

Community Voices of Disaster Resilience in Robeson County, North Carolina

Master of Natural Resources Paper

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Introduction

Flooding is a major threat to the livelihood of landowners, farmers, and farm managers throughout Eastern North Carolina. The Lumbee River Basin of Robeson County is a relatively flat, ecologically significant, and complex floodplain facing increased occurrences of severe droughts and floods; Hurricane Matthew of 2016 and Hurricane Florence of 2018 inundated the Lumbee River Basin and caused unprecedented flooding in the region that devastated the community (Emanuel 2019). This study examined the history of the people and policies in this region, collected and analyzed qualitative data from local and indigenous landowners, and offers suggestions for disaster resilience and Nature-based Solutions (NBS) to meet the needs of the community.

The purpose of this study is to gain a better understanding of the knowledge, perspectives, values, and concerns of Robeson County landowners regarding flooding, disaster resilience, and our FloodWise Research Project. This study aims to ensure that local landowners, representative of the population, have the opportunity to participate and contribute to disaster resilience planning and programs in North Carolina by: collaborating with landowners and community leaders, identifying major issues contributing to the severity of flooding, understanding and reducing barriers to community involvement, gathering local experiences and traditional knowledge relating to flooding and mitigation, and integrating different forms of knowledge (historical, local, traditional, indigenous, and scientific) to benefit the implementation and success of the NBS and natural infrastructure practices, as well as support the Robeson County community. This study component used qualitative data collected through semi-structured interviews with landowners, farmers, and farm managers in Robeson County.

This study is a complement to an established research project referred to as “FloodWise”, which examines the use of Nature-based Solutions (NBS) as flood reduction practices for farms and rural communities in Eastern North Carolina. The term “FloodWise” is used to describe the water quality, flood mitigation, farm benefits, and community engagement and governance connections; participating farmers would receive government conservation payments for storing water and adopting water farming practices on their properties, in order to reduce floods downstream (Hovis et al. 2021). This pioneering research and development effort examines the

effectiveness of such FloodWise and NBS approaches to reduce flooding, the costs and benefits of the selected conservation practices, landowner interest, and the necessary steps towards successful implementation of this project.

This study will contribute to the FloodWise Project by taking a closer look at local landowners' personal knowledge and outlook on different aspects of the project including: current land-use practices, history of flooding, conservation practices, program delivery, landowner incentives, institutional and policy support. We used interviews with selected Robeson County farm owners and managers, which will complement a farm owner survey led by Hovis (2022) in her PhD dissertation. It is essential to include landowners and community leaders in the planning, design, and implementation of policies relating to the disaster resilience efforts such as the FloodWise Project. This study was designed to include landowners in this process and gain a better understanding of the needs of the community; this will aid in implementing NBS and future policy formulation aimed at addressing issues of flooding in the region. Moving forward, collective resilience and community collaboration are keys to the successful design and implementation of natural infrastructure approaches to flooding and disaster mitigation.

Since Robeson County is home to the Lumbee Tribe, it is essential to include them in this stage of the project. The Lumbee have a historically unique connection to the land and water, so their local, traditional, and indigenous knowledge and voices are significant assets that should not be overlooked nor excluded. Being that the Lumbee Tribe is the largest Tribe east of the Mississippi, and the only federally recognized tribe denied the sovereign status and benefits of being federally recognized, meaningful collaboration with tribal members and leaders is necessary moving forward. "Extractive research" is used to describe a framework in which "outside researchers use Indigenous knowledge systems with minimal participation or decision-making authority from communities who hold them."(David-Chavez & Gavin, 2018). Excluding the Lumbee from this stage of the project could result in adverse and detrimental impacts on Tribal communities of Eastern North Carolina and their environments.

Many decisions regarding the land and waters of Robeson County have failed to consider the wants and needs of many community stakeholder groups. Recognition of the history of the environment, people, and policies of this region allows for better understanding of the major

issues that the community is presently facing. There is a need for inclusive policies that allow for North Carolina state-recognized Tribes to actively participate in environmental decision-making and provide opportunities for meaningful engagement that incorporates Indigenous perspectives and knowledge systems in all stages of environmental decision-making processes (Emanuel & Wilkins 2020). To address the issue of flooding in Eastern North Carolina, there needs to be collaboration between government agencies, community groups, and industry representatives moving forward. This should include how different community stakeholder groups will affect the discussions held throughout the policy process, which will ultimately produce better goals, methods, and outcomes (Butler & Adamowski 2015). Including stakeholders in the planning and design of policies that impact the land and water of this region can help to prevent potential, detrimental impacts on vulnerable communities.

With the FloodWise Project centered around the land, water, and community of Robeson County, further research needs to be rooted in meaningful involvement and collaboration with Lumbee landowners and Tribal leaders. Associate professor of hydrology at Duke University and an enrolled member of the Lumbee Tribe, Dr. Ryan Emanuel describes the makings of Lumbee identity stating, “We recognize that our biological ancestry shapes our identity as Indigenous people, and we emphatically affirm the other shapers of our identity, including our kinship ties; our connections to place—especially the landscapes and waterways that are integral to our ways of being; our oral tradition and lived experiences as tribal people; and our political status as tribal citizens (Emanuel & Bird 2022). The historical and cultural connection of the Lumbee to the land and waters of Robeson County is something that has not yet been considered much in disaster resilience planning in North Carolina, and this FloodWise study component of our project intends to begin to include indigenous voices in such disaster resilience issues and future opportunities for responses and programing.

Research Goals and Objectives

Goal:

The goal of this study was to gain a better understanding of the wants, needs, values, and concerns of a sample of landowners in Robeson County, North Carolina as our focus area for this integrated FloodWise project. In particular, I focused mostly on Lumbee landowners residing, owning, and leasing land in this historically and ecologically significant, rural area of Eastern North Carolina regarding flooding issues and the potential for meaningful solutions to address those issues. Other study components and a mail survey had a broader focus on all lands and all types of landowners in Robeson County (Hovis 2022). This qualitative research allowed us to narrow that broad approach to a few landowners with detailed in person interviews.

Objectives:

Identify landowner wants and needs from projects focused on flood mitigation.

Determine the actions, policies, and procedures needed to address flooding issues and to form meaningful solutions by speaking with individual community members who have resided and owned land in the area long-term.

Compare and contrast data collected from multiple landowners on their background information, history and experience with flooding, conservation practices and land adaptations, preferences for program delivery and landowner incentives, perspectives on institutional and policy support, and recommended solutions.

Identify ways in which the flood disaster resilience planning can meet the wants and needs of the community.

Research Questions:

How can the FloodWise Project serve to benefit the entire community, not just individual landowners? How can we ensure that mitigating floodwaters for one landowner doesn't cause more problems for other landowners down the line?

What is needed to ensure that the Lumbee Tribe is included in this project?

How can disaster resilience planning and our FloodWise research results, especially these interviews with landowners in Robeson County, contribute to the current North Carolina state flood planning blueprint process?

Background

Lumbee History

The experience of the Lumbee People is unparalleled based on the history of their land, identification, and recognition as a Tribe. The Tribe adopted the name “Lumbee” in 1952 and reclaimed the Lumber River as the “Lumbee River” to reflect the Tribes connection to and sovereignty over the river (Emanuel 2017). Although the river has been assigned many names throughout history, the Lumbee Tribal Council passed an ordinance in 2009 cited as “Reclamation of the Lumbee River’s Ancestral Name” (Lumbee Tribe 2009). Lumbee cultural identity and history is closely tied to the Lumbee River Watershed and homelands of Robeson County. Given the history and cultural significance of the river's name, this study will purposefully refer to the watershed as the “Lumbee River”.

Although the Lumbee River Basin has been home to Indigenous communities for thousands of years, Indigenous People from throughout Eastern North Carolina migrated to the area during periods of accelerated colonial expansion; enslavement and displacement of Indigenous populations caused Lumbee ancestors to move into the river basin (Emanuel 2019). The floodplain was an inhospitable location for outsiders to settle with no knowledge of the ecological terrain. Since Robeson County has been surrounded by swamps for centuries with only a few trails cutting through it, the location was viewed as the “promise land” for those seeking isolation and was one of the last areas settled by whites (Dial 1996). The swamps of Robeson County acted as a natural barrier that shielded Indigenous communities from advancing colonial powers. The cohesive nature of the Lumbee People and the floodplain, their self-sufficiency, and residency on non-reservation lands granted them freedom and sovereignty over the land that most Native American Tribes were stripped of.

The 1835 North Carolina Constitution sparked a new age of harassment, suppression, injustice, and deprivation of labor and property; the tactic used to obtain Lumbee property was known as “tied mule” incidents, where white farmers tied mules to Lumbee land to accuse them of theft as a way for the white farmers to legally receive free labor or property in exchange for unpressed charges (Dial1996). This point in history was the starting point for a new set of tactics, strategies, and policies aimed at displacing indigenous people from their land.

To understand the Tribe’s federal recognition status and its impact on the Lumbee today, it is important to understand the history of the Indian Reorganization Act of 1934 (IRA) and its establishment of the Federal Acknowledgement Process (FAP). The IRA is an extremely complex and controversial piece of legislation that established both the limitations and benefits received by most federally recognized tribes of today; in summary, the IRA includes specific titles covering tribal sovereignty and governance, federal funding and credit systems, education benefits, and tribal lands (Kelly 1975). To become recognized under the IRA, the federal government relied on research conducted by anthropologists that was based almost exclusively on physical characteristics (Emanuel & Bird 2022). The FAP is contingent on questionable and problematic forms of analysis to determine evidence of “Indianness” and “Tribalness”, which is the primary way for groups to become legally recognized as a Tribe; the classification of tribes as “federally recognized” or “non-federally recognized” are based on biased beliefs that govern tribal identity as being both “homogenous and absolute” (Den & O’Brien 2013). The Lumbee Tribe did not descend from one Tribe alone, are not confined to a reservation, and have a self-determined identity that is separate from the federal government's perceptions of tribal identity. Providing the federal government with evidence to become fully federally recognized is complex and difficult.

Ancestors of the Lumbee were recognized as “American Indians” by the state of North Carolina in 1855 and were federally recognized by the United States Congress under the 1956 Lumbee Act that instituted the limited recognition status currently held by the Tribe (Emanuel & Bird 2022). The Lumbee have been pursuing full federal recognition and aid for over a hundred years; the same law that granted the Tribe their current federal recognition status included an exclusionary clause that denies them the federal services and protections granted to all other federally recognized Tribes (McCulloch & Wilkins 1995). This reduced federal recognition

status eliminates benefits and represses sovereignty over the land and water in which the Lumbee and their ancestors have resided for centuries. For over a century the Lumbee have been subject to research that dismisses and diminishes Lumbee voices, perspectives, stories, oral histories, knowledge, sovereignty, and identity; examples of this extractive research have been used as political opposition to efforts that would grant the Lumbee Tribe full federal recognition (Emanuel & Bird, 2022).

The Lumbee Tribe is recognized The North Carolina State Commission of Indian Affairs was created and established in 1971 under the Department of Administration (DOA) to “deal fairly and effectively with Indian affairs; utilize local, State, and federal resources to provide aid and protection for Indians as needs are demonstrated; hold land in trust for the benefit of State-recognized Indian tribes; assist Indian communities in social and economic development; and promote recognition of and the right of Indians to pursue cultural and religious traditions considered by them to be sacred and meaningful to Native Americans.”(North Carolina State Commission of Indian Affairs). The State-recognized Tribes represented by the North Carolina Commission of Indian Affairs include: the Coharie of Sampson and Harnett Counties; the Eastern Band of the Cherokee Nation; the Haliwa-Saponi of Halifax, Warren and adjoining counties; the Lumbee of Robeson, Hoke and Scotland Counties; the Meherrin of Hertford, Bertie, Northampton and Gates Counties; the Waccamaw-Siouan from Columbus and Bladen Counties; the Sappony; and the Occaneechi Band of the Sapponi Nation.

The Drainage Movement in North Carolina

Scientists and policy makers of the 19th Century utilized Enlightenment-era philosophies of medicine as a basis to portray swamps as sources of pestilence that must be contained for the benefit of public health; these same philosophies were applied through actions such as the Sanitary Movement of Great Britain, 19th Century tenement clearing projects in New York, and the slum clearing projects of the 20th Century (Maxwell 2017). Condemning swamps as disease ridden areas that needed “cleansing” allowed policy makers to displace populations in rural areas under the falsehood of public health benefits, in a similar fashion to city clearance projects. It is estimated that in the early 1900s there were approximately one half million acres of drained agricultural lands in North Carolina; passage of the 1909 North Carolina Drainage Act allowed

for extensive drainage projects accounting for the approximately five million acres of drained agricultural lands that are present in North Carolina today (O’Driscoll 2012). The 1909 North Carolina Drainage Act established the North Carolina Drainage Association, and allowed farmers to group their holdings, sell bonds to cover the costs of drainage work, and repay loans over a ten-year period (Ross 1973). The Act was described as “an act to promote the public health, convenience and welfare by leveeing, ditching and draining the wet, swamp and overflowed lands of the state” (Pratt 1909). The 1909 North Carolina Drainage Act and the Drainage Movement led to the conversion of wetlands and swamps into agricultural lands throughout Eastern North Carolina, and the outcome of these policies can be seen across the landscape of today.

The Back Swamp drainage project of 1913 converted swamps of Robeson County into land consisting of crops, homes, and canals where traces of the swamp’s existence can now be seen in patches of forest lands that have not been cleared by farmers. Before the start of clearing, Back Swamp was approximately the size and shape of Manhattan extending across Robeson County from Maxton to Lumberton (Maxwell 2017). The drainage of swamps throughout the Drainage Movement was a political means of controlling both natural landscapes and populations of people residing there. Swamp drainage projects such as the Back Swamp drainage project were used as a tactic to clear out Native populations, secure their lands, and transform them into agricultural lands in the early 1900s; the Back Swamp and Jacob Swamp district are now referred to as a “biopolitical project that is part of a larger strategy of the management of the population” (Maxwell 2017). The Swamp Drainage Movement has had lasting impacts on the Lumbee Tribe and entire population of Robeson County with drainage issues and flood risk being at the forefront of the county's issues today.

Methods

Qualitative data for this study were collected through open-ended, in-depth interviews with landowners in Robeson County, North Carolina. A questionnaire was formulated based on research goals and objectives of this study. The questionnaire was then submitted and approved

by NC State IRB and the Lumbee Tribe IRB before any interviews were conducted. A copy of the survey questions is attached at the end of this paper.

After the Project was approved by both IRBs, I presented this study to the Lumbee Tribe's Agriculture and Natural Resource Committee, where they motioned to move forward with the project. I then contacted multiple agencies and community leaders to build a list of landowner contacts that would be willing and interested in participating in this study. A snowball sampling method was used, where landowners who were interested and involved in the FloodWise Project provided the landowner contacts that made up the sample.

In total, the sample consisted of nine landowners in Robeson County. One landowner that was contacted declined to be interviewed, stating that they wouldn't be able to help, but instead expressed interest in receiving more information on the project. Participants were contacted by phone, and interviews were then conducted either by phone, over zoom, or in person based on landowner preference. Before each interview, participants were emailed copies of the FloodWise informational flyer, adult consent form, and interview questionnaire. For the in-person interviews, each participant filled out an adult consent form and COVID-19 informed consent addendum and were given hard copies of the FloodWise informational flyer with an overview of the project and description of the ten selected conservation practices. For interviews conducted by phone or over zoom, participants were asked to overview the adult consent form and provide verbal consent to participate in this study.

All eight interviews were recorded, transcribed, and landowner identities were protected. Transcription software TEMI was used and edited to censor landowner names and fix any mistakes. Four of the eight interviews took place in person on the landowners' land, two interviews were conducted over the phone, and two interviews took place over zoom meetings. To protect their identities, landowners were assigned numbers one through eight based on the order in which they were interviewed.

Thematic analysis was used as the method to identify, analyze, and report patterns and themes within the data set; the process of thematic analysis involves becoming familiar with the data set, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Braun & Clarke 2006). I used Word copies of each of the transcripts,

and did the review and coding of the qualitative interviews by reading, highlighting, and sorting the transcripts manually.

Open, axial, and selective coding methods were used to conduct thematic analysis. Specifically, the first level of coding (open coding) was conducted through color coding the data. The second level of coding (axial coding) was conducted through “line-by-line coding”; this methodical approach allowed for themes to emerge directly from the data through focusing on the transcribed words of participants voices (Williams & Moser 2019). The third level of coding (selective coding) allowed for integration of themes to depict the interrelated and complex variables of the study (Williams & Moser 2019). I summarized the findings of the interviews by going through the participants answers to each question on the survey, identifying key themes and statements for each landowner by question, and reporting the interconnected and complex variables. The findings of that analysis and synthesis are categorically summarized here by questions on the survey.

Results

Population

The sample consisted of eight participants who all own land and reside in Robeson County, North Carolina. One of the participants is a woman and seven of them are men. Half of the landowners' families have owned or farmed land in the county for somewhere between thirty and fifty years; the other four landowners' families have owned or farmed land in the county for more than 100 years. The total acreage owned ranges from 3 acres to 4,000 acres, and the total acreage leased ranges from none to approximately 6,000 acres. Seven of the eight participants were farmers. The sample has deep roots in the county with many landowners being 3rd, 4th, and 5th generation landowners, and at least one landowner is a 6th generation farmer. Six out of the eight landowners confirmed they were enrolled members of the Lumbee Tribe, and one landowner was not a member of the Lumbee Tribe. Due to scheduling and time constraints, one participant did not complete the portion of the interview designated for Lumbee landowners.

Connection to Land and Water

Beyond the multigenerational ties to the area, participants expressed a deep-rooted connection to the land and water of Robeson County. Although this connection may vary from person to person, most participants consider themselves “stewards of the land”. With agriculture being a prominent pillar in this community, farmers have a unique understanding and relationship with the land and water.

In expressing this connection from an agricultural perspective, one landowner (#2) stated, “Well, I mean obviously if we farm it, it’s our most important resource... but also, it's been that some of it has been passed down generation to generation. I mean, there's a little different connection to it in that, you know. We've been taught that to maintain it and to maintain it in the family...and again, water, same thing. I mean, as a farmer we have to manage water.”. Another landowner (#3) stated “Well, when you say the connection... we're constantly doing work with drainage simply because drainage is the key to success in what we do.”. Landowners that were interviewed held a common understanding that they must work with the land and water, but there are acts of nature that cannot be controlled. In discussing their experience as a farmer through droughts and floods, one landowner (#3) stated, “We readily learned that there's something called nature, and as much as you may try, man will never outsmart nature. Nature always has the upper hand. We live in nature, and we have to live with nature, and we gotta support nature.”.

When one's livelihood is directly dependent on nature, this interconnected relationship is valued and respected. The connection to the land and water is felt and understood by both farmers and community members. As a community leader, one participant (#7) stated, “We are very, very connected to the land and to the water, because, you know, water is life... if you don't protect both, it's not going to be a good future for you if you don't be good stewards of the land and the water. So, we're all very cognizant of the land, and we want to do what's right by it because that's how it does right by us. It's a reciprocal relationship between human beings and the land and the water.”. Even if decisions being made regarding the land and water of Robeson County are aimed towards resolving flooding issues, they need to be in alignment with the interconnectedness of the community and nature.

History and Experience with Flooding

Landowner participants were asked a series of questions about flooding that touched on personal experience, community impacts, mitigation practices and adaptations, concerns for the future, changes in weather patterns, government and community response, changes made by the county, and changes they would like to see made.

Personal Experience and Impacts

Two of the eight participants experienced minimal flooding impacts on their land in the past five years; one landowner attributed this to the use of sandbags to block the drainage line and prevent water from draining onto their land. The other six landowners experienced standing water on portions of their land for extended periods after major storm events like Hurricane Matthew and Florence. Some experienced standing water on portions of their land for weeks after major storms, and one landowner recalled seeing ducks sitting in pools of water in a field that was previously farmed. One landowner claimed that sixty percent of their land had water on it for several days or weeks in some areas. Another participant stated that they have avoided planting in areas where water stands in some of the fields after only a couple of inches of rain and will stand for months during wet seasons. Most of the participants experienced portions of their land impacted by floodwaters after the major storm events in 2016 and 2018.

Overall Concerns and Changes in Weather Patterns

Participants expressed an overall high level of concern about flooding and future impacts of flooding throughout the interview. The overall top concerns about flooding varied but were all beyond the control of landowners. The majority of participants were most concerned about people's homes being flooded in the community and existing drainage system issues with ditches, streams, and major waterways leading to the river. One landowner (#2) stated, "We're five miles from the river and people on the river didn't flood. So obviously there's a problem getting our water to the river... and it continues to get worse with time and if something doesn't happen, it'll just continue to get worse... so it's pretty concerning. I mean, like I say, your kind of at the mercy of somebody else. Somebody above us has to do something to make a change." In

agreement with that statement, other participants mentioned that the control of drainage systems is in the hands of politicians and government agencies that have the power over the funding to solve the major issues with those drainage systems.

One participant expressed greater concern over drought than flooding based on the impact both have had on their land over the past two years. Two participants detailed their concerns over problems caused by beavers with one landowner (#3) stating, “Probably one of the things that gives us the most problems with drainage is a little creature with a big old wide tail on him called a beaver. That's one thing that upsets the natural flow of water...this good old earth was made with natural drainage systems, but those natural systems have to be maintained...they're creatures and they got their place, but they can be aggravating.”. Another landowner described how they believe beaver dams breaking throughout the swamps and their tributaries contributed to the amount of water that overwhelmed the county during major storm events. This landowner (#5) also expressed the need for maintenance of drainage systems stating, “The water needs to move at a good pace, and there needs to be attention put in some of these canals and swamps to make that water keep going and make sure that beavers don't have a lot of stored water too... They build, but they don't build to code. They just build what they want to build. So, I think somebody needs to monitor that and that will help farmers and help that water move on instead of backing up here. Cause if it backed up here and flooded me... and then it happened to break and it leaves me and goes to the next place, well then it's gonna flood some of them people to a level before it breaks and it goes somewhere else. So just constantly keeping that water moving would be the best opportunity probably. And making sure that this natural flow is open to where it can go.”.

When asked about changes in weather patterns over time, one participant stated that they have not noticed any changes. The seven other participants gave similar responses believing that weather has become more variable and extreme. It was noted that the summers seem to be drier while wet seasons tend to be more frequent and intense. Two landowners (#3 & #5) shared variations of the same quote passed down to them from previous generations, stating that “A dry year will scare you to death, but a wet year will kill you.”. There was an overall consensus that the weather seems to be either too dry or too wet with no inbetween.

Government Response

Given their experiences with two major hurricanes within a three-year period, participants were asked if the government is responding adequately to extreme and variable weather such as flooding, hurricanes, and drought. A majority of the participants felt that the response has not been adequate and there needs to be improvements made. One landowner (#5) stated, “I would hope that there could be better response in the future from learning from the mistakes of the past.”. Multiple landowners stated that the lack of resources and funding is the reason for inadequate responses, while others felt that the community had to force the government's hand to get involved. As a follow up to the lack of resources and funding, one landowner (#2) stated that, “Maybe it is bigger than what they can afford today, but you know, I would say that's the cost of doing nothing for 70 years. If you would've maintained it for the last 70 years, then the cost wouldn't have been as astronomical.”. The same landowner met with the Army Corp of Engineers about flooding caused by issues with a main line near their property, where they were told that their focus has shifted since the Corp put that main line in place in the 1950s; according to the landowner, the Corp followed with, “Our focus is to let what should have never been drained, go back to its natural state.”. It was also mentioned that the Department of Transportation shares a similar apathetic stance of “If it's not on our roadway, it's not our problem.”.

This is very telling of government agency priorities and response to flooding issues in the county. It was also indicated that response times were not adequate and that it took years for actions to be taken. Multiple landowners suggested that a preventive approach needs to be taken rather than the reactive approach that has been used. One landowner (landowner #7) stated that, “They can do more. The people that it's impacting don't have the means to mitigate the issues, and whether the government wants to believe it or not, they do have a responsibility to the traditionally disadvantaged areas that are impacted by these issues.”.

Community Response

In addition to government response, participants were asked about ways in which the community has responded to major flooding events such as Hurricane Matthew and Florence. The responses held a common theme of fellowship. Participants' examples of ways in which the community

pulled together to help each other after Hurricane Matthew and Florence include: use of boats to get people out of flooded areas, fire departments getting food and resources from the government to community members, and using whatever resources they were able to provide to help those in need.

One landowner mentioned bringing their refrigerated truck used to haul beef to the community event center to store ice, food, and resources until there was a better response from the government. Multiple landowners mentioned that the importance of ditches was made clear to community members, but many lack resources to have them cleaned out and maintained. Landowners also mentioned a collective effort of community members making calls to push local and state governments to get involved and clear out waterways to get water moving. On the other hand, one landowner stated that since everyone in the community has focused on clearing out water to move it off their land faster, moving it all into the Lumber River basin so quickly can present more problems. One landowner (#7) stated, “We pull together. There is one thing that happens in times of disaster is that we are our brothers' keeper. That resonates through our territory, and it resonates across racial lines. You know, all of us become brothers and sisters in the midst of chaos, and anytime we have issues that impact us, territorially red, yellow, black, white, we all come together because at the end of the race; the only race that really matters is the human race.”

County Changes

Participants were asked about changes made by the county that have impacted the severity of flooding or how flooding is managed. Both positive and negative impacts were noted. The highlighted actions taken after major flooding events that have had a positive impact include: upsizing road culverts, rebuilding roads, debris removal from ditches and waterways, cleaning out the Lumbee River and major canals, writing grants to help address flooding issues, and promotion of cover cropping and no-till farming by the county’s agricultural unit.

On the other hand, landowner responses about changes made by the county resulting in negative impacts share similar themes of issues highlighted under government response. Multiple landowners' responses included themes of funding issues, delayed response times, and prioritized actions not producing meaningful solutions. Participants mentioned that although there were

several projects funded to address flooding and water flow issues in the county, the changes made were reactive approaches to an issue that requires proactive solutions.

Multiple landowners described how grant and state funded projects, all focused on debris removal, did not take place until six years after Hurricane Matthew, and resulted in minimal changes made to further the ability of waterways to handle the increase of runoff caused by development. One landowner (#5) stated, “It is like playing a game of checkers or chess, when you move one piece, then something else is gonna happen over yonder.”. With the number of moving pieces involved in disaster resilience and flood mitigation, any actions taken need to be strategic and considerate of collective impacts.

While debris removal may allow for water to move faster in some areas, solutions need to be centered around more serious issues with main lines and canals. While discussing ongoing disaster resilience projects and the need for solutions that address the major drainage issues in the county, one participant (#7) stated, “Until we can get the state and the local government and the tribal governments together to look at this collectively on how it impacts us all, we're gonna keep kicking the can down the road. And the small people are always going to be the ones at the end of the day needing the most help.”. Disaster resilience projects designed to benefit individual landowners will not serve the community and produce meaningful solutions until major drainage issues in the county are resolved.

Recommendations for Changes

As a follow up question to changes that have been made in the County, participants were asked about the primary changes they would like to see made in Robeson County to reduce flooding. The recommended changes were focused on proactive approaches of being better prepared and evaluating the problems to form meaningful solutions.

One landowner (#5) stated, “Be better prepared now. Now we know it can happen.”. As a way to prepare for future major storms, staging resources like food, water, and generators in the community was recommended; many landowners also emphasized the need for ditches, streams, canals, and main lines to be re-dug, cleared out, and properly maintained before the next major storm hits.

The majority of participants' recommendations were focused on evaluation and analysis to better understand the problems and how to properly solve them. Questions posed by participants who suggested this include: “How long are we gonna stay flooded, and is that because of the limits of that water moving through this system to get where it needs to go?”, “Is it something we can do to make that water movement more efficient?”(#3), “Is there some alternate pathways that can be created, you know, like extensions, that can pull the water different directions rather than it just going one direction?”(#7). These are examples of questions that need to be answered before adequate solutions can be reached.

One landowner summarized what is needed moving forward stating, “They need to look at every drainage swamp and then the branches off of that swamp and figure it out. So, I think there has to be some effort put into figuring out what's going on. That's the first step before you can attempt to fix it. You gotta find out where the problems are.” (#5). Landowners also presented specific ways to evaluate and better understand the current situation. One landowner suggested hydraulic analysis of water flow to figure out how to put in a series of dikes or canal dams. Others suggested putting boots on the ground or using drones to evaluate the condition of the overall drainage system and figure out where the problems lay. While emphasizing the need for further study of the problem, one participant (landowner #5) stated, “I think there's opportunity to do better, but it needs to be a focus on it... there ain't gonna be no quick fix. It's gotta be a constant long-term focus, which it probably hasn't been in the last 30 years... you know, it has to be a focus, it has to be a priority. If it's not, then it just ain't gonna help.”

Conservation Practices and Adaptations

Participants were given an informational flier, which included a detailed chart that describes each of the ten conservation practices of the FloodWise project.

Table 1: Categories for Ten Natural Infrastructure Practices for Eastern North Carolina

Practices	Descriptions
Agricultural	
Cover crops and no-till	(1) Including legume and non-legume cover crops on fields during winter
Hardpan breakup	(2) Breaking up compacted hardpan layers to allow for soil water infiltration
Forests and Tree Planting	Planting (3) bottomland hardwood or (4) pine forest species
Agroforestry	(5) Combining mixed trees and pasture fields
Stream and Wetland	
Wetland restoration / Green-tree reservoir	Restoring natural wetlands in or along waterways with (6) the use of grasses, sedges, and water control structures in water retention basins or (7) bottomland hardwood forest wetland banks
Restore natural stream channels	(8) Restoring previously straightened streams to a natural configuration
Structural	
Dry dams and berms	(9) Constructing low-level dams and berms to retain and store floodwater during storm events
Simple drainage features	(10) Installing land drainage controls to manage runoff

Landowners were asked about any conservation practices they currently use, any land adaptations they have made in an effort to mitigate or reduce flooding, and the level of success they have had with those practices and adaptations.

Since seven of the participants were farmers, several conservation practices were mentioned being used to help mitigate flooding. Six of the eight participants plant annual cover crops, and one participant plants some cover crops less frequently. Four participants use no-till practices, two participants use reduced or minimum tillage, and one participant uses conventional tillage. Three participants use hardpan breakup practices such as deep tillage or strip till on an annual basis. Four participants use underground tiles on their land, with one participant (#3) stating “We

have installed miles after miles of underground drain tile to where the water's got a passageway to get back to the artery of the ditch to leave.” A majority of participants also mentioned mowing and cleaning out their ditches. Other practices being used by at least one of the participants include forest/tree planting, agroforestry, and stream maintenance to keep the streams running through their land clean. Another participant mentioned using sandbags in front of drainage lines during major storms to block the water from flowing onto their land.

One of the eight participants did not make any adaptations to their land stating that, “I don't see me putting a lot of money into something when the problems further down than myself. It would be a waste of money for me until such time as there is a cohesive plan that will effectively mitigate the issue for everybody. (#7)”. It is not feasible for individual landowners to bear the costs while major issues with drainage systems in the county are not being addressed or solved.

In addition to financial burdens, time constraints limit landowners with one participant stating, “It gets to be expensive running the machinery and then finding somebody who can do it cause your time gets limited... as wet as it is right now, it's difficult to actually get in any of the fields and do any type of maintenance if it was needed, and when it's dry, we're handling all the issues and stuff. So, after a while, time just starts to be an issue of handling as much maintenance as you feel like needs to be done. (#6)”

In terms of the success of using conservation practices and land adaptation to mitigate flooding, there was a general consensus that it's difficult to determine without another major storm or flooding event, and most landowners have done all they can do. When asked about success, one landowner (#5) stated, “Oh I think it helps, but I mean, I don't know how to measure success. I mean, it's like you're headed the right direction, but I don't know where success is, whether that's a mile down the road or a hundred miles down the road. We're headed that way. We're headed that way... That's all we can do. We can only walk at the pace we can go. Cause it is what it is. As long as we're headed the right way, it's better than going wrongly.”.

Participants were also asked if they know of any historical, local, or traditional practices used to mitigate or reduce flooding. The practices noted were no-till farming, cover cropping, and removing dams. Multiple landowners mentioned that cleaning out, maintaining, and digging new ditches were the only historical practices that came to mind. One landowner (#5) stated “I mean,

people used to keep the ditches clean... I mean, that was just what they did. And it's just not as big a priority as it used to be... I mean, everybody's water goes to the next person, right? And the next person, and the next person, and the next person. And some people just, you know, if that ditch comes through their property and they don't have the resources to keep it maintained, they just don't have the resources to keep it maintained. I mean, it ain't their fault. You know, so what, what are you supposed to do? I mean, you can't do but what you can do.”.

Issues with maintenance to ditches and drainage systems, as well as funding and personal expenses of maintenance were frequently mentioned throughout the interviews. Another landowner (#3) expanded on these issues by giving a historical explanation of the changes to agriculture that led to an increase in absentee landowners that have worsened some of the drainage problems in the county. According to this landowner, “farming has become big business”, so family farms that thrived before the 1960s are no longer sustainable to maintain, stating that, “We have to cross and produce a couple hundred acres a day just to be cost effective for the price of the equipment.”. This led to an increased presence of absentee owners renting out their family farmland as a source of income. Multiple landowners mentioned this being a drainage and maintenance issue because neither the landowner nor the lessee want to bear the responsibility of the cost of maintenance.

Additionally, this landowner explained the changes that farmers made after experiencing the driest year in 2007 and the wettest year in 2013; many farmers installed artificial irrigation systems after 2007 as an effort to keep the fields wet, but the major rainfall in 2013 turned many of those fields into ponds. Drainage became a priority with this landowner stating, “You know, the drainage system had to be updated to whereas we can use the water, but also get rid of the water and manage the water...Our drainage is one of the most, you know, it's just as important as anything we do, and every year we work on drainage.”.

Program Delivery and Landowner Incentives

Landowners were asked about their interest in participating in a disaster resilience project like FloodWise, as well as necessary considerations and preferences regarding participation and incentive payments. The majority of the participants were interested in participating in projects to help mitigate flooding. While all the participants were open to the idea of a project like

FloodWise, decisions to participate would depend on project constraints, interference with current day to day operations and practices, and costs.

There were several questions posed by participants that would need to be answered prior to participation; the questions focused on financial responsibility, financial feasibility, long range impacts of the project, and what would be needed from landowners. Participants were asked what would be needed for them to consider participating in the project. Some of the considerations for participation depend on the constraints, restrictions, requirements, burden on landowners, scope of work, environmental impact, sustainability, and the ability of the FloodWise project to bring forth meaningful solutions to flooding issues in the county.

One participant suggested that there needs to be engagement and meaningful dialogues held between all leadership entities in Robeson County and North Carolina to formulate real solutions that serve the entire community instead of benefiting individuals. This participant (#7) emphasized their concerns about the FloodWise project and the need for engagement between leadership, community, and researchers to formulate meaningful solutions to the complex issue of flooding, stating that, “They're putting the cart before the horse, really... you have forward thinking projects that don't begin with the basics. They begin advanced without beginning at step one. They wanna begin at step thirty, and what about one through twenty-nine? This is another government paid research to kick the can down the road.”. Based on these considerations, if the FloodWise project hopes to mitigate flooding issues in the county, the focus needs to be on sustainable solutions that benefit individual landowners, the community, and the environment of Robeson County.

There were several financial considerations brought up by landowners. Participants covered financial needs to consider participating, factors that determine adequate incentives, and preferences for incentive payments. Financial responsibility, costs, and benefits were commonly presented as a top consideration for participation. More specifically, the cost of implementing practices, removal if something goes wrong, mechanical, and human resources to accomplish practices, and interference with current operations were financial considerations mentioned by participants. One landowner (#5) stated, “So we want to do as many practices and beneficial things as we can for this planet and that we all live on it, sure, but in the meanwhile we gotta to

keep the banks from running us away or all that we do is for nothing...I think if the program's designed in such a way that it incentivizes farmers in the near term to do these things and they say, great gift, sure, I'll do that. And then it helps people downstream in the long term and helps us in the long term too, then everybody wins. But the short-term hurdle is where the pain's gonna be for the farmers and that kind of stuff. Cause if it costs to change, it costs to do new things, it's just all expensive.”. The cost of labor, equipment, seeds, potential problems, loss of production, and maintenance are taken into consideration by farmers when changing land management practices.

One landowner (#6) mentioned how time is another consideration stating that, “Time starts getting limited when you start moving into the spring, normally addressing issues like that's better in the summer or fall where it's not near as wet. Well, some years it is kind of wet, then that's when your hurricane season starts up. I should say I give more so during the summertime, but that's when we're at our peak trying to get other things done, and we got crops planted. So, dealing with streams, ditches, and stuff through fields isn't feasible then.”. This landowner concluded that winter is the best time for farmers to make changes. Agricultural production depends on time, the season, and weather conditions. There are numerous considerations that need to be taken into account by disaster resilience projects like FloodWise moving forward, including but not limited to: short- and long-range impacts on both individual landowners and the community, sustainability, community engagement, financial feasibility and responsibility, cost vs. benefits, time, weather, and goals of the project to bring forth meaningful solutions.

Participants were asked how they would prefer to receive cost-share payments for implementing flood control practices given the options were annual payments or a one lump sum payment for a set number of years for program participation. Half of the participants stated that they would probably prefer annual payments, while one landowner preferred the one lump sum payment option. One landowner (#6) gave reason to their preference for annual payments by claiming that, “If you're taking into consideration what all needs to be done, you need to be working at it year after year after year. And then if there's a program coming to help, helping to cover installation costs, then you're able to look at, you know, in other words, taking it step by step by step at that point versus lump sum.”. The landowner that preferred a one lump sum payment for a set number of years mentioned that, in their experience with government cost share programs,

there are a lot of upfront costs for the farmer where they do not receive payments until the job or project is completed.

Other participants' preferences depended on the type of practice and its requirements. One landowner (#5) stated, "If I got an upfront cost, then it needs to be upfront. But if I got an annual cost to accomplish these tasks, then it needs to be a payment annually too.". Based on this idea, practices such as cover cropping and no-till farming would work well with annual payments, while installation of structural practices like land drainage features and berms would be better paired with a one lump sum payment.

Institutional and Policy Support

Participants were asked a series of questions about the support of systems, policies, programs, and organizations in place; these questions covered a range of topics including water management needs, barriers to success and participation, opportunities to better support landowner and community needs, trust of organizations, and preferred organizations to work with. The goal of this set of questions was to better understand how current systems, policies, programs, and organizations support or hinder the needs of landowners and the community to better adapt to extreme and variable weather.

Participants were first asked what systems, policies or programs currently help or hinder them from meeting their water management needs. The majority of respondents stated that they were unaware of any and/or did not participate in any public programs. Only two landowners mentioned support programs they currently participate in: one stated that they recently signed up for the climate resilience packages and participate in the soil water conservation program of reduced tillage and cover cropping, while another receives five dollars per acre for cover crops from a program through the Farm Services Agency that is applied to their crop insurance.

In discussing water management needs, there were no specific systems, policies, or programs declared as hindering landowners, but there were obstacles faced and suggestions for improvement brought to light by the participants. Ultimately, funding and complicated, restrictive requirements are the biggest challenges to supporting landowners' water management needs.

One landowner (#3) described having to receive approval from Soil and Water Conservation for drainage projects on their land, but there were never any issues since, “technically, you're not putting in a new drainage system, you're managing the old one.”, and the majority of land in Robeson County has been drained at some point in time. This landowner described having to work to maintain drainage for years upon purchasing or leasing farmland to stay within the state’s guidelines for drainage, in order to receive benefits from the state like price support and farm payments. Some of the drainage issues on their farmland were attributed to government funded projects in the forties that put underground drain tile systems made of terracotta placed deep below the subsurface that are failing and well past their life expectancy. The issue of having to replace entire drainage systems on land to receive government support benefits was illustrated as, “A lot of your landowners either don't wanna spend the money or simply don't have the ability of the funding to do the project, but it's their land... me as the farmer, if I'm leasing your land and I go out there and spend the money, I have just basically increased the value of your land at my expense.”.

Some participants suggested that studying the main ditch lines to address major drainage issues, working with water retention technology used in states like Arizona, and maintaining streams and ditches throughout the county are ways in which the government can better support their water management needs. One participant (#5) expressed how improving the soil will benefit water management by stating, “How do we make the soil more healthy and resilient, and hold moisture in dry times, but accept water in wet times? And that's through increased organic matter and I mean, just making it more healthy. So, if they can help us do that, I think that helps everybody.”.

Upon discussing the complicated requirements and limited funds available for cover crop conservation programs in the county, one landowner (#5) suggested, “They need to realize that incremental steps in the positive direction is making progress. You don't have to arrive at the destination tomorrow as long as you get there...so I think what the government could and should do is recognize that and say, okay, you are going in the right way. And so, they set these bars, you gotta do this and this and that, this, this and the other. But they need to say, okay, you are going the right way. You know, and each person may be at their own pace. So, if this person's able to go at a walking pace and the other guy's able to go at a jogging pace, maybe somebody

else is sprinting along the way, that's all okay as long as they're all going toward the same place.”.

Participants were asked what can be done to help the community better adapt to extreme and variable weather and reduce any barriers to participation in decisions being made over the land and water in Robeson County. The majority of responses were centered around information, communication, education, and action. One landowner (#1) referred to the FloodWise informational flyer I provided each participant with stating, “Maybe more little charts like this. Easy to read information.”.

Multiple participants felt that education and knowledge were essential in helping the community better adapt to extreme and variable weather. One landowner (#6) expressed interest in classes and programs that offer information and knowledge, stating that, “Classes, programs and stuff that offers knowledge... We farmers are the ones that control the bulk of the land. So we're the ones that I guess needs to be a little more insightful of what needs to be done, and just having the knowledge to be able to do it and otherwise the assistance or funding to carry those out.”.

Two of the participants concurred that open dialogue between all parties and more communication with better explanations are needed moving forward. In discussing barriers participating in county programs, one landowner (#3) expressed that more often than not, local landowners have similar sentiments of, “They’re trying to do something we don't wanna do, rather than realizing maybe they're trying to help you.”. Understanding through better communication and explanation of the project and its goals may help reduce barriers and increase landowner participation.

Some of the participants felt that a lack of action and funding to take action served as barriers to participation. One participant mentioned expressing their concerns about cleaning out ditches and streams to a county official, but no action was taken; they did not experience a barrier in communicating issues, but instead believed the barrier was funding to get things done. Beyond the need for more communication, education, and funding, the level of authorization required for actions to be taken serves as a major barrier. One landowner mentioned participating in meetings after Hurricane Matthew in 2018 where no action has taken place from those meetings; they also

mentioned that when decisions require an act of congress or a committee act, large scale actions become increasingly difficult to accomplish and often exclude community input.

To reduce barriers to participation, one landowner (#7) suggested, “You can actually put actions to words. You know, you can talk any situation to death, and you can really talk and come up with things that sound really good. But it's going to take action, and it's going to take purposeful action toward solutions in order to get people interested to participate.”. Based on participant responses, there is a need for information sharing, funding, and purposeful action.

Participants were also asked a series of questions about agencies and organizations. This set of questions was aimed at determining the agencies and organizations they would or would not like to work with if a voluntary program were established and whether there was trust or mistrust in certain organizations. Participants expressed a variety of perspectives on public agencies and organizations. Some were open and willing to work with any agency or organization, some expressed indifference with no preference for working with any particular agency, and some expressed an overall mistrust of government agencies and organizations in general.

The specific agencies named by landowners as their preferred organization to work with include the Farm Services Agency (FSA), North Carolina Soil and Water Conservation, and the Natural Resource Conservation Service (NRCS). Three of the participants are currently working with one or more of these agencies. One landowner stated that their work with NRCS gave them insight and got them involved in conservation programs that helped them to purchase a no-till drill and experience the benefits of cover cropping and no-till practices. In their experience with programs like the Environmental Quality Incentives Program (EQIP), one landowner stated, “It really helps increase the knowledge on different stuff as far as what helps prevent flooding and erosion.”.

The participants who have experience working with different agencies were open and willing to work with any organization, while the participants who have not were uncertain of most agencies. In discussing working with and trusting public agencies, one landowner (#6) stated, “Government can be tricky at times and slow”. Lack of communication was another common issue faced by landowners working with different agencies.

While expressing mistrust of government agencies and officials, one landowner (#7) stated “You know, this thing's been going on for a long time, and no one has really put a foot forward to really actively do anything. They come around during election season and they're all about whatever you need... So, you've got to have movers and shakers. You've got to have people who are community connected as well as politically connected. Because it's going to do us no good to know who the politicians are without having the trust of the people in the community, the grassroots.” Given the uncertainty and mistrust of government agencies expressed by many of the participants, moving forward there needs to be proper communication, community involvement and connection, and meaningful action as an outcome of public programs involving agencies and organizations.

Participants Final Thoughts and Recommendations

Landowner participants offered a wide variety of final thoughts, ideas, questions, and recommendations for the FloodWise project. Some of the landowners appreciated the thorough set of questions and insight into the different conservation practices included in the FloodWise project.

One landowner (#2) asked if the cost of flooding on farmers and landowners has been considered and factored into the FloodWise project stating that, “If I lost say 40 acres of corn, that's \$20,000... in the research, if you had numbers, then it just adds another dynamic to the importance.” This landowner also spoke on how crop insurance “doesn't make you equal, it gets you back to where you can stand again”. Another landowner emphasized the importance of funding in projects like this and suggested getting assistance with public funding. Regarding research, it was suggested that putting boots on the ground in the watershed to figure out how to expand the watershed and discover alternate drainage pathways and canal systems is needed.

Two participants emphasized the need for collaborative efforts in forming solutions. One landowner (#8) categorized solutions as “a quick fix, a slow fix, or a world change”. Another landowner (#7) suggested “The biggest thing for me is getting the leaderships for all impacted areas together to be a brain trust to develop... You know, we need people who are the impacted and you need their leadership to come and to join with local leadership, and state leadership, and even regional leadership to develop solutions for these floodings. You know, if the people over a

hundred years ago understood the dynamic of digging canals, with all the education that's been had in that hundred and some years, where are the solutions that should be happening throughout the leadership who bring themselves in front of us every election season, telling us how they care? And these flooding issues are evidences that they don't care.”.

Based on participants' suggestions, there needs to be collaboration between community, leadership, and researchers working together to dissect and understand the County’s complex flooding problems, formulate meaningful solutions, and figure out funding to take action and carry out those solutions. One participants (#7) perspective posed a question that needs to be considered moving forward with the Floodwise Project, “Are we going to create someone else's issue? And that's what I mean by kicking the can down the road. I don't want my issue to become someone else's. I want my issue resolved for everybody on down the road. I want resolve. I don't want the, well, as long as it doesn't bother me, I'm good. I'm not that kind of person. I am definitely not that one. I believe in the whole, the collective, and if my problem is going to become somebody else's problem, then guess what? I guess I'll just keep it as mine, because at least I know it's here and it's not going to hurt anybody else.”. When it comes to actions taken by this project, the outcomes of those actions need to be analyzed to consider if individual benefits are being prioritized over community interest.

Lumbee Landowners

History

Last, participants were asked if they were enrolled members of the Lumbee Tribe. Six of the eight participants answered this set of questions. The goal of this set of questions was to gain a better understanding of the experiences and perspectives of Lumbee landowners.

Being that the Lumbee have historically lived in this area long before anyone else, participants were first asked about historical events or knowledge that have had lasting impacts on the land and water, will help to better understand this area, and may be carefully applied as a means to adapt to changes in weather. Multiple participants could only recall recent history of their

experience with Hurricane Matthew and Florence, with one landowner (#8) stating, “It was scary there that, you know, we get two 500-year hurricanes 25 months apart.”.

Legislation put in place over the past fifty years that increased regulation to protect water quality was noted as a part of history that has had a positive lasting impact on the waters of the Lumbee River Basin. Throughout the interviews, participants referred to the river as either the Lumbee River or the Lumber River. One landowner (#7) described the history of the rivers’ name as, “Traditionally the name of the river was Lumbee, and because of the logging industry that was booming at the time, I think it was maybe the 1800s...they went to the General Assembly, and they had the name of the river changed to Lumber. Now my tribe has the support of the North Carolina Commission of Indian Affairs. We're going back to that same general assembly, and we are petitioning to reclaim the name of the river and restore it back to the Lumbee River.”.

When looking at the history of Native Americans residing on land that has been condemned as being undesirable and barren, there are two different occurrences to take into account. One being Native Americans were forced onto these lands, and the other being that Native Americans chose these lands as a way to protect themselves from outsiders. Both are two sides of the same coin that is colonization.

One landowner (#2) framed one side as, “I don't think it affects the core causes of flooding, but if you look at it from a heritage standpoint, from the Lumbee or most other native communities or tribes, and in early times when they were moving the tribes around... the Indians were kind of moved into the places that were non-productive, here being a swamp... I mean if you look at it nationally, you have Indians in mountains, you have Indians in deserts, and then they're in the swamps. So, we were kind of forced into these positions, but now and over time I guess it was accommodated by the government putting in drainage systems. But now it's been forgotten, you know? And they say, let it go back to its natural state. Well, we're here... and you see that all throughout history if you study it. And I think for us the drainage issue is equally... that's why it's as important as it is. You know, it's because this is where we were left and it's our issue.”.

On the flip side, another landowner (#7) stated, “My people have been dealing with the extremes of Mother Nature since way before Columbus got lost, you know? We've been having to deal with it and to make do and use our own common-sense approaches to mitigate issues. I guess

sometimes you just get tired of having hope, having hope that something will change... It's not just these people that are here today who are counting on me. It's the next seven generations. I have a responsibility to the unborn as well as those who were here. And I, I have a responsibility to my ancestors to keep the things that they held dear alive.”. Both viewpoints are one in the same with the end result being a need for change that is not rooted in colonialism.

Considerations for Participation

The next set of questions were centered around collaborating with Tribal members and leaders. The purpose of this set of questions is to identify important considerations and understandings to have when collaborating with Tribal members and leaders, what is needed to ensure that Tribal members and leaders are included in environmental decision-making processes, and recommendations for ensuring Lumbee landowners are able to consider participating in the FloodWise project. When asked about important considerations to have when collaborating with Tribal members and leaders, honesty and respect were recognized as being fundamental to collaborative efforts. One landowner (#2) stated, “I think as long as they feel like you're genuine, you don't have anything to worry about.”.

Multiple participants also mentioned the importance of respecting Lumbee landowners' connection to the land and their property. One landowner revealed that although they appreciated advice and suggestions to improve land management practices, they are quite protective of their property; advice and suggestions become offensive when landowners feel pressured or forced to do something on their land. Considering the historical significance of this connection, one landowner (#8) proclaimed, “You know, the biggest thing is to never mention relocation. The American Indians were relocated during the 1800s and relocation is not a word that they want to hear. So that's the biggest thing... how can we work toward a solution for the health of the river and the health of you and not relocate?”.

To ensure Tribal members and leaders are included in environmental decision-making processes, it was suggested that meetings take place at local Tribal centers. It was also suggested to find ways to make information about meetings more accessible to community members, such as mailing out information for those who may not be able to receive information online. In ensuring that Lumbee landowners are able to consider participating in state or federal disaster resilience

projects such as FloodWise, multiple landowners advocated for better communication and accessible information to keep people informed.

In discussing the importance of collaborating with Tribal community representatives, one participant (#8) stated that Lumbee landowners “put a lot of faith in certain people”, and “each area has got a certain level of management that should be involved in anything coming in.”. Since there are community representatives for each district in Robeson County, collaborating with Council Representatives for the Lumbee Tribe is essential moving forward and will help get information to Lumbee landowners throughout the county.

Federal Recognition

Participants were asked a set of questions about the Lumbee Tribe’s current federal recognition status. The goal of these questions was to gain a better understanding of the impacts of the Tribes limited federal recognition status on the environment and the community.

Participants provided an array of perspectives to consider. Participants were first asked whether the Lumbee Tribe’s current federal recognition status has any impact on the environment, and if full recognition status would reduce any barriers to participation in decisions being made over the land and water of Robeson County.

Three of the six Lumbee participants did not believe that a change in federal recognition status would have any impact on the environment nor would it reduce barriers to participation in environmental decision-making processes. One landowner (#6) stated, “Me personally, I don't think so... I think the individuals, regardless of race or their ethnic groups, needs to be in tune on what they need to do to manage things for the future, the future citizens. You know, that's the way it actually needs to be. So no, I don't think full recognition would really help.”. Two landowners focused their reasoning on funding and benefits provided by full recognition status. One landowner (#1) felt that “free checks” would be more detrimental to the community, and too much energy is spent on federal recognition.

One participant (#8) felt that the benefits would not outweigh the limitations of full federal recognition. This landowner detailed the limitations and loss of current grant funded programs stating, “The housing authority would go away and some of the assisted livings would go away,

cause it'd be an automatic program run through the Federal Indian Bureau of Affairs instead of the Lumbee Tribe going out and getting a grant.”. This landowner also brought up the issues that may arise with “the hotels and chance of gambling coming in”, suggesting that the increase in land value would reduce accessibility to certain land. Half of the Lumbee participants felt that full federal recognition would be more limiting than beneficial to the community and environment.

The other half of Lumbee participants provided perspectives on the other side of the spectrum that focused on the benefits of full federal recognition status. These three landowners highlighted the resources that would become available with full federal recognition of the Lumbee Tribe. One landowner (#2) detailed the benefits provided by government funding to cover the costs of environmental programs like drainage projects, stating that, “Being federally recognized, it’ll bring a lot more money to cover those restricted things. So, the unrestricted money, there will be less of it used for restricted purposes...So basically any money coming from the government is restricted, but we have some companies that's tribal owned that generate revenue that's unrestricted. But if they have to use that money to subsidize the government money, then that money's not available for other things.”.

It was also mentioned that Tribal leadership would change under full recognition with leadership positions being “more highly sought after” with better pay; it was suggested that a change in leadership would foster a change in environmental decisions being made, which could be either positive or negative. These three landowners highlighted the increased funding, accessibility to programs, and power and control over environmental decisions being made as the benefits of full federal recognition status. In discussing the programs that would become available to the Tribe, one landowner (#7) detailed the government's strategic, systematic design of federal recognition status as, “They play this in a conniving way... They use a caste system or a system of recognition, and they give certain tribes that status, and they give em’ a pot of money, and they say... if any other tribes come in now, we're not going to increase your pot of money. We're gonna cut your money. So, what happens is, they pit these tribes that are, it's a class system, and the uppers are looking down on the ones who have been here since long before contact or anything. And they fight over the pot of money. And I keep telling my people... I support federal

acknowledgement in the sense that the ancestors, they sacrificed so much for the principle of it. But I believe our salvation comes from self-recognition all the way, all the way.”.

Sovereignty

Last, Lumbee participants were asked what sovereignty meant to them and what it would look like. There are many ways to view and define sovereignty, but for this study, Tribal sovereignty can be viewed as being “politically distinct from the United States” and having the “right to govern their own affairs”. (Lowery 2018). The purpose of this question was to gain a better understanding of Lumbee landowners’ perspectives on the complex matter of Lumbee sovereignty and how it would affect decisions being made over the land and waters of Robeson County. Participant viewpoints of sovereignty brought up themes of ownership, governance, unity, and balance.

In describing the complex nature of Lumbee sovereignty, one landowner (#2) stated, “There's not a reservation you know what I'm saying? It's all individually owned parcels of land. So, what sovereignty looks like with that? I don't, it's really hard for me to imagine... You know, cause I got mine, you got yours, and everybody else's got theirs, and there's a struggle of togetherness... So, I don't know what it means or how it looks. Cause I guess I've never thought of it. Cause I don't know that it's accomplishable.”. This brings to question, what would Tribal sovereignty look like outside of a reservation? The struggle of togetherness was also brought up by another landowner who described the difficulty of getting landowners on board to conjointly clear out ditches; this landowner hoped that sovereignty would allow for more to be done to collectively improve drainage issues.

One landowner (#6) pondered the benefits and limitations of less governance over land ownership, and concluded that there are regulations that benefit everyone in the long run; this landowner claimed that, “I’ve talked to individuals who feels like well I own it, I ought be able to do what I want to with it, and you gotta have some type of governing control, some way, some form or fashion or else, people are just gonna run 'em up point blank. You gotta have somebody to tell you no, you can't do that.”. This viewpoint of sovereignty brings to question who would gain regulatory authority over land and water?

Another landowner described actively fighting for sovereignty stating that, “If we do not exercise our sovereignty with regard to our land and our water while this atmosphere exists, then I don't know if the opportunity will present itself for my grandchildren and my great-grandchildren.”. This landowners viewpoint focused on unity between Southeastern Tribes working together to achieve sovereignty over the land and water, and described this idea as, “If we can keep a unified front, then what happens in the land of the Lumbee can happen in the land of the Haliwa-Saponi, the Coharie, the Occaneechi, the Sappony, the Meherrin, and the Waccamaw Siouan. All of the other ones are sister tribes, and we have to be our brother's keeper... it has the ability to affect all indigenous peoples, but we've got to have, we've got to have a voice. And the government recognizes its own entities. So, the Commission of Indian Affairs is the voice that the governor listens to. So being able to access sovereignty through the sovereignty that the state already acknowledges is the way we protect our lands and our waters, and we develop our own legislations... we have a law right now with regard to being able to collaborate with the tribe in regard to projects and things that will impact our people. They have to bring the tribe to the table. We wrote laws to do that. So, if other tribes will get on board, meaningful consultation is what we call it, a mandate on meaningful consultation. If other tribes will do that, we can collectively partner together and become a southeastern jurisdiction of tribes.”. This landowner focuses on existing political avenues in the state to achieve and grow sovereignty for not only the Lumbee Tribe, but the collective of North Carolina state-recognized Tribes.

One landowner (#8) describes sovereignty over the land and water as, “Just a balance... I feel that we need to balance everything first. The biggest thing is... trees is very important sovereignty in this area. And I feel that the timber companies coming in offering these dollars and everything, and depleting and deforest everything... And the sovereignty aspect of the Lumbees is that we shouldn't never rape the land. That's just like raping your mother, to go there and strip it all of natural resources, or sell the sand, or sell all the wood off, and don't reestablish it... Or never clear cut you know, select cut. There are very few forests get done that way now.”. This perspective of sovereignty focuses on protection from entities depleting the land of natural resources. Collectively these viewpoints cover a broad spectrum of the complexities of sovereignty. Based on landowner perspectives, Lumbee sovereignty grants the Tribe political power over the community's land and water and protects their natural resources from further exploitation.

Discussion

In looking at the issues of today, it's important to understand the history of the issues faced over time, decisions made to address issues, and the impacts of those decisions. Knowledge of this history can bring understanding of the issues of today, and lead to meaningful solutions that take past decisions and their impacts into account. Without fully understanding the issues of today, we cannot put forth adequate solutions for tomorrow.

The history of the Lumbee people sheds light on the issues impacting the community today. Much of the research conducted on the Lumbee has been extractive, used as means to continuously deny the Tribe full federal recognition status, and has discredited and excluded their voices. This extractive research plays a role in the limitations of the Lumbee Tribes federal recognition status and their governance power over the land and waters of this region. The history of this region also brings forth generational knowledge and experience from community members whose stories paint a picture of present-day problems and the need for adequate solutions.

The history of the drainage movement sheds light on the swamp drainage projects in Robeson County that resulted in swamplands being converted into agricultural lands; many of these agricultural lands face significant drainage issues and flooding. Changes in agriculture overtime can provide insight on the worsening of drainage issues in the County. The decrease in family farms and increase in absentee landowners has led to maintenance issues with no one wanting to take on the responsibility or cost of maintaining land drainage systems. Another occurrence impacting drainage and maintenance is the cost of replacing outdated and failing government funded tile drainage systems on lands. The increase in variable and extreme weather conditions have also impacted agriculture and drainage issues over time with the installation of artificial irrigation systems due to extreme drought leading to the need for updated drainage systems due to severe flooding.

Lack of maintenance to the major canals and mainlines and failure to update drainage systems in the county have led to costly issues that play a major role in the severity of flooding during major

storms. The community's experience of inadequate, delayed response after the severe flooding caused by Hurricane Matthew and Florence shed light on the county's major drainage issues and a lack of support and resolution. Many of the projects and efforts after major hurricanes have taken reactive approaches to an issue that requires proactive advancements. Apathetic stances and delayed efforts of many government agencies have resulted in exacerbated drainage issues and an increasing need for actionable solutions.

Moving forward, the major flooding and drainage issues in the county need to be a constant, long-term focus with actionable and adequate solutions being a top priority. Research needs to be conducted to map out specific drainage issues throughout the county; this includes all waterways and drainage systems currently in place. Creative solutions need to be generated that consider: fixing, updating, and redesigning drainage systems; creating alternate drainage pathways; maintenance plans to ensure that drainage systems continue to work in the future; and the cost and funding required to carry out actions. There needs to be a collective effort between local government representatives, state government agencies, Lumbee Tribal government, researchers, and community members working together to bring forth real solutions put into action. Finally, there needs to be proper and effective communication, education, knowledge sharing, and action between all parties involved.

For disaster resilience projects like FloodWise to benefit the community, major drainage system issues in the county must take priority over individual land drainage systems. Efforts focused on mitigating floodwaters on individual land parcels may result floodwaters being pushed down the line or "kicking the can down the road". Disaster resilience efforts need to be cohesive and involve a collective of community members and leaders in the planning, design, and implementation of solutions. Moving forward, the FloodWise project and similar disaster resilience projects need to consider short- and long-range impacts on both individual landowners and the community, sustainability, community engagement, financial feasibility and responsibility, cost vs. benefits, time, weather, and goals of bringing forth meaningful solutions.

Conclusion

Nature, land, water, and community are major pieces of the complex issue of flooding in Robeson County, North Carolina. This region is no stranger to flooding, but there has been inadequate resolve due to policies and solutions taking reactive approaches rather than proactive advancements. Outside entities hoping to solve flooding issues do not have the understanding, knowledge, or connection to the land and water in this region that community members have. The participants interviewed in this study are experts on these issues due to their lived experiences, agricultural backgrounds, multigenerational ties, community involvement, and connection to place. Their knowledge, perspectives, and experiences are vital to ongoing and future disaster resilience efforts aiming to bring forth meaningful solutions to the county's flooding and drainage issues. The increase in extreme and variable weather conditions and occurrences of severe flooding in Robeson County calls for proactive and meaningful solutions to major drainage infrastructure issues. Severe weather conditions, major storms, and hurricanes cannot be controlled, but purposeful and proactive solutions can help to ensure that the community is not devastated by floodwaters like they have been in the past.

“Collective continuance” is the key to disaster resilience projects like FloodWise that are aimed at reducing and mitigating flooding. Collective continuance refers to “a community’s capacity to be adaptive in ways sufficient for the livelihoods of its members to flourish into the future” (Whyte 2013). Flood disaster resilience is designed as an adaptive effort to address issues of flooding in Robeson County and reduce the impact on landowners and downstream communities. Since this project depends on landowners to implement Nature Based Solutions on their properties, involving the community and leadership entities is essential moving forward; this includes Lumbee Tribal members and leaders. This project will only be successful if there is a collective of landowners participating and working together to mitigate flooding across the landscape. Individual landowners can implement practices that reduce flooding impacts on their land, but if their water is being pushed down the line causing more water to collect on another's land, what is being solved? Once the major flooding and drainage issues in the county are

resolved, flood resilience projects like FloodWise can effectively benefit the land, water, and community of Robeson County.

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