some participants thought that the pandemic also drove local business sales because the pandemic made people less likely to drive to the surrounding larger towns to shop.

However, not everyone benefited in this way. One participant who volunteers regularly with the local food pantry (Photo 6) described how people were "coming in droves." He said, "People, they need help down here. They do." Another explained how in a town of many essential workers, people suffered significant hardships. She said:

> It was also terrifying for these people. I know a lot of people that work in the service industry… the grocery store, McDonald's… they had to go to work anyway. They had people in their families that were at risk… it was terrifying for them, they were thinking, "oh my god, I'm gonna bring Covid [home] because 10,000 people have went through my line today and I got to be here.

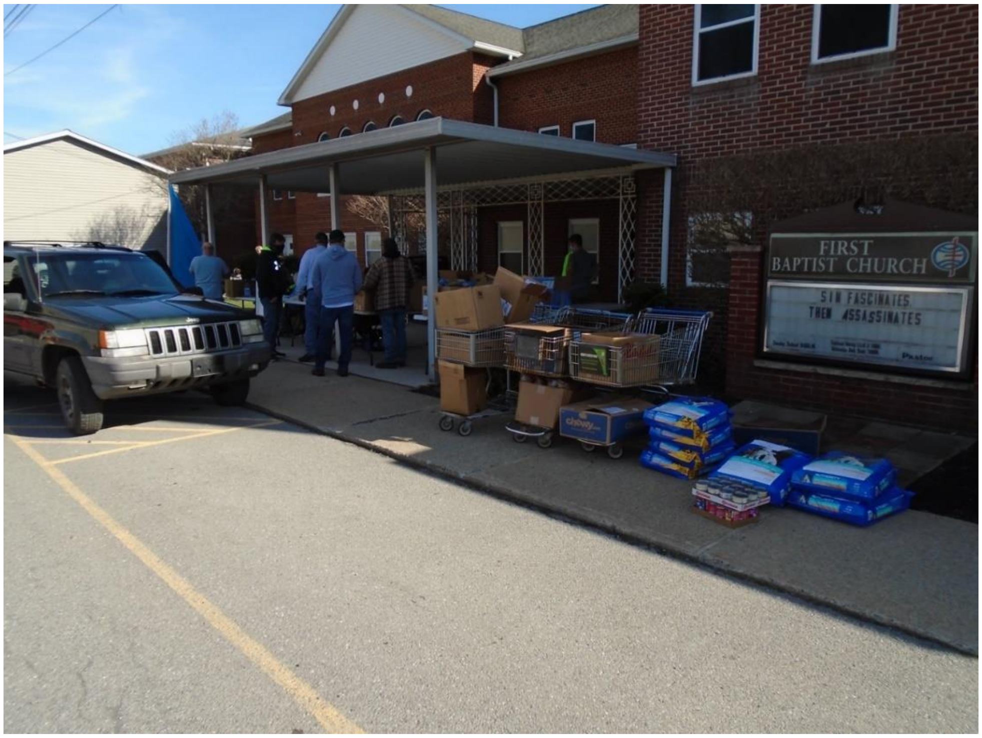

Photo 6: Food Distribution.

Someone else was laid off as a result of the pandemic and took photos of the empty buildings and parking lots of her former workplace, where she hoped to return after the pandemic ended. Another explained to the focus group how they knew "a couple people in town had a member of their family that had… been hospitalized for Covid for weeks and lost their jobs." She added, "They can't go back to work because they're still sick. They can't buy groceries. They can't pay their rent." This seemed to surprise some members of the group that had felt the economic impacts of the pandemic were largely positive or at least neutral. These conversations really elevated the unequal impacts of the pandemic, even in the context of one very small town.

Flood memories and recovery

The most striking theme to emerge from the project was the emphasis that so many participants placed not on the direct impacts of the pandemic itself, but on how they intersected with ongoing recovery from the 2016 flood. Through interviews, focus group conversations, and hundreds of photographs (Photo 7), participants were eager to tell the story of the flood and the way it continues to impact individuals and the community. For some participants, the flood impacts were far worse than those of the pandemic. As one local business owner said, "In my opinion the virus really didn't hurt … the economy of the town any worse. But the actual flood itself devastated the town."

FOURTH ST
CENTER ST

Photo 7: Crossroads.

The memory of the floods is still very strong for residents of Rainelle. It was very common for interview discussions to turn to the flood, even in response to questions about the pandemic. During the focus group, participants took time to reflect and share their experiences and memories of the flood with one another, with one describing it like a scene from a "horror film" as others nodded in agreement. They shared harrowing stories of assisting with rescue operations by driving boats down the streets of Rainelle to rescue people from their homes, of being trapped in attics, of nearly losing their businesses, and of the difficult emotional and physical work of recovery. As one person summarized, the floods "... took people's homes, family, loved ones, our friends...a lot of people died, and we about lost our town in that flood. Someone added, "we're nowhere near recovered."

One person described some of his photos to the focus group, saying "Most of those houses that I took pictures of, had five to seven feet of water in them. A lot of people just moved off and abandoned their houses" The issue of vacant buildings left behind after the flood was a common topic for several participants. Another participant said, "Well, the town is still suffering a lot from the 2016 flood. Most all those houses that I took pictures of are vacant houses." Several people discussed the emotional toll of seeing homes that still have an "X" spray painted on the door, indicating they had been part of search and rescue efforts, over five years after the flood (Photo 8).

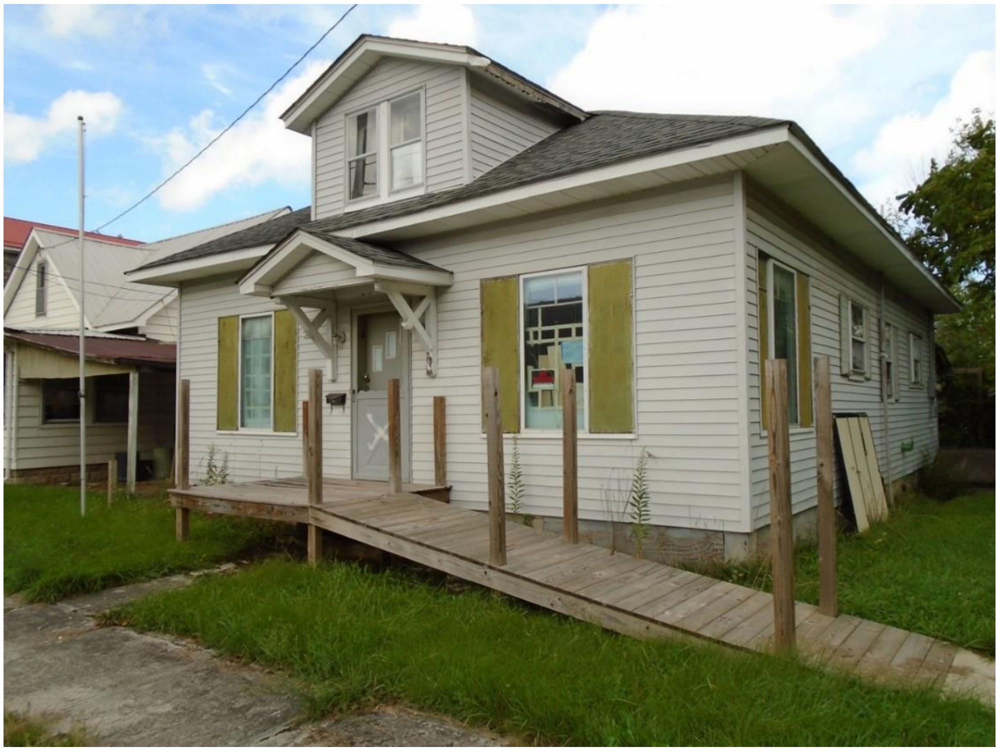

Photo 8: Still Standing.

One person described how, "I took a picture of a door or two that had writing on it. That was where they went through and marked the doors on houses, the fire department had to go through and kick the doors open." People also described how the vacant buildings left behind by the floods had contributed to a growing drug problem in town. During the focus group one participant said:

> After the flood we have all these vacant buildings…. and we can have a lot of people squatting in vacant buildings, living in houses with no utilities and stuff like in your neighborhood. They don't have any trash service or water or power. They're just running a generator 24 hours a day. And it sounds like airplanes landing in the road constantly and there's trash piling up everywhere. And that's been a huge problem since the flood.

People also consistently described their fear that another flood would destroy the town (Photo 9). One person explained how:

> Anytime they talk about the possibility of flooding, flash flooding, or a bad storm system or anything like that, everybody that owns business in that town or that lives in that town, absolutely, their nerves go on end. I can't eat, I can't sleep, whenever they start talking you know that there's a bad storm system coming and everybody that I know of is in the same shape.

Another said, "Every time that sound, the emergency broadcast sound comes on our phones and the TV or something, it bothers me, and it really bothers my kids." And as another said:

> I know for a fact that the town was literally devastated with the flood to the point, say we have another one, heaven forbid, that would do the town in. They would have to bulldoze the whole everything and turn it into a big pasture or something. Nobody would be able to – none of the businesses I don't think would go back.

Photo 9: Standing Water.

It was in this context of ongoing emotional anxiety and recovery efforts that the Covid pandemic hit Rainelle.

The "double whammy" of disasters

Given how present the 2016 flood remains for people more than five years later, it is not surprising that people discussed how the ongoing impacts were compounded by the Covid pandemic. Participants described both emotional and economic ways in which the two disasters intersected. Some described the compounding anxieties of the two disasters. One described the "special kind of PTSD" that affects people after a disaster and went on to explain how, "everybody in this town is still experiencing post disaster PTSD and along comes the pandemic." During our focus group, one person said:

> I was thinking what if it floods during Covid? What would we do because there won't be any water and we wouldn't be able to clean stuff and we'd have to go out and get stuff from where they're giving away water. You know what I'm saying? I thought about that the whole time, I don't know if anyone else did?

Clearly others had. One person said, "The springtime came last year… and every time it rained, I was thinking, oh God, that would be like the worst thing that could ever happen if it would flood again while the pandemic's going on." Of note, the entirety of the research project took place before vaccines were widely available.

Several people also discussed the compounding economic impacts of the two events. As one participant explained, "The whole story about… dealing with Covid is we've been hit almost back-to-back. Yeah. It's a tough thing. It's a wonder there's any business left in town." Another person explained how the flood had caused some businesses in town to permanently shut down and then the pandemic caused even more to do so. He said:

> Here's the problem, we have a Kroger grocery store and a hardware store and all that. We lost almost every restaurant in town… From the flood, of course, and then since the flood, the Covid.

Perhaps the clearest illustration of the intersections between Covid and flood recovery for Rainelle came from a photo that seems at first glance to be a simple image of a sidewalk being repaired (Photo 10). When I asked the person who took the photo to tell me about it, he explained how the town had received a grant to repair the sidewalks in town, which had been in poor condition before the flood and then were underwater during the flood. However, the town was only able to complete half of the project by the time they received the grant because the cost of supplies and labor had risen dramatically during the pandemic. As a result, only half the sidewalk could be repaired, leaving another physical reminder of ongoing flood recovery in Rainelle. One person perfectly summarized these intersections during our focus group when she said, "Everyone is still devastated by the flood and Covid just landed on top of it. Double whammy. We're like intermingling these two catastrophes in our lives and minds."

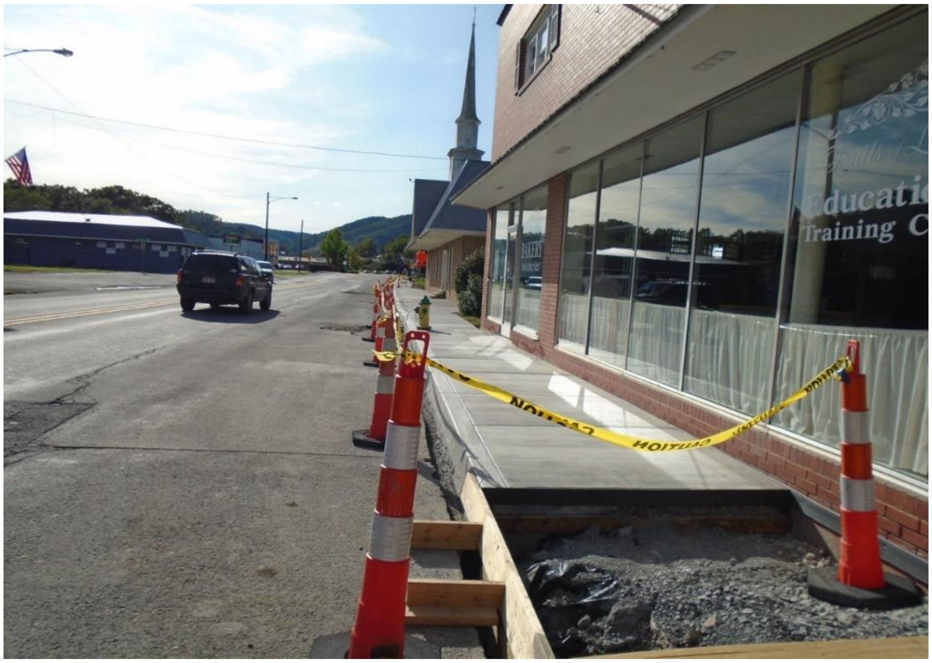

Photo 10: Where the Sidewalk Ends.

5. Discussion: Insights for just climate futures from a "town built to carry on"

Some of Rainelle's experiences with Covid are universal, including its economic challenges, fears of sickness, and the loss of loved ones. However, the pandemic also played out in particular ways in the town, both positive and negative. What is most unique about the story of Rainelle is how the community's experience with Covid was intimately tied to the 2016 flood and its ongoing impacts. The importance of the intersection of these events was something that all participants agreed upon, through their photos, and in focus group discussions and one-on-one interviews. In this way, the stories from the project make clear that the pandemic in Rainelle is not a story that began in 2020 but is rather connected to past disasters – the 2016 flood, but also the toll taken by a long history of resource extraction.

Over two decades ago, O'Brien and Leichenko (2000) first introduced their "double exposure" framework for considering the joint impacts of climate change and globalization for particular regions, sectors, social groups, or ecological areas. The framework illustrates how pathways of double exposure "often lead to growing inequalities, increasing vulnerabilities, and accelerating rates of change," as well as possibilities and opportunities for responses to those changes (Leichenko & O'Brien 2008, p. 5). The story of the double whammy in Rainelle illustrates the outcomes of double exposure in one highly localized context in central Appalachia where processes of environmental change (e.g., increased flooding risk) coupled with impacts of globalization (e.g., loss of regional extractive industry jobs resulting from changes in global energy markets) have combined to make this community particularly vulnerable, including to the Covid pandemic.

At the same time, the story of Rainelle offers insights into possibilities for building more just climate futures across the precarious landscapes of Appalachia. During focus group conversations, all participants expressed a deep desire to revitalize Rainelle, whose motto is "a town built to carry on." They described the strong sense of community that exists in the town, with many stories of the networks of support used to assist one another during disasters, including the pandemic and the 2016 flood. And yet at the same time, not all community members experienced the impacts of these disasters in the same way, nor do they necessarily have the same desires for the future of this place. It would be easy to assume that residents of Rainelle long for the return of the booming days of a coal- and timber-based economy, but previous research in the region tell a more complex story of people's relationships with extractive industries (Harris & McCarthy, 2023; Shinn, 2020). Nor is it a simple story of political polarization that pits conservatives against climate change. Even in the "heart of Trump country," participants indicated a range of political views, telling jokes during the focus group about Democrats saving Republicans from the 2016 flood.

With federal initiatives increasingly targeting issues of environmental justice[4] and as momentum increases for a sustainable energy transition in central Appalachia (Department of Energy, 2023), there are real opportunities to build more just climate futures in this region. These efforts will only be effective in Rainelle and places like it if they are done with communities, in ways that honor their lived experiences. This includes attending to economic and environmental vulnerabilities, while also recognizing the sources of strength that already exist. Moreover, communities will not only need to be part of the conversation, but diverse perspectives from within the communities will need to be represented. How and if new initiatives can successfully do this, in Rainelle and across Appalachia, remains to be seen.

As political ecologists, we are uniquely qualified to bring diverse experiences – ones that are grounded in complex histories and rich with cultural meanings – into conversations about climate change. In doing so, we can help expand not only who is included in such conversations, but whose visions get to help shape 'just' climate futures. Photovoice provides one such method by which we can help engage in the telling of such stories. To that end, I conclude by offering three insights that photovoice has for political ecologists interested in storytelling.

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[4] For example, the Justice40 initiative mandates that 40 percent of some federal investments now flow to disadvantaged communities. Like much of WV, Rainelle is in a census tract classified as "disadvantaged" under this program as a combined result of flood risk, income levels, health issues, abandoned mine land, education levels, and transportation barriers (Climate and Economic Justice Screening Tool, 2022).

6. Conclusion: Methodological insights for political ecology

This photovoice project offers three distinct but connected methodological insights for political ecology. First, it makes clear how the use of photography can facilitate deeper engagement with our participants by gaining insight into their views, quite literally. If, as political ecologists, we are asking our participants to tell us about the landscapes they live in – how they have changed and what those changes mean to them – there is richness in asking them to visually document this. I, like so many political ecologists, have spent months at a time in the field employing ethnographic methods to gain deep understanding of changing places, but this is ultimately always filtered through my own lens. By asking participants not just to describe for us what we are seeing, but to *show us what they see*, there is a subtle but powerful shift in the vantage point of the research. Because this project began with photographs, my follow-up conversations with participants started from their viewpoint and was ultimately more grounded in their lived experiences than it would have been otherwise. For example, when I first downloaded the photos from a participant camera and saw photo 10 above, I admittedly wondered why the person was compelled to take a photo of a sidewalk construction project. When they later explained in an interview how it represented the intersection of flood recovery and Covid, it became a visual representation in my own mind of the story told by this project, of the "double whammy" of disasters, as well as a symbol of revitalization and hope for the future of Rainelle. I am not suggesting that there is not still a role for our traditional field methods, but I believe the addition of photovoice can help us more effectively understand and elevate the stories of communities living in changing landscapes.

A second insight from this project is the power of bringing participants together around their photos for collective reflection. Through our focus group, in which participants shared with and sometimes questioned one another, a more complete story of the pandemic in Rainelle emerged. This included how the pandemic had differential impacts even within this one small community, differences that were not even obvious to the participants until they shared their photos and stories with each other. The most powerful aspect of the focus group happened when the conversation turned to flood stories, becoming almost reverent as it did. Everyone in Rainelle knows the story of the flood but telling their version of the story to each other was a form of community making, even five years after the 2016 event. Through telling the story to each other and collectively choosing photos to showcase in the exhibit, the participants crafted the story that would be told to the public through our project– the story of the double whammy.

Finally, this project validates recent calls for political ecologists to incorporate more storytelling in their work to help envision new climate futures. Harris (2021, p. 332) tells us "It is important for political ecologists to bring their strengths – an attention to power differentials in nature-society relations, critique, and historical analysis – to bear on issues that are already happening or have not yet happened." And Harris (2022, p.18) asks "Applied to nature-society studies, we can think through possibilities for the ways that story might fundamentally challenge what research is, or could be, with possibilities to reorient work towards healing, or fashioning alternative futures." Photovoice is one particularly effective method for bringing people together to reflect and collectively understand experiences with their environments, including their hopes and fears for the future, as well as for researchers to tell stories not about but *with* people living in changing landscapes. By facilitating storytelling with nine residents of Rainelle, WV, this photovoice project was able to document the waves of disaster that have hit this small rural community, and the vulnerability it faces due to its double exposure to economic decline and increasing climatic variability. It also centered on stories of people not traditionally included in conversations about climate change – precisely the types of stories we will need to continue to help tell if we hope to build inclusive and just climate futures, in and far beyond rural Appalachia.

References

Abraham, J. (2017). Just transitions for the miners: Labor environmentalism in the Ruhr and Appalachian coalfields. *New Political Science, 39*(2), 218-240. https://doi.org/10.1080/07393148.2017.1301313

Adams, E. ., & Nyantakyi-Frimpong, H. (2021). Stressed, anxious, and sick from the floods: A photovoice study of climate extremes, differentiated vulnerabilities, and health in Old Fadama, Accra, Ghana. *Health & Place, 67*, 102500. https://doi.org/10.1016/j.healthplace.2020.102500

Arsenault, R., Diver, S., McGregor, D., Witham, A., & Bourassa, C. (2018). Shifting the framework of Canadian water governance through Indigenous research methods: Acknowledging the past with an eye on the future. *Water, 10*(1): 49. https://doi.org/10.3390/w10010049

Beh, A., Bruyere, B. L., & Lolosoli, S. (2013). Legitimizing local perspectives in conservation through community-based research: A photovoice study in Samburu, Kenya. *Society & Natural Resources*, *26*(12), 1390-1406. https://doi.org/10.1080/08941920.2013.805858

Bell, S. E. (2008). Photovoice as a strategy for community organizing in the central Appalachian coalfields. *Journal of Appalachian Studies*, 34-48.

Bell, S. E. (2013). *Our roots run deep as ironweed: Appalachian women and the fight for environmental justice*. University of Illinois Press.

Bell, S. E. (2015). Bridging activism and the academy: Exposing environmental injustices through the feminist ethnographic method of photovoice. *Human Ecology Review*, *21*(1), 27-58.

Berrang-Ford, L., Dingle, K., Ford, J. D., Lee, C., Lwasa, S., Namanya, D. B., ... & Edge, V. (2012). Vulnerability of indigenous health to climate change: A case study of Uganda's Batwa Pygmies. *Social Science & Medicine*, *75*(6), 1067-1077. https://doi.org/10.1016/j.socscimed.2012.04.016

Blaikie, P., & Brookfield, H. (Eds.). (1987). *Land degradation and society*. Methuen.

Bonnin, G., Martin, D., Lin, B., Parzybok, T., Yekta, M., & Riley, D. (2006). *Precipitation-Frequency Atlas of the United States. Volume 3* Version 4.0. Puerto Rico and the US Virgin Islands

Braun, B. (2015). From critique to experiment? Rethinking political ecology for the Anthropocene. In Perreault, T., Bridge, G., McCarthy, J. (Eds.), *The Routledge handbook of political ecology*. Routledge.

Cameron, E. (2012). New geographies of story and storytelling. *Progress in Human Geography*, *36*(5), 573-592. https://doi.org/10.1177/0309132511435000

Caretta M.A., Fernandez, R., Zegre, N., & Shinn, J. (2021). Flooding hazard and vulnerability. An interdisciplinary experimental approach for the study of the 2016 West Virginia floods. *Frontiers in Water*, 60. https://doi.org/10.3389/frwa.2021.656417

Carson, R. (1962). *Silent spring.* Houghton Mifflin Company.

Climate and Economic Justice Screening Tool. (2022, November 2). Retrieved February 2, 2024, from https://screeningtool.geoplatform.gov/en/#9.36/37.9039/-80.8536

Data USA. (2019). Greenbrier County, WV. Available from: https://datausa.io/profile/geo/greenbrier-county-wv

Davis, D., Harris, C., Johnson, V., Pennington, C., Redus, C., Sanders, T., ... & Gulilat, E. (2020). Black women's perspectives on neighborhood safety: reflections from the women of northeast Oklahoma city photovoice project. *Gender, Place & Culture*, *27*(7), 917-943. https://doi.org/10.1080/0966369X.2019.1611547

Di Liberto, T. (2016). Thousand-year' downpour led to deadly West Virginia floods. National Oceanic and Atmospheric Administration. Available from: https://www.climate.gov/news-features/event-tracker/thousand-year-downpour-led-deadly-west-virginia-flood

Department of Energy. *Energy facts: Impact of the investing in America agenda on West Virginia*. (2023, October 15). Retrieved February 2, 2023, from https://www.energy.gov/articles/energy-facts-impact-investing-america-agenda-west-virginia-0

Elmhirst, R. (2015). Feminist political ecology. In In Perreault, T., Bridge, G., McCarthy, J. (Eds.), *The Routledge handbook of political ecology*. Routledge (pp. 519-530). Routledge

Fairhead, J., & Leach, M. (1995). False forest history, complicit social analysis: rethinking some West African environmental narratives. *World Development*, *23*(6), 1023-1035. https://doi.org/10.1016/0305-750X(95)00026-9

FEMA. (2016). Understanding flood dangers in central West Virginia: Lessons learned from the June 2016 Flood. Available from: https://www.fema.gov/sites/default/files/documents/Region_III_WV_FloodReport.pdf

Ferring, D., & Hausermann, H. (2019). The political ecology of landscape change, malaria, and cumulative vulnerability in central Ghana's gold mining country. *Annals of the American Association of Geographers*, *109*(4), 1074-1091. https://doi.org/10.1080/24694452.2018.1535885

Flavelle, C., & Schaff, E. (2021). As Manchin blocks climate plan, his state can't hold back floods. *The New York Times*. Available from: https://www.nytimes.com/2021/10/17/climate/manchin-west-virginia-flooding.html?smid=tw-share

Forsyth, T. J. (2004). *Critical political ecology: The politics of environmental science*. Routledge.

Garcia, A., Tschakert, P., & Karikari, N. A. (2020). 'Less able': how gendered subjectivities warp climate change adaptation in Ghana's Central Region. *Gender, Place & Culture*, *27*(11), 1602-1627. https://doi.org/10.1080/0966369X.2020.1786017

Gaventa, J., (1980). *Power and powerlessness: Quiescence and rebellion in an Appalachian valley*. University of Chicago Press.

Harris, D. M. (2021). Storying climate knowledge: Notes on experimental political ecology. *Geoforum*, *126*, 331-339. https://doi.org/10.1016/j.geoforum.2021.08.011

Harris, D. M., & McCarthy, J. (2020). Revisiting power and powerlessness: Speculating on West Virginia's energy future and the externalities of the socioecological fix. *Environment and Planning E: Nature and Space*, *4*(3), 915–939. https://doi.org/10.1177/2514848620935751

Harris, D. M., & McCarthy, J. (2023). A just transition to what, for whom, and by what means? Transition technology, carbon markets, and an Appalachian coal mine. *Energy Research & Social Science*, *106*, 103307. https://doi.org/10.1016/j.erss.2023.103307

Harris, J. C. (2018). Vulnerable youth's perspectives and priorities for informal settlements: Photovoice evidence from Lusaka, Zambia. *Journal of Planning Education and Research*, *38*(4), 398-412. https://doi.org/10.1177/0739456X17709914

Harris, L. M. (2022). Towards enriched narrative political ecologies. *Environment and Planning E: Nature and Space*, *5*(2), 835–860. https://doi.org/10.1177/25148486211010677

Hersher, R., Jingnan, H. & Schmidt, S. (2021). A looming disaster: New data reveal where flood damage is an existential threat. National Public Radio. Available from: https://www.npr.org/2021/02/22/966428165/a-looming-disaster-new-data-reveal-where-flood-damage-is-an-existential-threat

Hess, D. J., McKane, R. G., & Belletto, K. (2021). Advocating a just transition in Appalachia: Civil society and industrial change in a carbon-intensive region. *Energy Research & Social Science*, 75 (2021), 102004. https://doi.org/10.1016/j.erss.2021.102004

Heynen, N., Kaika, M., & Swyngedouw, E. (2006). Urban political ecology: Politicizing the production of urban natures. In Heynen, N., Kaika, M., & Swyngedouw, E. (Eds.) *In the nature of cities* (pp. 16-35). Routledge.

Houston, D., & Vasudevan, P. (2017). Storytelling environmental justice: Cultural studies approaches. In *The Routledge handbook of environmental justice* (pp. 241-251). Routledge.

Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization (IGWG). (2021). Initial report to the President on empowering workers through revitalizing energy communities. Available from: https://netl.doe.gov/sites/default/files/2021-04/Initial%20Report%20on%20Energy%20Communities_Apr2021.pdf

Kirksey, S. E., Shapiro, N., & Brodine, M. (2013). Hope in blasted landscapes. *Social Science Information*, *52*(2), 228-256. https://doi.org/10.1177/0539018413479468

Kirksey, E. (Ed.). (2014). *The multispecies salon*. Duke University Press.

Kong, T. M., Kellner, K., Austin, D. E., Els, Y., & Orr, B. J. (2015). Enhancing participatory evaluation of land management through photo elicitation and photovoice. *Society & Natural Resources*, *28*(2), 212-229. https://doi.org/10.1080/08941920.2014.941448

Kull, C. A. (2000). Deforestation, erosion, and fire: degradation myths in the environmental history of Madagascar. *Environment and History*, *6*(4), 423-450. https://doi.org/10.3197/096734000129342361

Labbe, J., Ford, J. D., Berrang-Ford, L., Donnelly, B., Lwasa, S., Namanya, D. B., ... & Harper, S. L. (2016). Vulnerability to the health effects of climate variability in rural southwestern Uganda. *Mitigation and Adaptation Strategies for Global Change*, *21*(6), 931-953. https://doi.org/10.1007/s11027-015-9635-2

Latz, A. O., & Mulvihill, T. M. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Routledge.

Lave, R., Wilson, M. W., Barron, E. S., Biermann, C., Carey, M. A., Duvall, C. S., ... & Van Dyke, C. (2014). Intervention: Critical physical geography. *The Canadian Geographer/Le Géographe canadien*, *58*(1), 1-10. https://doi.org/10.1111/cag.12061

Lilly, J. (2021). Five years after 2016 flood, There's still work to do. West Virginia Public Broadcasting. Available from: https://www.wvpublic.org/health-science/2021-06-23/five-years-after-2016-flood-theres-still-work-to-do.

Leichenko, R., & O'Brien, K. (2008). *Environmental change and globalization: Double exposures*. Oxford University Press.

MacFarquhar, L. (2016). In the heart of Trump country. *The New Yorker*. Available from: https://www.newyorker.com/magazine/2016/10/10/in-the-heart-of-trump-country

Margulies, J. D. (2019). On coming into animal presence with photovoice. *Environment and Planning E: Nature and Space*, *2*(4), 850-873. https://doi.org/10.1177/2514848619853060

Masterson, V. A., Mahajan, S. L., & Tengö, M. (2018). Photovoice for mobilizing insights on human well-being in complex social-ecological systems. *Ecology and Society*, *23*(3). https://doi.org/10.5751/ES-10259-230313

McCarthy, J. (2002). First World political ecology: Lessons from the Wise Use movement. *Environment and Planning A*, *34*(7), 1281-1302. https://doi.org/10.1068/a3526

Moulton, A. A., Velednitsky, S., Harris, D. M., Cook, C. B., & Wheeler, B. L. (2021). On and beyond traumatic fallout: Unsettling political ecology in practice and scholarship. *Journal of Political Ecology*, *28*(1), 677–695. https://doi.org/10.2458/jpe.3051

Moulton, A. A. (2022). Towards the arboreal side-effects of marronage: Black geographies and ecologies of the Jamaican forest. *Environment and Planning E: Nature and Space*, 6(1). https://doi.org/10.1177/25148486221103757

Nyantakyi-Frimpong, H. (2019). Visualizing politics: A feminist political ecology and participatory GIS approach to understanding smallholder farming, climate change vulnerability, and seed bank failures in Northern Ghana. *Geoforum*, *105*, 109-121. https://doi.org/10.1016/j.geoforum.2019.05.014

O'Brien, K. L., & Leichenko, R. M. (2000). Double exposure: assessing the impacts of climate change within the context of economic globalization. *Global Environmental Change*, *10*(3), 221-232. https://doi.org/10.1016/S0959-3780(00)00021-2

Perreault, T., Bridge, G., McCarthy, J. (Eds.), *The Routledge handbook of political ecology*. Routledge.

Powers, M. C., & Freedman, D. A. (2012). Applying a social justice framework to photovoice research on environmental issues: A comprehensive literature review. *Critical Social Work*, *13*(2). https://doi.org/10.22329/csw.v13i2.5867

Pulido, L., & De Lara, J. (2018). Reimagining 'justice' in environmental justice: Radical ecologies, decolonial thought, and the Black Radical Tradition. *Environment and Planning E: Nature and Space*, 1(1-2), 76-98. https://doi.org/10.1177/2514848618770363

Rice, J. L., Burke, B. J., & Heynen, N. (2015). Knowing climate change, embodying climate praxis: Experiential knowledge in Southern Appalachia. *Annals of the Association of American Geographers*, *105*(2), 253-262. https://doi.org/10.1080/00045608.2014.985628

Rocheleau, D., Thomas-Slayter, B., & Wangari, E. (Eds.). (1996). *Feminist political ecology: Global issues and local experiences*. Routledge.

Schroeder, R. A., Martin, K. S., & Albert, K. E. (2006). Political ecology in North America: discovering the Third World within? *Geoforum*, *37*(2), 163-168. https://doi.org/10.1016/j.geoforum.2005.05.003

Scott, R. R. (2010). *Removing mountains: Extracting nature and identity in the Appalachian coalfields*. University of Minnesota Press.

Shinn, J. E., & Caretta, M. A. (2020). If it wasn't for the faith-based groups, we wouldn't be where we are today. *Southeastern Geographer*, *60*(3), 235-253. https://doi.org/10.1353/sgo.2020.0019

Sultana, F. (2021). Political ecology 1: From margins to center. *Progress in Human Geography*, 45(1), 156-165. https://doi.org/10.1177/0309132520936751

Swyngedouw, E., & Heynen, N. C. (2003). Urban political ecology, justice and the politics of scale. *Antipode*, *35*(5), 898-918. https://doi.org/10.1111/j.1467-8330.2003.00364.x

Turner, B. L., & Robbins, P. (2008). Land-change science and political ecology: Similarities, differences, and implications for sustainability science. *Annual Review of Environment and Resources*, *33*, 295-316. https://doi.org/10.1146/annurev.environ.33.022207.104943

Wang, C., & Burris, M.A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369-387. https://doi.org/10.1177/109019819702400309

Wang, C. C., Yi, W. K., Tao, Z. W., & Carovano, K. (1998). Photovoice as a participatory health promotion strategy. *Health Promotion International*, *13*(1), 75-86. https://doi.org/10.1093/heapro/13.1.75

Watts, M. J. (2013[1983]). *Silent violence: Food, famine, and peasantry in northern Nigeria*. 2nd edition. University of Georgia Press.