

# A Process for Asset Mapping to Develop a Blue Economy Corridor

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## Abstract

Through a multistakeholder partnership, this research aims to catalyze the development of a blue economy corridor (BEC) through community-based asset mapping in the eastern portion of the Tar-Pamlico River Basin in North Carolina, a geographic area predominated by physically and culturally rural landscapes. Underpinned by appreciative inquiry, this project aims to counter a deficit model of community development in this portion of eastern North Carolina by increasing awareness of quality of life assets that communities currently possess and may leverage for sustainable economic, environmental, and social development through their inclusion in a digital interactive map freely available to the public.

*Keywords: blue economy, sustainable tourism, community development, community-engaged research, rural community development*



Over the past decade, research has evinced the connection of tourism and recreation to residents' quality of life (QoL), thus creating an argument for prioritizing investment into these industries not just for economic development but for community well-being (Bricker et al., 2016; Kachniewska, 2015). Investing in economic development activities that prioritize residents' QoL is one pathway toward addressing the compounding effects of other challenges to rural destination resilience (e.g., outmigration, conversion of biological to technology crops) that are inextricably linked to rural destination trajectories (Battino & Lampreu, 2019; Bevk & Golobič, 2020; Li et al., 2019).

Through a multistakeholder partnership, this research aims to catalyze the development of a blue economy corridor (BEC) through community-based asset mapping in the eastern portion of the Tar-Pamlico River Basin in North Carolina, a geographic area predominated by physically and culturally rural landscapes. Across North Carolina coastal communities, the tourism and recreation sector comprises over 50% of North Carolina's blue economy (DITC, 2014; North Carolina Sea Grant, 2023). The sector's success highlights increasing consumer

demand and opportunities for all North Carolina coastal communities to participate in the blue economy by leveraging their blue resources for tourism and recreation development. Existing secondary data sets suggest a wealth of nonmaterial QoL assets (Lucas, 2022; North Carolina Department of Environmental Quality, 2023) to be triangulated with local knowledge for all users within the corridor to experience (Keen et al., 2018; Okafor-Yarwood et al., 2020).

To extend agency to residents in the design and content of the corridor, we used an appreciative inquiry (AI) approach to identify existing assets within the corridor. Founded within positive psychology, AI is a strengths-based qualitative asset mapping methodology that has been particularly successful when implemented in rural communities to focus on what they currently have rather than what they may lack to contribute to local tourism development (Che Aziz et al., 2018; Joyner et al., 2019; Koster & Lemelin, 2009; Paige et al., 2015). Through AI, this project aims to counter a deficit model of community development in this portion of eastern North Carolina by increasing awareness of QoL assets that communities currently possess and may leverage for sustainable economic, environmental, and social development through

their inclusion in a digital interactive map freely available to the public. Rogerson, 2019).

## Literature Review

Originating from the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012 (DITC, 2014), the “blue economy” in its most basic form is an economic development strategy premised on leveraging water or “blue” resources. Although many official definitions of the “blue economy” exist (NOAA, 2021; North Carolina Sea Grant, 2023; Silver et al., 2015; Smith–Godfrey, 2016), all share the industrialization of water resources. The blue economy framework is frequently applied in the context of leveraging ocean and sea assets, but it has also proved applicable in freshwater environments (Graziano et al., 2019). In a related geographic vein, an interesting feature of the blue economy development approach is its inclusion of both urban and rural systems under one “blue” system (Campbell et al., 2021; Keen et al., 2018).

In the United States, states such as North Carolina have embraced the blue economy. An industry cluster analysis, which is a typical asset mapping approach within a blue economy development framework, reveals that tourism and recreation comprise over 50% of North Carolina’s blue economy (North Carolina Sea Grant, 2023). In North Carolina, rural coastal communities that are inextricably linked to the state’s embraced blue economy vary widely in terms of population density and economic indicators. Indices of economic distress in North Carolina counties include average unemployment rate, median household income, percentage growth in population, and adjusted property tax base per capita, with Tier 1 as the most economically distressed and Tier 3 the least economically distressed (North Carolina Department of Commerce, 2022). Although the eastern portion of the Tar–Pamlico River Basin consists only of Tier 1 and Tier 2 counties, one county within the basin, Beaufort County, ranks eighth in the state for percentage of employment in North Carolina’s blue economy (North Carolina Sea Grant, 2023). Critiques of the mainstream blue economy framework for its orientation toward a neoliberal extractive development agenda are found broadly within academic literature, including tourism development research (Islam et al., 2020; Kabil et al., 2021; Okafor–Yarwood et al., 2020; Phelan et al., 2020; Rogerson &

Counter conceptualizations of the blue economy centralize human well-being (Campbell et al., 2021). For example, through an ecosystem services approach, Phelan et al. (2020) offered a model for community-based ecotourism in Selayar Island and Takabonerate Marine National Park, Indonesia, that attributes existing community social, human, and built capital to the ecosystem services provided by natural capital (i.e., blue resources). Similarly, Okafor–Yarwood et al. (2020) proposed a restructuring of the blue economy framework to that of a “cultural livelihood–ecosystem conservation triangle” that inverts the traditional top-down approach of natural resource commercialization, thus positioning developers’ collaboration with local communities as the starting point in economic development strategies that would leverage these blue resources. Others support this version of the blue economy framework, as it acknowledges “historical development pathways” of using blue resources and may reduce negative ecological impacts that are often amplified in marginalized communities (Cisneros–Montemayor et al., 2019; Howard, 2018). Among these marginalized communities are those also classified as “rural” and who depend on blue resources in ways that include but are not limited to subsistence and economic activities such as small-scale fishing (Keen et al., 2018).

Research has long supported the notion that development strategies which include tourism and recreation as economic drivers are most successful when they are underpinned by residents’ support for a given development strategy (Boley et al., 2014; Kim & Thapa, 2018; Yeager et al., 2020). Support for tourism among residents, including those in rural communities, is directly linked to feelings of agency in the tourism development process (Boley et al., 2014; Strzelecka et al., 2016). This project aims to leverage an ecosystem services approach supported by the blue economy framework to develop a BEC in the eastern Tar–Pamlico River Basin in the form of a digital interactive map for all users of the eastern portion of the basin. This digital map will also serve as a regional economic development tool (e.g., marketing, identifying new assets) for the communities included in this corridor.

## Setting the Context

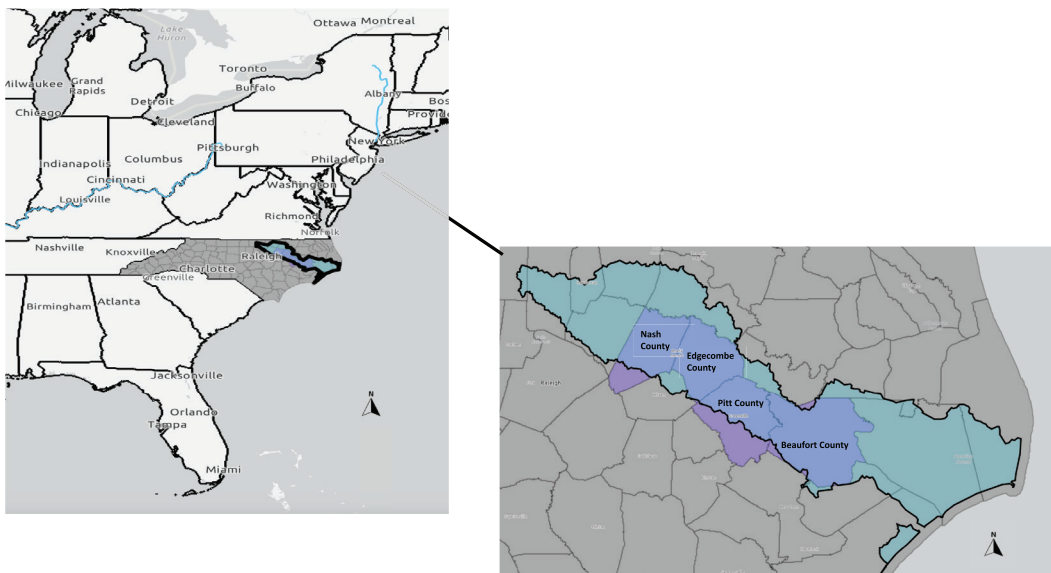
East Carolina University (ECU), located

in Greenville, North Carolina, has been designated an Innovation & Economic Prosperity University by the Association of Public and Land-grant Universities (East Carolina University, n.d.b). This designation was earned in part by ECU's service to 29 counties in eastern North Carolina that are classified by the state as facing greater economic disparities than other areas of the state (Division of Research, Economic Development and Engagement, n.d.). The Tar-Pamlico BEC currently serves three Tier 1 counties (Nash, Edgecombe, and Pitt Counties) and one Tier 2 county (Beaufort County) in eastern North Carolina (North Carolina Department of Commerce, 2022; Figure 1).

Small municipalities comprise most of the population centers within these four counties, with the largest population centers existing in two cities—one straddling Edgecombe and Nash Counties, and another within Pitt County (Mid-East Commission, n.d.). Outside these small municipalities, an average 46% of the remaining population across all four counties is considered “rural” (Ratcliffe et al., 2016). Although indices of population density, distance from large urban centers, and economic specialization help define and measure rurality (Deavers, 1992), social transformations have also evolved the meaning of rurality. For

example, during the United States’ “rural rebound” in the 1980s, urban transplants amenable to commuting to urban centers exported urban expectations to their rural homes, inducing “rural gentrification,” which further diversified the portfolio of the rural nonfarm economy to service and manufacturing sectors (Abay et al., 2021; Hazell et al., 2007; Li et al., 2019). Although manufacturing is an important contributor to each county’s economy (Mid-East Commission, n.d.; Upper Coastal Plain Council of Governments, n.d.), the service sector, particularly economic activity related to outdoor recreation and tourism, is becoming an increasingly viable option for diversifying local and regional economies within the Tar-Pamlico River Basin and surrounding areas that possess a similar portfolio of natural, sociocultural, and economic resources (Bradshaw et al., n.d.; Fryberger et al., 2016). More specifically, increasing numbers of potential outdoor recreation and tourism opportunities are being created through reinvestment into waterfront structures. Examples include revitalizing manufacturing plants into “live, work, play” places (Rocky Mount Mills, n.d.), downtown revitalization near the Tar and Pamlico Rivers (City of Washington, North Carolina, 2022), and a newly emerging cohort of outdoor recreationists with a wider documented range of motivations and preferences in

**Figure 1. Geographical Context of Tar-Pamlico Blue Economy Corridor**



*Note.* The map in the top left corner highlights North Carolina in the United States of America. The map in the bottom right corner reflects the four counties in the Tar-Pamlico BEC where asset mapping is occurring, with the Tar-Pamlico River Basin overlaid on these counties.

outdoor recreation opportunities (Landry et al., 2021; Taff et al., 2021).

For Tar-Pamlico BEC communities, the goal of this project is to work with residents to identify and subsequently map existing assets that contribute to their QoL to be leveraged for sustainable economic, socio-cultural, and environmental development within their communities. For students working with the Tar-Pamlico BEC, the goal is to provide a transformative educational experience that includes community-engaged research experience. Faculty working with the Tar-Pamlico BEC aim to invest their expertise and time to maintain and improve the QoL in the Tar-Pamlico River Basin that they call home.

### Project Details

In spring 2019, researchers from ECU in partnership with Sound Rivers, the conservation nonprofit for the Tar-Pamlico River Basin, proposed the idea of identifying nonmaterial QoL assets in the river basin and subsequently visualizing them on a digital interactive map. Sound Rivers manages the Tar-Pamlico Water Trail, which features river access points and reservable camping platforms on a digital interactive map (Sound Rivers, 2016). ECU researchers proposed the new and expanded map to live on Sound Rivers' website with the intention that the camping platform reservation system and existing assets remain in place with the addition of the proposed nonmaterial QoL assets (Eslami et al., 2019). Hosting the Tar-Pamlico BEC map on Sound Rivers' website is a win-win in that the nonprofit could potentially receive more site traffic and the project's foundation would be tied to an organization that promotes environmental sustainability in the region. After agreement to partner on the project through a formal memorandum of partnership (MOP) between ECU researchers and Sound Rivers in spring 2020 (Appendix), a subsequent Tar-Pamlico BEC advisory group was formed to include the following stakeholders: county economic development directors, parks and recreation departments, tourism authorities, experts/community leaders in each of the eight proposed asset categories, and residents. There are currently 40 Tar-Pamlico BEC advisory group members. Initial meetings with advisory group members focused on establishing and vetting nonmaterial QoL asset categories relevant to the four-county study area. The proposed nonmaterial QoL

assets included nature-based tourism assets (e.g., paddling, wildlife viewing), hospitality assets (e.g., hotels, breweries), sociocultural heritage assets (e.g., African American heritage sites, Native American heritage sites), public health assets (e.g., parks, greenways), conservation assets (e.g., water quality testing results provided by local conservation entities, citizen science programs such as litter-reporting systems), STEAM education assets (e.g., nature centers, museums), tourism and recreation small businesses (e.g., tour guides, paddle outfitters), and accessibility assets (e.g., ADA compliant accessible outdoor recreation sites, free to low-cost recreation opportunities). Nonmaterial QoL assets were initially chosen to reflect recreation amenities (in the broadest sense of the term) and the ability of residents to maintain their way of life (Andereck & Nyaupane, 2011; Hwang & Lee, 2019; Woo et al., 2015). QoL indicators that fall within these two nonmaterial life domains are distinct from material life indicators (e.g., housing status, employment; Sirgy, 2002). Since many publicly available secondary data sets exist that paint the portrait of material life indicators (e.g., U.S. Census Bureau demographic data, U.S. Department of Labor statistics) that can be layered onto an existing map, this project focused on inventorying nonmaterial life factors whose prevalence and nature can vary at different geographic scales. Pilot asset mapping in the Tar-Pamlico BEC is concentrated in the four easternmost counties of the Tar-Pamlico River Basin as, collectively, they possess the most public water access in the river basin.

After establishing categories of assets, three goals were set that focused on connecting with communities in the four-county study area in multiple ways to identify and document nonmaterial QoL assets in the river basin: (1) Perform asset mapping with Nash, Edgecombe, Pitt, and Beaufort County residents, (2) provide residents an option to contributing assets outside asset mapping workshops, and (3) create a website to host the digital interactive Tar-Pamlico BEC map and other relevant project content.

**Goal 1:** Perform asset mapping with Nash, Edgecombe, Pitt, and Beaufort County residents.

*Objective 1.1:* Conduct one community asset mapping workshop per county in a socially neutral space.



*Objective 1.2:* Digitize documented assets into a database.

*Objective 1.3:* Geotag assets in the asset database.

To build resident support for the Tar-Pamlico BEC, it is vital to prioritize resident-identified QoL assets. Should residents be unsupportive of the Tar-Pamlico BEC in their community, they may take political action to discontinue its development (Spencer & Nsiah, 2013). Historically, residents' decision to support tourism and recreation opportunities in their communities has relied heavily on their perceived personal benefits and costs of this economic activity (Hawkins & Cunningham, 1996; Sofield & Birtles, 1996). Including residents early in the tourism and recreation development process can increase support and can ultimately increase the success of the planned tourism and recreation activity (Yeager et al., 2020). In fall 2021, the primary ECU researcher for this project participated in an ECU faculty development program that helps faculty cultivate skills related to community-engaged research (East Carolina University, n.d.a). The program provided various types of support, including a student team to initiate a community-engaged research project (in this case, the Tar-Pamlico BEC). In addition to the four students assigned to this project through this faculty development program, two other students recruited from the primary ECU researcher's courses also assisted with the design and implementation of the asset mapping workshops. In spring 2021, community asset mapping workshops were held in each of the four initial Tar-Pamlico BEC counties at times and locations deemed appropriate by the corridor's advisory group. It was vital to choose locations that would appeal to resident participation regardless of any component of one's social location (e.g., gender, race, social class, age, ability, religion, sexual orientation, or geographic location; Shamah & MacTavish, 2018). Therefore, workshops were held at the following locations/events: a North Carolina Cooperative Extension building (<https://www.ces.ncsu.edu/>), Edgecombe Community College (<https://edgecombe.edu/>), a festival hosted by the Association of Mexicans in North Carolina (<https://www.amexcannc.org/?lang=en>), and a STEAM education museum (<https://aurorafossil-museum.org/>).

Asset-based community development

(ABCD), a community resource inventory method, guided the initial round of asset mapping in each county (Kretzmann & McKnight, 1993). This approach encourages community members to consider what resources can be leveraged in their community to achieve their development goals rather than focusing on what their community is lacking. Through a heritage asset mapping lens, the ABCD methods of this project asked participants to share what contributes to their QoL and simultaneously might serve as an attraction for visitors to their community (Office for Coastal Management, 2018). Persons over the age of 18 who live in the initial four Tar-Pamlico BEC counties were recruited to participate in workshops through outlets recommended by project partners (e.g., social media sites, significant community sites), fliers in public establishments, and through snowball sampling. Moreover, recruitment materials were prepared in both English and Spanish, and one of the ECU research team members who is fluent in Spanish helped facilitate asset mapping with Latinx community members as needed.

At each workshop, poster-sized maps of the pertinent county were laid on tables. Participants were able to physically locate assets on each map using a dot sticker. Student facilitators labeled each dot sticker with a number and worked with participants to classify each asset by any of the relevant eight asset categories. Each of the eight asset categories was assigned a different color sticky note upon which students took notes about each asset. The description of assets on each sticky note included a physical address. Information from each sticky note was later uploaded into a database and geotagged for subsequent visualization and analysis via geographic information systems software (Motta & Georgiou, 2017).

Goal 2: Provide residents an option to contributing assets outside asset mapping workshops.

*Objective 2.1:* Develop a resident attitude survey in ArcSurvey 123.

*Objective 2.2:* Distribute a resident attitude survey to every zip code tangential to the Pamlico River in Beaufort County.

Regardless of the location of in-person asset mapping workshops, the reality is that not

everyone will always be able to attend in-person events due to a variety of constraints (e.g., work schedules, transportation). ABCD can be achieved through a variety of methods, including in-person workshops and surveys; sometimes, multiple ABCD methods will need to be simultaneously employed to ensure opportunities for comprehensive community input (Lightfoot et al., 2014). To provide an alternative mode of participation in the project, a resident survey was distributed in Beaufort County. Since the geographic extent of survey distribution was relegated to any zip code tangential to a county's pertinent river, budget constraints allowed piloting this survey in only one county. The survey was developed in ArcGIS Survey 123 using an ECU account. This software is particularly useful in that when respondents access the survey, ArcGIS Survey 123 (Esri, 2023) recognizes browser language settings and will convert all survey materials accordingly. In total, ArcGIS Survey 123 recognizes 40 different languages, including Spanish, which is vital to increasing opportunities for resident input that is comprehensive and reflective of cultural diversity of the four counties when funds are identified to survey further in the corridor.

A survey link, an associated QR code, and a brief description of the project were printed on postcards that were distributed using the U.S. Postal Service's Every Door Direct Mailing (EDDM) service. Through EDDM, postcards are distributed to every address in zip codes within the BEC's four counties that are tangential to the Tar and Pamlico Rivers. The EDDM method is a low-cost, anonymous, contactless way to reach residents within communities that are geographically dispersed (e.g., rural communities; Al-Muhanna et al., 2023; Grubert, 2019). Surveys were distributed in June 2022 and contained questions measuring residents' support for the Tar-Pamlico BEC and one question allowing residents to add assets to a digital map with pertinent metadata (e.g., address, description, photos). Assets identified in the survey will be integrated with those provided in the AI workshops.

**Goal 3:** Create a website to host the digital interactive Tar-Pamlico BEC map and other relevant project content.

**Objective 3.1:** Create a website for the project via ArcGIS StoryMaps.

**Objective 3.2:** Generate a digital interactive map of collected geotagged assets to embed in the project website.

To increase public awareness, pride, and visibility of the Tar-Pamlico BEC, a project website was created via ArcGIS StoryMaps, a web-based application that allows creators to share maps in the context of narrative and other multimedia content (Esri, 2022; Yeager et al., 2022). Within the project website, individuals can learn about the Tar-Pamlico BEC, discover community engagement/events happening with the project, follow the project on social media, access the resident survey, view a digital interactive map of assets compiled thus far, and learn more about other rural and small-town communities across North Carolina who are doing similar work.

### Measuring Project Impact

Impact of the Tar-Pamlico BEC work is being measured by the amount of public interaction with the project's digital footprint, which includes the ArcGIS StoryMap and social media accounts on Instagram and Facebook, public interest after participating in the research component of this project, and the number of invited opportunities to present the project to the public. Each of the authors of this article contributed to these areas of project impact in at least one of the following ways: assistance with the promotion and implementation of asset mapping workshops, advisement on asset mapping workshop and survey content, development and management of the Tar-Pamlico BEC's digital presence, collaboration on submission of IRB application (UMCIRB 22-000340), and guidance on best practices for community engagement with this project.

### Impact of Project Website

The official website for the Tar-Pamlico BEC was created through ArcGIS StoryMaps (Esri, 2022) ArcGIS StoryMaps allows the user and owner of the site to access the view count over a maximum period of 12 months. As of February 2023, the Tar-Pamlico River Basin Blue-Economy Corridor StoryMap has a total of 1,273 views over the past year with an average of 3.49 views per day (Figure 2). Although average viewership is seemingly low, consistent viewership over time positively indicates that should grant funding be secured to integrate the current web-

site content with a new website for Sound Rivers, the Tar-Pamlico BEC content might contribute to consistent public viewership of the organization's website.

### Impact of Project Social Media

The Tar-Pamlico BEC Instagram (@tarpam- bec) was the main source of social media promotion for the BEC. To keep branding consistent and increase name recognition, the BEC Instagram features the same blue circular logo used for workshop materials created by the student BEC team (Figure 3). Most of the posts featured on Instagram were created in Canva, which enables use of a branding kit for a cohesive look on the Instagram feed.

Instagram also allows content to be published through either a permanent post or a 24-hour story. Posts on the BEC Instagram included asset mapping workshop fliers, updates to the project, and additional events happening in the community related to the blue economy corridor. Instagram stories were used to increase user interaction with the BEC page. Although these stories lasted for only 24 hours, Instagram allows all temporary stories to be archived. Older stories are not available to the public eye, but the owner(s) of the account can still access the previously published content.

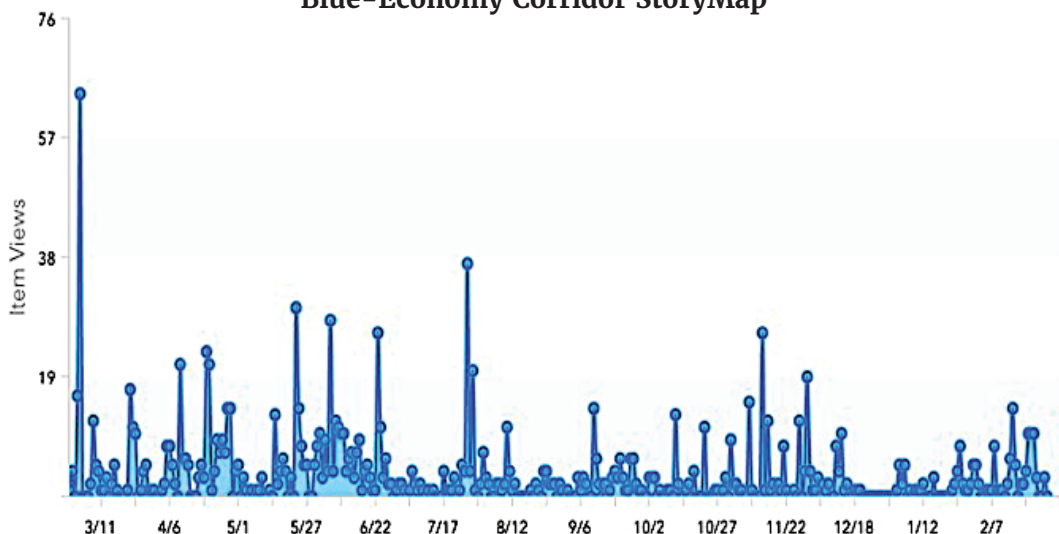
As of February 2023, the Tar-Pamlico BEC Instagram had 116 followers and 15 posts. Data collected from Instagram Insights

stated that 123 accounts were reached in the past 30 days, 44 of these accounts being non-followers. This 127% increase from the previous month was most likely a result of the BEC Bowl Season 3 being released on February 3, 2023, and posting more content.

Since March 2022, the Tar-Pamlico BEC Instagram has been used to host weekly quizzes referred to as "BEC Bowl Friday." Every Friday, a quiz question related to the Tar-Pamlico BEC project is posted. These quizzes enable the BEC team to reach the audience in a fun and educational manner. Recently, the questions posted have been revolving around the different core assets of the Tar-Pamlico BEC project. As Figure 4 shows, posting the BEC Bowl yields a spike in accounts reached. Hosting the BEC Bowl has contributed to an increase in the average number of accounts reached via the Tar-Pamlico BEC Instagram.

Linktree, a website that allows users to create a home base for the resources linked to a project, was utilized to organize and centralize tracking of digital impact of the Tar-Pamlico BEC. This platform was chosen primarily because its free version provides significant functionality and exceeds the basic needs for this project. The Linktree for this project is currently linked within the Tar-Pamlico BEC Instagram, and includes links to the project's ArcGIS StoryMap, the asset mapping survey, the project's Facebook, and the podcast *Hello North*

**Figure 2. Views of the Tar-Pamlico River Basin Blue-Economy Corridor StoryMap**



Note. ArcGIS StoryMap views February 28, 2022–February 28, 2023. Analytics provided through ArcGIS StoryMaps.

Figure 3. The Official Tar-Pamlico Blue Economy Corridor Logo



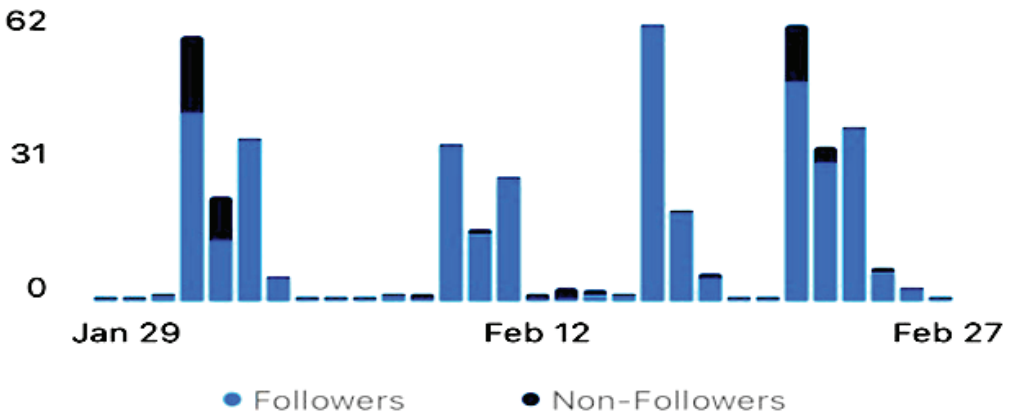
Figure 4. Tar-Pamlico Blue Economy Corridor Instagram: Accounts Reached

### Account insights

[See all](#)

123 accounts reached in the last 30 days

44 are non-followers



Note. Accounts reached January 29, 2023–February 2, 2023. Analytics provided by Instagram Professional Dashboard.



*Carolina: Stories from Rural NC.* The podcast *Hello North Carolina* is produced by the North Carolina Department of Natural and Cultural Resources (NC DNCR). NC DNCR helped fund the first round of asset mapping workshops. By following a give-and-get model, the BEC team decided to feature their podcast on the StoryMap. The Linktree was also used as a platform to host the RSVP forms for the asset mapping workshops. The Linktree analytics that we use show 52 views and 27 clicks since creation; further analytics would require the purchase of Linktree Pro.

### **Impact From Public Engagement**

After distribution of the first round of surveys in Beaufort County, 14 residents directly emailed the BEC research team to be added to the project's email list to receive updates and opportunities to continue participating in the project. Additionally, the Tar-Pamlico BEC has been shared through five public presentations through the following outlets: Sound Rivers, ECU's Coastal Studies Institute, North Carolina Department of Environmental Quality, Pitt County Partners for Health, and the Association of Mexicans in North Carolina.

### **Findings and Implications for Future Work**

The first goal of conducting community asset mapping workshops was achieved, with 20 attendees across the four workshops. Although an attendance rate had not been predicted for the four workshops, workshop organizers felt this attendance rate was low. Discussions of attendance rate with the Tar-Pamlico BEC advisory group resulted in a decision to move away from workshops in future rounds of asset mapping. Instead, should future grant funding be secured, community festivals and events likely to draw a diverse sample of a given county's population will be targeted for future community asset mapping. However, it is important to note that although workshop attendance was relatively low, the intimate nature of each workshop resulted in 82 distinct assets being identified, and rich information for each asset and opinions about the future direction of the Tar-Pamlico BEC were documented. This project recently received additional grant funding that will be used to conduct another round of asset mapping in each of the four target counties in spring 2023. To increase the participation rate, the research team will asset map

at one event in each county that is likely to draw a diverse and representative sample of the county's population. These events include two countywide farmers markets, a Founder's Day celebration, and a countywide festival.

The second goal of providing an option to contributing assets outside asset mapping workshops was achieved through the distribution of a survey in zip codes tangential to the Pamlico River in Beaufort County. With 20,000 surveys distributed and 41 responses recorded, the survey yielded only a 0.2% response rate, which was much lower than expected. Some of the constraints to a higher response rate might stem from two issues. First, some post offices that survey postcards were delivered to were in relatively rural locations; they sometimes operate on limited staff and seldom receive requests to process EDDM orders. One of these post offices told us that they simply do not process EDDM orders, which caused confusion and required the research team to deliver that bulk of surveys to a larger post office that was unsure how they would process those survey postcards. Future survey distribution through the EDDM method might not only delineate sampling locations by zip codes that are tangential to the BEC's waterway but also by the capabilities of post offices serving each zip code to distribute EDDM mail. Also, to help increase response rate, additional efforts should be made to post the online survey link in digital spaces such as the Tar-Pamlico BEC social media sites or the project's official website.

The third goal of creating a website to host the digital interactive Tar-Pamlico BEC map and other relevant project content was achieved. ArcGIS StoryMaps proved a useful platform for broadcasting the project because it affords users the ability to integrate data and multimedia into a "story" that becomes an informational and advocacy tool for a user's initiative. The project's functionality will continue to evolve with the planned addition of an ArcGIS Dashboard that can display aggregated survey data in an interactive and aesthetically pleasing way (Szukalski, 2023). Another planned improvement within the project's website is the interactive asset map. Currently, users can hover over each data point in the map and view metadata (e.g., latitude and longitude, resident description of the asset, asset category). However, the layout of the metadata provides only text descriptions. Future

iterations of this asset map will include photos in each point's metadata contributed by residents either through the survey or photos on social media sites that are tagged with the @tarpambec handle. Additionally, to further increase map functionality, each asset category will be populated as a layer on the map that can be turned on and off as a "filter" so that users can tailor the usefulness of the tool to their needs.

## **Future Strategic Directions of the Tar-Pamlico Blue Economy Corridor**

### **Phase 1**

Phase 1 of the strategic plan for the Tar-Pamlico BEC is to engage in community asset mapping, which this article has explored in depth. After the second round of asset mapping is completed in spring 2023, the project will move into Phase 2, which consists of five goals.

### **Phase 2: Goal 1**

This goal will focus on compiling secondary resources to complement the assets contributed by BEC community members in Phase 1. Secondary resources are any data related to the asset categories that are available to the public (e.g., North Carolina Department of Environmental Quality water testing reports, statewide STEAM asset mapping data). These data sets will be cross promoted through the BEC map and will strengthen the functionality and applicability of the final digital map to a wide range of end users, thus ultimately increasing traffic to Sound Rivers' website.

### **Phase 2: Goal 2**

This goal focuses on the implementation of an annual river basin-wide summit of existing and potential advisory group members. The summit is intended to serve as an opportunity for community leaders from the Tar-Pamlico BEC to provide feedback on the process undertaken so far to establish proof of concept for a blue economy corridor. The summit is intended to also provide a space and time for envisioning future functionality and developments of the Tar-Pamlico BEC. The first summit is planned for fall 2023 and will be geographically bound to the initial four target counties of the project. Given the distance between the most western edge and most eastern edges of this stretch of the corridor, advisory group members will be polled for the interest in a face-to-face or virtual summit.

### **Phase 2: Goal 3**

This goal focuses on pivoting the BEC survey distribution method to online outlets, including the project's social media outlets, website, and affiliated organizational email lists. To increase transparency in survey results, a dashboard will be embedded into the project's website reflecting aggregated survey responses in real time that may be explored by the public.

### **Phase 2: Goal 4**

This goal focuses on establishing a financial sustainability plan for the BEC. Previous and current funding support for this project have provided opportunities for pilot data collection that prioritizes residents' needs and wants for their community that a blue economy corridor might help satisfy. This pilot work serves as a springboard to pursue additional funding to build out the remaining portions of the Tar-Pamlico BEC vision. Two major remaining portions of this project to be funded include the transition of the project to a non-ArcGIS StoryMap website and hiring a Tar-Pamlico BEC specialist.

Objective 8 in the MOP signed between the research team and Sound Rivers (Appendix) consisted of exploring development options for the transition to a non-ArcGIS StoryMap website. This objective has been achieved with vendor options and a drafted budget should a funding option present itself. However, this goal will help formalize the funding model that will be pursued in the next 5 years for the BEC (e.g., membership dues in exchange for inclusion on the digital map, grant opportunities).

The Tar-Pamlico BEC specialist position is a brainchild of the research team and Sound Rivers stemming from a persistent trend in visitor phone calls to Sound Rivers requesting information about itineraries within the Tar-Pamlico River Basin. The nature and scope of conservation work that the organization must accomplish unfortunately leaves little bandwidth to assist with these requests. The Tar-Pamlico BEC specialist's responsibilities might therefore include the following: assisting visitors with curating experiences in the Tar-Pamlico River Basin with the assistance of the digital, interactive asset map; managing marketing and branding initiatives for the Tar-Pamlico BEC; managing Sound Rivers' online camping platform reservation system; managing Sound Rivers' website; and assisting Sound Rivers' staff with environmental project

and public outreach initiatives as needed. A position description, hiring requirements and eligibility, and salary have been drafted through review of various data sources (Bureau of Labor Statistics, U.S. Census Bureau, GlassDoor, etc.) and is ready to be included in future grant proposals.

### Phase 2: Goal 5

This goal focuses on developing a marketing plan for the Tar-Pamlico BEC. Opportunities for strategic connections with regional, state, and national marketing organizations, initiatives, and so on, will be inventoried. Connections that seem promising will be contacted and the marketing plan shared for transparency and collaboration.

### Phase 3

Phase 3 of this project is contingent upon securing necessary funding, at which point three developments will occur. First, a contract will be formalized with a vendor to create the new website for Sound Rivers with all their requested functionality that will also host the final digital Tar-Pamlico BEC map. Second, the Tar-Pamlico BEC specialist will be hired. Third, before the website is officially published, the vendor will be asked to help develop a pop-up disclaimer that must be read before users may enter the website that emphasizes the purpose of the map and instructions on using its contents only in conjunction with actual visual observations of conditions in the BEC. This is a particularly important message for users who may have never visited portions of the BEC that they include in their itinerary.

## Discussion

Embarking upon regional community/economic development initiatives requires strategic piecemeal planning, especially if its foundation requires community input. Prioritizing residents' voice in this proj-

ect through AI signals a commitment to transparency, authenticity, and democratic development of an initiative like the Tar-Pamlico BEC that ultimately increases the likelihood of residents' future support of this initiative's growth. However, it should be noted that attempting to capture diverse community input through inclusive methods across a geographic scope of four counties can be challenging, particularly if timelines are a constraint. Smaller funding opportunities are often accompanied with shorter timelines, which in this case meant that securing locations/events and creating marketing materials for each round of asset mapping had to be completed in 6 months. Meeting such timelines is particularly challenging if community events are not primarily scheduled during the time that funding is available. Therefore, to scale up the geographic scope of this project, larger funding opportunities will need to be secured that allow for longer time frames in data collection.

## Conclusion

The community-engagement model used to develop the Tar-Pamlico BEC demonstrates a way in which AI may be utilized to support development initiatives that support social, economic, and environmental community sustainability. Even more, this work exemplifies the usefulness of AI in identifying nonmaterial quality of life assets within communities. As the Tar-Pamlico BEC evolves, community involvement will remain prioritized in hopes of not only securing residents' buy-in, but also to improve the BEC's ability to authentically reflect values and community idiosyncrasies across the river basin to its visitors locally and from afar.



## About the Authors

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## **Appendix. Memorandum of Partnership Between the ECU Research Team and Community Partner, Sound Rivers**

The purpose of this Memorandum of Partnership (MOP) is to mutually acknowledge a commitment to a working relationship between the community and University Partners related to activities of the East Carolina University Engagement Outreach Scholars Academy (EOSA). The purpose of this partnership is to collaborate on a project to begin a Blue Economy Corridor (BEC) in the Eastern portion of the Tar-Pamlico River Basin. The larger goal beyond EOSA is to document BEC assets through a digital interactive map that BEC visitors can use to curate their experiences in the Eastern portion of the Tar-Pamlico River Basin. The goal of this EOSA project is to complete the first phase of developing the BEC. In this EOSA project, seven objectives will be accomplished to complete this goal.

### ***Objective 1 (Completed by July 25th)***

To inform resident survey design and overall vision for the BEC, an advisory board consisting of stakeholders from communities directly located on the Tar or Pamlico Rivers.

### ***Objective 2 (Completed by September 10th)***

To gauge resident support for a Pamlico-Tar River Basin Blue Economy Corridor, a resident attitude survey will be distributed to residents within counties located within the proposed corridor. Antecedents for their support of the corridor will be measured using research-supported survey constructs (e.g., perceived empowerment, place attachment) will be measured to inform the design and content of the corridor asset map.

### ***Objective 3 (Completed by November 5th)***

An inventory of the current hospitality assets (e.g., breweries, local retail businesses) of communities along the Tar River will be conducted. Identification of hospitality related economic assets (e.g., breweries, hotels) will be achieved in two ways. First, hospitality assets will be verified through researching existing secondary data sources (e.g., Chamber of Commerce websites). Second, residents within the counties of interest will be solicited to crowdsource hospitality assets on a public Google map via the proposed resident survey.

### ***Objective 4 (Completed by November 5th)***

An inventory of the current nature-based tourism assets of communities along the Tar River will be conducted. Nature-based tourism assets may include but are not exclusive to kayak launches, camping platforms, fishing locations, and environmental interpretation initiatives. This inventory will be achieved in three ways. First, nature-based assets will be verified through researching existing secondary data sources (e.g., existing paddle trail maps). Second, residents within the counties of interest will be solicited to crowdsource ecotourism assets on a public Google map.

### ***Objective 5 (Completed by November 5th)***

An inventory of the current sociocultural assets of communities along the Tar River will be conducted. Sociocultural assets may include but are not exclusive to African American heritage sites (e.g. Shiloh Landing in Princeville) and Civil War sites (e.g. Rocky Mount Mills). The sociocultural asset inventory will be achieved in two ways. First, sociocultural assets will be verified through researching existing secondary data sources (e.g., ECU libraries collections). Second residents within the counties of interest will be solicited to crowdsource sociocultural assets on a public Google map.

### ***Objective 6 (Completed by November 5th)***

Advisory board members will be engaged in asset mapping for hospitality, nature-based, and sociocultural assets in the BEC.

### ***Objective 7 (Completed by November 5th)***

The BEC ArcGIS Story map will be updated with assets provided through each stakeholder.

### ***Objective 8 (Completed by July 25th)***

Options for Sound Rivers' website revamp will be researched. The website revamp might

include combining maps together to centralize data sets and streamline website access points for users. Data generated through this research will include costs for redesign as well as options for control of generating and directly inputting content into the website and its maps.

Each partner may be invited to attend relevant meetings in person or virtually scheduled by the EOSA as participation is expected. A schedule for these meetings will be provided by the director of EOSA.

In addition, each partner is accountable for his/her contributions to the development and implementation of an engaged research project that addresses a jointly identified challenge of interest to both the ECU EOSA scholar and community partnership. The timeline for the project is tentatively outlined above with a proposed completion date for each objective is provided. Resources necessary for completion of the project are expected to come from both the university and community partner. Resources from ECU/EOSA include

- Seed funding to pay for design and distribution of resident survey using ECU University Printing & Graphics (\$4,000)
- Seed funding to pay for travel for advisory board meetings as well as transcriptions of recorded meetings (\$1,000)
- Qualtrics to create an online survey (provided through ECU)
- SPSS for statistical analysis of survey results (provided through ECU)
- Subscription to ArcGIS for the update to the existing BEC ArcGIS Story Map (provided through ECU)
- Microsoft Office Suite (provided through ECU)
- Google Maps (free)
- One EC Scholar (provided through ECU)
- One graduate student (provided through ECU)

The roles of the partners will evolve as the project moves forward. Decisions made for the project will involve both the community and university partners.

The project will be evaluated for effectiveness and efficiency by the community and university partner through monthly meetings which will be scheduled to accommodate the availability of Sound Rivers (Clay Barber). Evaluation will include a debrief in each monthly meeting as to whether or not each objective slated for the month is achieved. In each meeting, time will be set aside to discuss project goals that specifically benefit Sound Rivers and adjustments made to those goals where necessary.

Data generated for this project will be managed as follows. Emily Yeager, Clay Barber (Sound Rivers), and an EC Scholar/Graduate Student will have access to the Qualtrics survey. Emily Yeager and an EC Scholar/Graduate Student will have access to the survey data and will be responsible for data cleaning, analysis, and interpretation. Emily Yeager will have access to the Interview/Focus Group Recordings as well as any other meeting materials. Clay Barber and an EC Scholar/Graduate Student will have access to the Interview/Focus Group anonymous transcriptions. The data will be secured on Emily Yeager's encrypted computer on ECU's campus and it will be stored for two years to accommodate data analysis.

Each partner will dedicate the time necessary for the development and implementation of this project. In addition, each partner is committed to the growth and development of the community-university partnership with the intent to position the partnership for further engaged scholarship including publications, grant funding, and other activities upon conclusion of the EOSA.

**This MOP specifically applies to the duration of the EOSA project only. Should either partner feel the terms of the agreement are not being met, he/she should contact Elizabeth Hodge, Director of Engaged Research (hodgee@ecu.edu; 252-328-6175)**

