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# Art Relief Map: An emergent topography of expressive arts offerings after a natural disaster

## ABSTRACT

*This article describes evidence of the therapeutic value of expressive arts programming following a natural disaster. The authors created the 'Art Relief Map' to serve as a living online record of the therapeutic art-based offerings that emerged organically in western North Carolina, United States, in the wake of devastation caused by Hurricane Helene in late September 2024. By sharing the 'Art Relief Map' and its evolution alongside several stories of art-based programme development in the midst of a drastically changed landscape, the authors depict a topography of healing that may be adapted and applied during future climate-related crises.*

## KEYWORDS

art-based research  
climate change  
geographical identity  
Appalachia  
shifting landscape  
visual art

## INTRODUCTION

In late September of 2024, Hurricane Helene swept through the Appalachian Mountains of western North Carolina in what government officials have referred to as a 1000-year flood (Cooper 2024). The region suffered widespread destruction and a devastating loss of life, affecting an estimated 4.6 million people (Cooper 2024). In some areas, the landscape is changed forever. The authors' efforts to support our communities while living through a natural disaster directly influenced our approach to the project described in this article. In our experience, conditions in the soul were now marked by a sense of disorientation and uncertainty that mirrored the sudden geographical rearrangement of the region. The Art Relief Map, described in further detail within this article, is an effort to honour emergent art-based offerings in the wake of a natural disaster. The map is also our way of charting a course back to self, community and the natural environment we call home.

### ***Context of natural disaster and expressive arts***

Climate change contributes to the increased occurrence and heightened impact of natural disasters (Chen et al. 2020) as well as significant mental health effects, which are amplified by pre-existing economic, cultural and environmental vulnerabilities (Lawrance et al. 2022). Climate-related solutions should address not only the planet but also the mental health needs of those who experience catastrophic events (Lawrance et al. 2022).

In the initial aftermath of disaster, expressive arts approaches can be applied to meet primary psychological goals of safety and self-regulation, and also support recovery: processing potentially traumatic events, empowering survivors and integrating experiences (Juric 2024). Given the sensory-based and action-oriented nature of expressive arts practices (Malchiodi 2020), outcomes from a single process are wide ranging and include supporting resilience, expression and sense of community (Liebmann 2023). Following a natural disaster, a facilitator's intentional choices within the process can result in unique outcomes, such as reconnection with the natural environment (Linton 2017: 31).

There is limited research on the therapeutic benefits of expressive arts in responding to a natural disaster. Fields of practice and healing mechanisms are difficult to standardize (Malchiodi 2020), and the rapidly changing circumstances within crisis situations may impede research efforts. This report is an attempt to add to the empirical literature available.

### ***Emergent art-based programming as evidence***

Referring to changes that occur through disruption or chaos (Prigogine and Stengers 2017), the concept of emergence is relevant to studying expressive arts approaches that arise in the wake of a crisis. In fact, the field of expressive arts itself emerged in response to states of collective conflict that necessitated a healing response (Marcow Speiser et al. 2023). Within art-based processes as well, emergent approaches and novel experiences of connection may be inspired by experiences of relative chaos and disconnection (Biddle et al. 2023; Kossak 2021).

Documenting the emergent nature of expressive arts offerings is particularly relevant in the context of natural disasters. Within nature, disruptive states catalyse adaptations that promote survival (Prigogine and Stengers 2017).

From a social perspective, the emergence of particular therapeutic offerings following a natural disaster provides significant evidence of their adaptive value. For example, in the days following Hurricane Helene in western North Carolina, expressive arts colleagues shared stories of art-based responses that had emerged rapidly and organically in the midst of physical relief efforts, without the typical planning that characterizes mental health initiatives. The example stories that follow within this article confirm what many expressive arts facilitators know through experience: humans naturally turn to the arts during times of crisis (Malchiodi 2020).

## DESCRIPTION OF THE ART RELIEF MAP

Relief mapping is a scientific practice with a surprisingly long history in the arts (Ribeiro et al. 2018). The act of mapping enhances understanding of the earth's surface and how it is affected by natural and human factors (Ribeiro et al. 2018). Of the many types of maps, relief maps are unique in their depiction of three-dimensional topographic features. They are considered aesthetically pleasing due to their incorporation of visually complex, realistic images (Douglass et al. 2022) and are particularly useful in navigating complex terrain.

The Art Relief Map project developed organically as former students and colleagues of Katherine Biddle (Andi Gelsthorpe, Morgan Duckett, Lucy Lodge and Caitlin Adams) reached out to share how they were offering expressive arts in response to Hurricane Helene. In the university expressive arts classes Biddle was teaching, students were exploring their inner landscapes in relation to changes to the external landscape. With Biddle, two students (Lisa T. Rose and Sarah DeShields) began discussing how emergent art-based programming could be documented to honour the work of healing taking place in the disaster's aftermath. The idea of presenting individual projects in their geographical locations via an online map emerged. Biddle, Rose and DeShields decided to gather data on offerings already shared with a plan to identify other programming emerging at the time.

Biddle contacted Josh Platt, a geographer in the Geography and Planning department at Appalachian State University with knowledge in the creation of interactive maps. Platt provided recommendations for gathering specific types of data, such as brief stories of programming, artefacts and geographical coordinates to allow for an intuitive visual display of each offering within its topographical context. A survey was developed to capture these aspects. Gelsthorpe, Duckett, Lodge and Adams submitted the stories of their offerings, including associated artefacts and observations of impact, and Platt added these to the web-based map, which was created using open-source programming languages (Javascript, HTML and CSS).

The Art Relief Map is a publicly accessible tool that demonstrates the benefits of expressive arts following a natural disaster, honours human experience in the midst of crisis, serves as an evolving tool for knowledge generation and a guide for future relief efforts. Though at the time of this article's submission, the only offerings displayed on the map are those submitted by Gelsthorpe, Duckett, Lodge and Adams; the map is a living tool that will be updated as additional offerings are shared. Figure 1 displays the initial version of the map. Clicking on a geographical location displays a pop-up window containing artefacts from the offering.

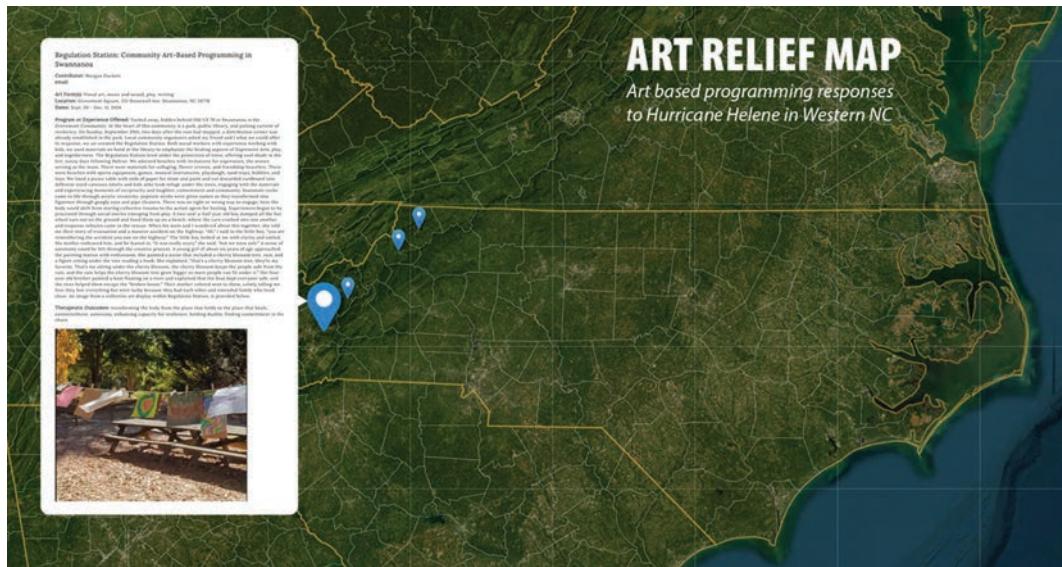


Figure 1: Image of Art Relief Map of Western North Carolina, 2025. Map image © Appalachian State University. Interactive map accessible at <https://www.expressivearts.appstate.edu/art-relief-map>. Accessed 8 September 2025.

### ***Cultivation of locations and stories***

Through snowball sampling, other facilitators are invited to share their stories via a simple Google form. Inclusion is based on the following criteria: programmes centre engagement with one or more artistic modalities; involve one or more experiences for individuals, groups or communities; are new or reimagined in response to Hurricane Helene within western North Carolina and are facilitated by someone with a graduate degree in a mental health field.

Contributors are asked to share the title, location and dates of their programming, and to 'tell the story of their offering, including its context, purpose, the process of development and how it was received' in a narrative, first-person format. Contributors may also share key therapeutic outcomes and complete an artistic reflection if they wish. Coordinates and select attributes of each account are uploaded to the map. Artefacts not displayed due to space limitations are stored in a GitHub repository to be featured on a dedicated webpage for each offering.

### ***Philosophical foundations***

The Art Relief Map is grounded in philosophical foundations at the intersection of geography and processes of healing within Appalachian culture. Within southern Appalachia, a legacy of colonization, including attempted extermination of Native American cultures and ongoing marginalization of the rural poor, continues to negatively impact communities (Cole 2021). Harmful stereotypes of the region's people enable economic and environmental exploitation that worsen the physical and psychological impacts of a natural disaster (Cole 2021). Yet cultural values, including the strength of community, love of place

and sense of beauty, contribute to the resilience of Appalachian communities (Jones 1994).

In Appalachia, arts such as storytelling, photography, quilt-making, folk-song and gardening have traditionally been interwoven with themes of place and home, creating a rich tapestry of geographical identity (Revill et al. 2018). The history of language and song specific to the region paints a picture of ancestral lineage stretching from Europe to Africa (Revill et al. 2018), and many Appalachian people derive beauty, a sense of community and identity from the landscape, of which aspects are considered sacred (Jones 1994).

## **STORIES OF EMERGENT OFFERINGS**

Below are excerpts from four of the first-person narratives that inspired the Art Relief Map. These stories demonstrate the rich content contained within the map, including details of unique offerings, programming development and response, images and poetry from the programming and, in some cases, artistic reflections by facilitators. Each facilitator captured their work in different ways, including through photographs, video, maintaining created works and/or journaling.

### ***Lucy's offering: Pop-up Community School in the Celo Community land trust***

The South Toe Valley beneath Mt Mitchell was devastated by Hurricane Helene. The Celo Community land trust became one of the information hubs in the valley, and it was in this setting that a number of educators gathered together and a community school was created to offer art-based educational and therapeutic experiences in response to the hurricane. We (Lucy Lodge and other educators) began this work a week after the hurricane and served approximately 30 children from 5 to 17 years of age for two weeks every weekday morning. My own work was with the older group of 12- to 17-year-olds.

In creating this offering, I (Lucy) reflected on the importance of using the senses to tune into what had just happened (Malchiodi 2020). Before the flood, the South Toe River was beloved by many for its clean, swimmable water and many beautiful spots along its banks. Now it was the cause of terrible destruction. With everything being so fresh, there was still very little ability to form a clear narrative about what we had all been through. Tapping into the senses felt do-able and not too big of an ask of these youth. This approach seemed an accessible entry point into processing as they all became deeply focused on the task at hand. To document aspects of participants' experiences, I kept artefacts of the programming, including photographs, a resultant poem and collective mural.

### *Lucy's story of programming development and response*

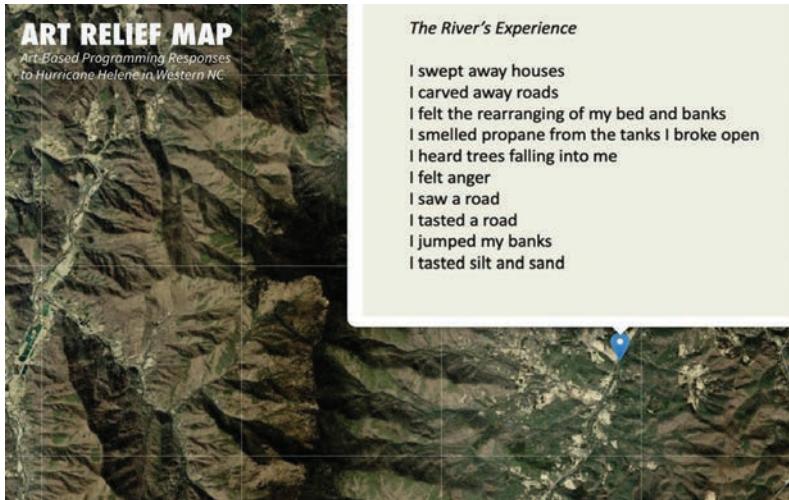
We met around a campfire most mornings, starting the day with singing and a variety of movement games and activities. After singing, three groups were formed: Kindergarten to second grade, third to sixth grade and seventh grade and up. I worked with the older students and the first invitation was to write two to three things they remembered from the first few days, post-hurricane, using all their senses as a starting point: 'I saw ... I heard ... I smelled ... I touched/felt ... I tasted'. These memories were shared verbally with a partner first, then students were given the choice to share one or two of their sense

memories with the whole group of approximately ten students. We ended the morning by covering a large outdoor table with paper to doodle and draw with Cray-Pas, markers and pencils (see Figure 2). Some expressed ideas and emotions related to the flood. For example, there was an energetic 'before and after' picture. Potentially as a way to distract and/or regulate themselves, others played tic-tac-toe and doodled what seemed to be familiar patterns and pictures.

The next day, we drew on the principles of dialoguing with images to inform our experience (McNiff 1992). The students were invited to share sense memories from the river's perspective, hearing what the river wanted to say. I saw curiosity and interest among participants, with many raised eyebrows and audible sounds invoking surprise, such as 'huh!' Shifting perspectives like this was new to the students. In small groups, they wrote their ideas. Each group was invited to share a line or two. These were collected on a large piece of paper as a poem with the title, 'The River's Experience'. A topographical map of the offering's location along with the poem that emerged is displayed in Figure 3.



*Figure 2: Image of collaborative doodle and drawing at Pop-Up Community School, 2025. Image courtesy of Lucy Lodge. Shared with written consent of participants.*



Long description

Figure 3: Art Relief Map image of Pop-Up Community School, 2025. Poem courtesy of Lucy Lodge. Map image © Appalachian State University.

***Mo's offering: Regulation Station, community art-based programming in Swannanoa***

Tucked away, hidden behind Old US Highway 70 in Swannanoa is the Grovemont community. At the heart of this community is a park, public library and a pulsing current of resiliency. On Sunday, 29 September, two days after the rain had stopped, a distribution centre was already established in the park. Local community organizers asked what I (Mo Duckett) and a social work colleague could offer. In response, we co-created the Regulation Station using materials on hand at the library to offer expressive arts to promote emotional regulation, a key component of healing in the aftermath of a crisis (Juric 2024; Malchiodi 2020). Throughout the offering, I observed individuals' responses and collected data in photographs and videos.

***Mo's story of programming development and response***

The Regulation Station lived under the protection of trees, offering cool shade in the hot, sunny days following Hurricane Helene. To allow for expression and sensory engagement, we adorned benches with a variety of materials, including art supplies for collaging, flower crowns and friendship bracelets. Other benches held sports equipment, games, musical instruments, play-dough, sand trays, bubbles and toys. We lined a picnic table with paper for creating with slime, paint and discarded cardboard we had cut into different-sized canvases. We encouraged participation by communicating that there was no wrong way to engage.

Adults and children alike took refuge under the trees, engaging with the materials and experiencing moments of reciprocity and laughter, contentment and community. Inanimate rocks came to life through acrylic creativity; popsicle sticks were given names as they transformed into figurines through googly

eyes and pipe cleaners. Here the body could begin to shift from a receptacle storing collective trauma to the action agent for healing (Johnson 2024; Van der Kolk 2014).

Experiences were processed through social stories emerging from play. For example, a 2-and-a-half-year-old boy dumped all the Hot Wheels-type cars out on the ground and lined them up on a bench, where the cars crashed into one another and emergency response vehicles came to the rescue. When his mother and I wondered about this together, she told me the family's story of evacuation and a massive accident on the highway. I suggested to the little boy that he might be remembering the accident he saw on the highway. Perhaps confirming this interpretation, the boy looked at me with clarity and smiled. His mother embraced him and he leaned in. She said, '[i]t was really scary, but we were safe'.

A sense of autonomy was demonstrated as children used the materials to create new narratives. A young girl of about 6 years of age painted a scene that included a cherry tree, rain and a figure sitting under the tree reading a book. She explained:

That's a cherry blossom tree, they're my favourite. That's me sitting under the cherry blossom, the cherry blossom keeps the people safe from the rain and the rain helps the cherry blossom tree grow bigger so more people can fit under it.

Her 4-year-old brother painted a boat floating on a river and explained that the boat kept everyone safe and the river helped them escape the 'broken house'. Their mother coloured next to them, calmly telling me how they had

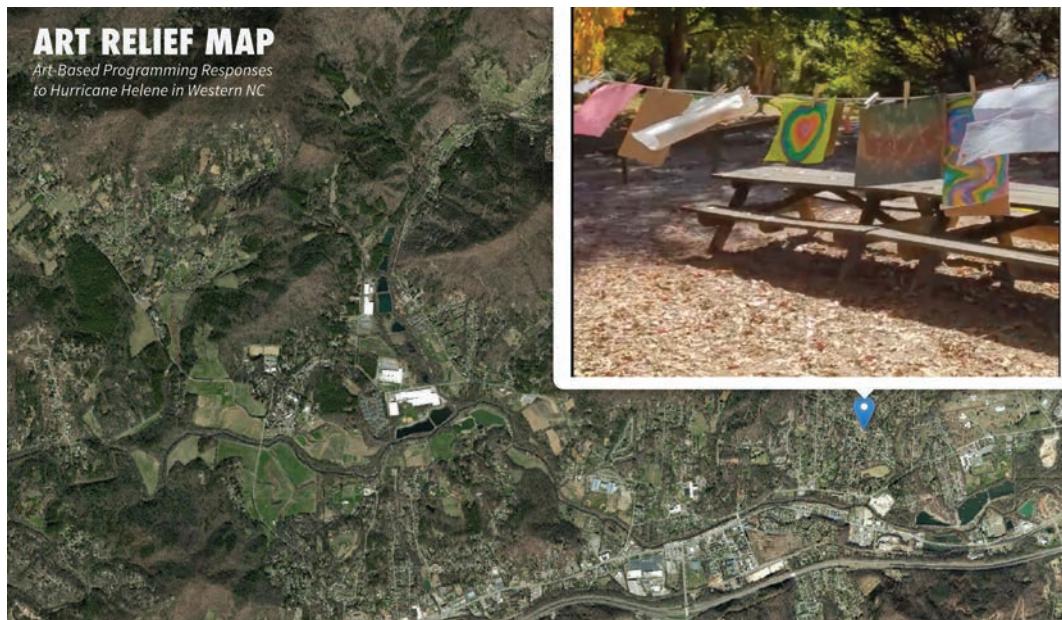


Figure 4: Art Relief Map image of Regulation Station, 2025. Photograph courtesy of Mo Duckett. Map image © Appalachian State University.

lost everything but were lucky because they had each other and the extended family who lived close. An image from the Art Relief Map of Regulation Station, including a photo of a collective art display, is shown in Figure 4.

#### *Mo's artistic reflection*

This work (Figure 5) reflects the juxtaposition of holding and being held. The power of community and relationships are resilience factors to help hold space for the external devastation and the internal disjointedness left by Hurricane Helene.



*Figure 5: Morgan Duckett, Artistic Reflection of Facilitator of Regulation Station, 2025. Photograph and original artwork. © Morgan Duckett.*

#### ***Andi's offering: Sidewalk Expressive Arts Ministry, community co-creation in Boone***

I (Andi Gelsthorpe) established an outdoor street ministry in front of a consignment shop that had opened a free clothing store to serve an area that had suffered catastrophic flooding. In creating this offering, I first considered what materials I had on hand and how they could be used as a community engagement offering. Next, I identified where a need was and how I could access that population safely. At the time of the offering, downtown Boone was alive with first responders, community members, local business owners, National Guard personnel, evacuees, volunteers and families with children. Standing in the heart of Boone in front of the free clothing store provided opportunities to interact with all of these populations. The exterior walls of the corner store became a canvas where passers-by could contribute to and witness words and images of nourishment and encouragement. We created a supportive environment for the open sharing of emotion, both verbally and non-verbally, which contributes to a sense of safety and community in the midst of uncertainty and in some cases, great loss (Johnson 2024; Rimé et al. 2011). I gathered data through photographs and journaling.

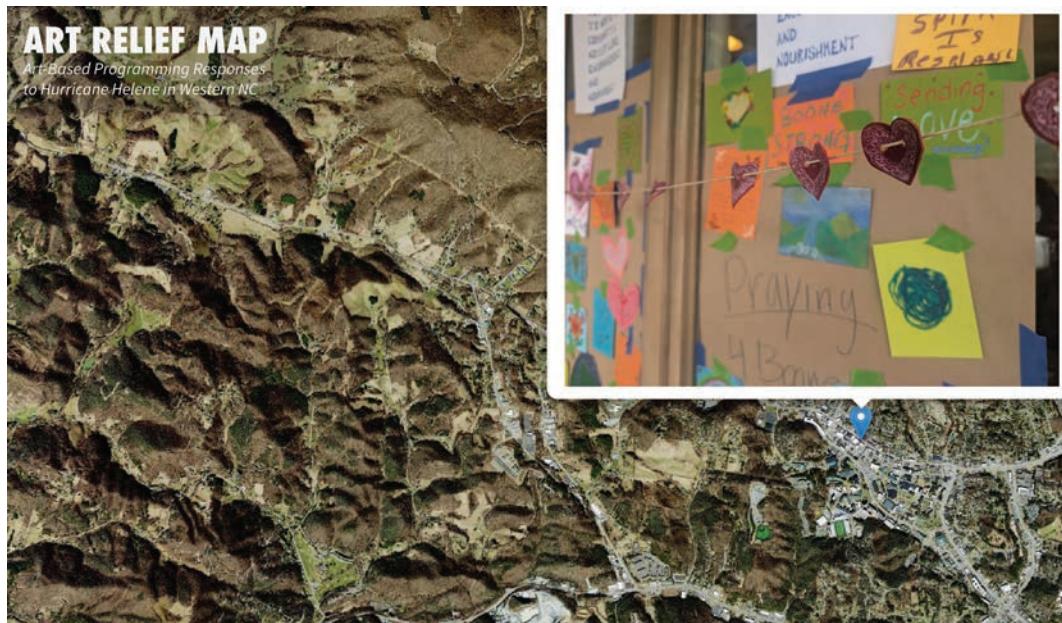
*Andi's story of programming development and response*

I begin with an extended excerpt from my personal journal, 3 October 2024:

Today I was scheduled to put up my show 'Intraconnection' at the Jones House Gallery. That is no longer going to happen. Instead, I took what energy I had to offer and set up a table on the corner of King and Depot streets smack dab in the middle of downtown. I want to hold space for my community and offer them a place to create and express themselves, a place to take a breath and press PAUSE and to offer words of encouragement and nourishment to each other. I am calling it the Sidewalk Expressive Arts Ministry. I am christening myself an expressive arts minister today. I made that up or should I say it dropped down and I caught it.

This work gave me purpose. A table with leather heart necklaces, string, scissors, crayons, markers, crayons, paint pens, chalks, paper hearts and stacks of coloured cardstock became my offering. Locals came by, volunteers stopped, families, individuals, children, adults, college kids; everyone was curious and most decided to engage in the activity. Children were quick to drop into the creative flow and process. We have so much to learn from them. Others drew pictures, wrote words of encouragement, cried, hugged each other and lingered in the space reading all of the outpouring the walls gathered. One child apologized to Mother Earth for all of us.

(Gelsthorpe 2024: n.pag.)



Long description

Figure 6: Art Relief Map image of Sidewalk Expressive Arts Ministry, 2025. Photograph courtesy of Andi Gelsthorpe. Map image © Appalachian State University.

On the first day, a little boy drew a picture, and I asked him to tell me about it. He said, '[i]t is rain'. Then he drew another image. Again, I asked him to 'tell me about this one' and he replied, 'it is rain and mud'. He offered the words 'rain, mud and my house' to describe the following image in the series. To end his story, he drew his house and a rainbow. Using the supplies on hand, we created a book of his images and he chose where to attach it to our community art wall. An Art Relief Map image of this offering location, along with a close-up photograph of a portion of the community art wall is displayed in Figure 6.

### *Andi's artistic reflection*

Eight weeks later, Figure 7 shows an aesthetic response that has poured out of me. Like blood cells to an open wound, individuals came together from all over to our small mountain communities to tend to the wounds that Hurricane Helene left behind.



Figure 7: *Andi Gelsthorpe, Artistic Reflection of Facilitator of Sidewalk Expressive Arts Ministry, 2025. Photograph and original artwork. © Andi Gelsthorpe.*

### ***Caitlin's offering: Creative invitations to reduce isolation, expressive arts at the Ashe County Red Cross shelter***

A week after Hurricane Helene, I (Caitlin Adams) began volunteering at a Red Cross shelter that had been set up inside Ashe County High School. The shelter housed about ten residents who were displaced from their homes. They were missing pets who were staying with neighbours or lost to violent flood waters. With schools closed for the foreseeable future, my own displacement came in the form of an abrupt halt to my work as a middle-school mental health therapist. I offered services to my existing clients, but everyone refused, flatly responding that there must be families in greater need of support.

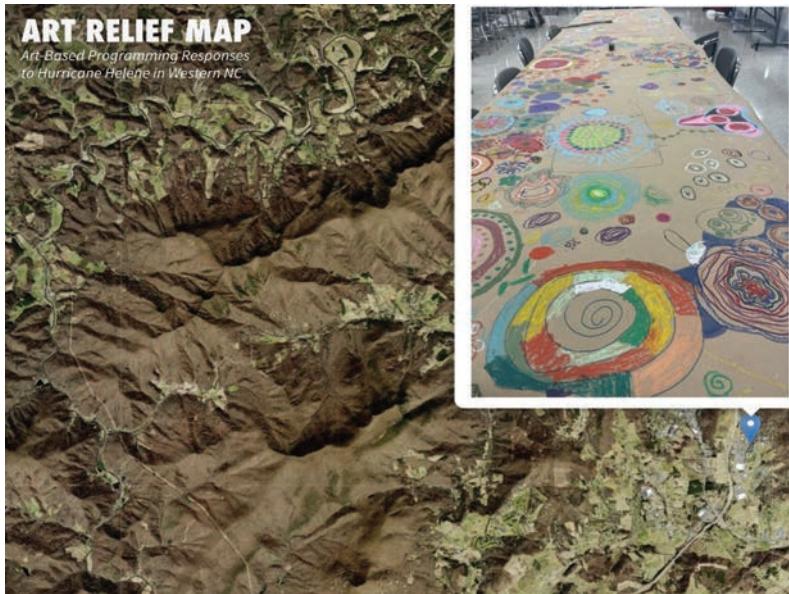
I called my teenage clients, and they spoke in monotone voices, struggling to tell me anything they had done with their day. The internet was still down throughout most of the county and the familiar wooded landscape was covered in recently fallen trees. Most of their time was spent shuffling between various family members' homes, depending on who had power and water.

It felt like the COVID-19 quarantine. I was concerned about the mental health of these teenagers who once again had no reason to brush their teeth or get dressed in the morning. I told my colleague that I was spending my days at the Red Cross shelter, and we decided to bring expressive arts there for the residents and students of the county to come and create. During times of crisis, a sense of social connection can protect survivors from experiencing an event as a trauma (Van der Kolk 2014). I wanted to remind these young people who had experienced long school closures during the pandemic that we did not have to live through another crisis in isolation. The isolation these teens experienced during quarantine is what led many of them to experience depression for the first time in their lives (Meade 2021). Conscious connection with others is a core part of trauma stewardship (Lipsky and Burk 2009), the practice of tending to the 'hardship, pain or trauma experienced by humans, other living beings, or our planet itself' (Lipsky and Burk 2009: 11). Creating art in community provided a critical social resource, enabling students to more confidently encounter aspects of their experience, including destruction to the planet and inequitable access to resources within a rural community (Levine and Levine 2011).

### *Caitlin's story of programming development and response*

We hosted the expressive arts experience for four days in the high-school cafeteria, with participants ranging from 4 to 14 years old. Red Cross volunteers set out snacks and pulled out donations they thought the children may want to take home. As the children shyly trickled in on the first day, my colleague and I set up stations with supplies for stick wrapping, collage and a range of other materials. The adults confirmed that they did not need to stay with their children. A grandmother expressed gratitude through a look of exhaustion in her eyes, sharing that she planned to use this time to clean up the debris on her property. A mother cheerfully giggled, thanking us for allowing her first few moments of alone time since the hurricane hit. Everyone needed a quiet moment to process.

On the second day, we walked around campus collecting natural materials to paint on or wrap with yarn. One boy stood by the hot glue and created layers of colourful adornments on his stick. We covered the cafeteria tables in brown paper and invited participants to create circles. After about five minutes, everyone moved over one seat to collaborate with the circle their neighbour



*Figure 8: Art Relief Map image of Expressive Arts at the Ashe County Red Cross shelter, 2025. Photograph courtesy of Caitlin Adams. Map image © Appalachian State University.*

had started. We continued this process, allowing everyone to work on each circle. The finished product was a collaborative art piece with everyone's circles intertwined. This became our anchor piece for the remainder of the week. Participants with extra time could always return to work on the circles.

On the third and fourth day, participants were invited to partner with someone else and trace the outline of their body on a large piece of paper. Each person filled their tracing with an illustration of how they felt inside their body. When finished, artists were asked to tell me what they could 'feel, see and imagine'. They used words like 'happy' and 'colourful'. This was an activity that was new to each participant, but the process came naturally as they shared materials with each other. Little dialogue was spoken during this art-making process. While each process maintained its uniqueness, the influences of the group showed through in each piece's vibrant colours and thick yarn textures. In a time of isolation and confusion, participants were dropping into art-making and feeling the power of the collective community. Data were collected in the form of photographs of artwork. An Art Relief Map image of the location of this offering, along with a photograph of the community circle art piece, is displayed in Figure 8.

## REFLECTIONS

After creating the initial version of the Art Relief Map, which includes the four stories that inspired the project, the authors collectively reflected on the process of developing the map. Areas of focus for reflection included the overall experience of creating the map, the potential benefits of contributing stories and the experience of seeing several art-based offerings within their geographical context.

Key themes that emerged include experiencing multiple states of being simultaneously. For example, Platt, the geographer who created the map, acknowledged how the juxtaposition of encountering pre-Helene satellite imagery alongside map updates reflecting post-Helene conditions challenged his spatial and temporal contexts of experience. The necessity of using pre-Helene imagery for the Art Relief Map provides a surprising, visceral reminder of what once was, validating the magnitude of the natural disaster and its effects on both the external landscape and the landscape of inner experience. The authors identified unique experiences of holding what has been lost through tragic circumstances. Yet through mapping relief efforts, all authors witnessed the courage, compassion, creativity and connection among those who showed up to support our communities.

Gelsthorpe, Duckett, Lodge and Adams, who contributed stories to the map, reported feeling affirmed by witnessing the real power of creativity on collective healing. For these four, the visibility of stories on a map provides a sense of community, hope and encouragement for what is possible, and their motivation to continue offering the arts as agents of healing has been strengthened. They also feel more aware of the importance of our own artistic engagement as a source of support and healing.

For all of the authors, participation in this project has provided a greater sense of place and has highlighted our personal connections to the global climate crisis. Some collective questions arose: Is our work in this rural and rugged landscape a part of something larger? Are these art-based offerings shaped by the external landscape and therefore unique to our mountain culture? Are our stories part of a broader expression of humanity and creativity in the wake of natural disaster? In addition to inspiring future relief efforts, we all hope the Art Relief Map may serve as a way to further explore these questions.

## CONCLUSION

Strengths of the Art Relief Map project include cultivating examples of offerings that expand the evidence base for the value of art-based approaches in responding to a natural disaster. Displaying these offerings in connection to the natural landscape emphasizes their geographical context and the connection between communities and the natural environment.

Mapping stories of art-based responses has also served to honour human experience and create a sense of possibility in the midst of tragedy. Discrete examples of programming provide templates for responding to future disasters and an opportunity to explore the role of art-based approaches in crisis response. For all of the authors, the process of contributing to and creating the map has offered healing through validation of the shared experience of shifting landscapes that occurred both externally and internally. For those of us who are art-based facilitators, we have greater motivation to continue our work.

Despite many benefits, this article and the current Art Relief Map are limited to describing the occurrence of art-based offerings that took place in a specific area affected by a single natural disaster. Though the authors will continue to populate the Art Relief Map as stories are shared, the research could be widened by expanding the map both within and beyond western North Carolina. It is the authors' hope that facilitators who have offered therapeutic art-based approaches in different parts of the world in the wake of

natural disasters will consider contributing their stories by contacting Biddle. With the addition of stories, landscapes and contexts across geographies and cultures, the Art Relief Map may serve as a more robust guide for relief efforts and tool for knowledge generation.

## ETHICAL STATEMENT

The Appalachian State University Institutional Review Board deemed this project to be non-human subject research (HS-25-125). The authors have followed ethical guidelines of the field of expressive arts therapy and other relevant professions to ensure participant confidentiality, as relevant, in sharing accounts and documentation of programming. Accounts and artefacts must either contain no personally identifying information or be intended for and included within a public display. Otherwise, inclusion requires participants' explicit written consent. Within this article, included images are from workshops that were part of disaster relief art response. Verbal permission of facilitators has been granted to publish these images.

## CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

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## FIGURE LONG DESCRIPTIONS

Figure 3: A relief map zoomed in to a location marker pointing to a river valley within an area of mountainous terrain. From the marker, a pop-up window displays a poem titled 'The River's Experience' with the following verses: 'I swept away houses, / I carved away roads, / I felt the rearranging of my bed and banks, / I smelled propane from the tanks I broke open, / I heard trees falling into me, / I felt anger, / I saw a road, / I tasted a road, / I jumped my banks, / I tasted silt and sand'.

Figure 6: A relief map zoomed in to a small town surrounded by mountainous terrain. A location marker displays a pop-up window containing artwork created collectively by participants. Contributions appear to be paper notes and images, which are taped to large sheets of butcher paper. A string of red, leather hearts hangs in front of the artwork. Visible messages include 'Sending love', 'Boone strong' and 'Praying 4 Boone'.

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