

A Proposal to the  
**National Oceanic and Atmospheric Administration Office for Coastal Management**  
**2020 Digital Coast Fellowship Program**

Project Title:  
**Building capacity to use existing Digital Coast tools and resources for implementing  
nature-based solutions after a major hurricane**

Submitted by  
Christine Shepard on behalf of  
**The Nature Conservancy**



The Nature Conservancy  
4245 North Fairfax Drive, Suite 100  
Arlington, Virginia 22203-1606



## 1. Background and Introduction

The Nature Conservancy (TNC) proposes a 2020 Digital Coast Fellowship focused on planning and implementing nature-based solutions to reduce risk in coastal communities. We intend to focus the fellowship on building capacity to use existing tools and resources for nature-based solutions in two regions of the Southeastern United States that have been recently impacted by hurricanes: the Florida Panhandle and the Carolinas Coastal Plain.

In 2018, Hurricanes Michael and Florence made landfall in the Southeast United States, causing significant flooding that impacted coastal communities across the region. Hurricane Michael made landfall in the Florida Panhandle as a Category 4 Hurricane impacting a region with communities that are highly dependent upon tourism and the health of their natural resources. This region is sometimes referred as the Forgotten Coast. Hurricane Florence made landfall near Wrightsville Beach, NC along the northeast coast of North Carolina. It then stalled, dropping unprecedented rainfall across the North Carolina and South Carolina coastal plain that left communities dealing with the combined issues of storm surge, stormwater, and riverine flooding. The result of both hurricanes is a swath of communities facing recovery and searching for ways to build future resilience to these flooding events. In each case, natural systems have the potential to enhance community resilience, but the capacity to account for and enhance these nature-based solution varies from well-staffed, high capacity cities to rural counties with limited capacity to plan for and access funding.

TNC and NOAA's Office for Coastal Management (OCM) have been collaborating through the Digital Coast Partnership (Partnership) since 2008. A hallmark of the partnership has been the collective development of online decision support tools and crosscutting trainings for assessing risks of coastal hazards and emphasizing nature-based adaptation solutions. With this fellowship application, we propose to incorporate tools and resources developed through the Partnership into a resilience planning process for each hurricane impacted region. TNC has previously led a Tools and Training Digital Coast subgroup that aimed to compare online decision support tools across the partnership organizations to educate users on their similarities and differences and guide the use of specific tools within the context of a planning process. This proposal seeks to establish and document a process that will rely on products developed through the Tools and Training subgroup as well as other resources developed in each region, such as the Gulf Tree and the Southeast Coastal Resilience Training Program.

The Conservancy staff supporting this proposal bring a broad suite of experience with coastal resilience tools, community engagement and training. TNC and OCM have jointly developed and provided training sessions at conferences including Restore America's Estuaries, Coastal Geotools, National Adaptation Forum, Association of State Floodplain Managers (ASFPM), Social Coast Forum, and Rising Seas Summit. In addition, TNC and OCM have co-developed toolkits to help communities understand coastal inundation, provided support for how coastal wetlands conservation can reduce impacts of sea level rise, contributed to the development of the U.S. Climate Resilience Toolkit, developed and delivered joint trainings on tools, and restructured the Digital Coast Partnership to have subgroups with specific leadership roles.

Much of TNC's efforts within the Digital Coast Partnership fall under our Coastal Resilience body of work. The Coastal Resilience approach, network and decision support tool have been used globally and locally in guiding decisions to assess risk and identify risk reduction solutions. The tool operates U.S. nationwide and globally, with various apps developed for 17 U.S. coastal states, the Caribbean, and across Mexico and Central America, having reached over 100 communities since 2008. TNC recently increased coverage of the tool and custom web apps to more sites in Mexico, Australia Southeast Asia. All of these geographies have benefitted from the efforts of previous Digital Coast Fellows and our current proposal seeks to further expand the breadth of the impact of the Digital Coast Fellowship with a focus on post-disaster planning and identification of nature-based solution projects that could qualify for disaster funding.

One resource within our Coastal Resilience toolkit that is relevant to this proposal is the development and expansion of the Community Rating System app. The National Flood Insurance Program's Community Rating System (CRS) is a voluntary program administered by the Federal Emergency Management Agency (FEMA) that encourages communities to reduce their flood insurance rates by performing activities that promote the protection of open space in Special Flood Hazard Areas. As part of the Coastal Resilience decision support system, a customized CRS web app was developed in North Carolina to help planners in Dare County identify areas within seven pilot areas that would be eligible for Open Space Preservation (OSP) credits. The app not only identified natural areas linked to community resilience but addressed the immediate needs of local planners who were updating their CRS applications. The app is designed to identify open space areas, export maps and summary tables for use in the CRS application process and allow users to search and view individual parcels that currently contribute to OSP credits. Two previous Digital Coast Fellow's contributed to this effort. Since its original development in North Carolina, TNC has worked with partners to expand the app to communities South Carolina, Mississippi and Texas. As part of our CRS app engagement in the Gulf, we worked with Louisiana Sea Grant to develop a Community Rating System (CRS) Greenprint process that focuses on five nature-based solutions that are likely creditable under CRS and identifies which specific CRS elements should be explored for further consideration via the CRS Green Guide. These include *Open Space Protection, Habitat Restoration, Species/Habitat Conservation Plans, Buyouts* and *Smart Development*. The CRS Greenprint process seeks to create a collaboratively developed plan that allows conservation practitioners, floodplain managers, municipal staff and CRS coordinators to easily identify opportunities to work together to increase, maintain or establish the community's CRS rating.

In addition to the CRS app and the Greenprint process, The Nature Conservancy and other Digital Coast partners have developed a variety of resources and tools focused on using nature to build community resilience. However, lack of capacity and dedicated stewardship to engage communities through a process to identify, design, and implement on-the-ground, nature-based solution projects has limited efforts to increase resilience in coastal communities where we work. This problem is compounded when the same communities suffer from devastating coastal hazards events like hurricanes. While these events can raise awareness of the need for increased resilience, we have observed that communities impacted by a disaster often lack the time, capacity and funding to focus on the potential use of nature to reduce risk and the associated identification of where nature-based solution projects can be included in their redevelopment plans. Ironically, this situation occurs while competitive funding is available for nature-based resilience projects that are 'shovel ready'. To begin to bridge this gap, we propose

a fellowship focused on two hurricane impacted regions of the United States where we will develop a partnership-based, planning process that uses existing Digital Coast tools and resources to develop plans and project portfolios for nature-based solutions to enhance coastal resilience.

## 2. Goals and Objectives

The overall goal of this fellowship project is to build capacity for implementing nature-based solutions for hazard mitigation and post-hazard redevelopment by providing an integrated process that uses existing Digital Coast tools, trainings and resources to enhance coastal resilience. The fellow will work with The Nature Conservancy's Coastal Resilience program and advance this approach across the U.S. by supporting and leveraging two regional scale efforts in the Gulf of Mexico and the Carolinas Coastal Plain. Through the fellowship, we will work to integrate with ongoing efforts in the Hurricane Michael and Hurricane Florence regions to provide stewardship through a regional resilience planning process focused toward communities that lack in-house capacity for robust planning around nature-based solutions. The Fellow will work with TNC staff and partners to identify resources, understand community challenges, develop nature-based solutions planning process, collate data, host workshops and identify priority locations and suitability assessments for nature-based solution projects. This fellowship may require the formation of new partnerships with academia, non-governmental organizations and other partners focused on post-disaster recovery.

Based on previous success with the 2012 and 2016 Digital Coast Fellowship Program, the fellowship objectives for 2020 are to mentor, develop, and establish the fellow on a career path with TNC that is in alignment with the Healthy Coastal Ecosystems and Resilient Coastal Communities strategic focus areas of Digital Coast. We intend to provide the Fellow with experience in workshop development and facilitation, science-based decision making, strategic conservation planning and partner coordination by accomplishing the following goals:

### Goal 1. Support planning and implementation of nature-based solutions in areas impacted by Hurricane Michael and Hurricane Florence

- Objective 1.1: Engage a regional working group within each geography focused on using nature-based solutions for hazard mitigation and post-hazard redevelopment.
- Objective 1.2: Assess existing needs and implementation gaps at the local government level
- Objective 1.3: Use Digital Coast resources to propose a replicable process for using existing tools, trainings and resources to address the identified capacity gaps
- Objective 1.3: Connect this nature-based solutions planning process to existing efforts within the impacted areas (local government, state, federal, NGO, academic)

### Goal 2. Expand and support the use of the CRS web app on the Coastal Resilience tool in both regions and support modification and expansion of the web app across North America

- Objective 2.1: Support ongoing efforts in South Carolina and North Carolina to engage state coastal programs and local governments in development and communication of the CRS app.
- Objective 2.2: Work with Digital Coast CRS Connects group to identify additional communities for the CRS app within the Hurricane Michael region in the Gulf of Mexico

- Objective 3.3: Support TNC’s Global Marine Team and North America Science team in modifying and expanding the CRS app across North America

Goal 3. Develop communications materials and case studies to promote and share the project process and outcomes

- Objective 3.1: Support TNC communications staff to develop a variety of learning, outreach, and training resources for both technical and general audiences about the regional resilience efforts
- Objective 3.2: Work with NOAA OCM and other Digital Coast partners to develop materials for use on the Digital Coast website (e.g. stories, focus areas) that document how existing tools can be used in a post-hazard event context

### 3. Project Description, Milestones and Outcome

This project leverages multiple ongoing and planned efforts in both the Florida Panhandle and the Carolinas Coastal Plain.

#### **Task 1. Identifying partners, capacity needs and Digital Coast Resources in partnership with TNC staff (August 2020- December 2020)**

Lead an effort to identify primary partners in each region. Conduct informational interviews and/or survey partners to assess their existing capacity and challenges around implementing nature-based solutions. Base on discussion with partners, review existing Digital Coast tools and resources to identify which products will be value added in each region. This step includes an assessment of previous or ongoing post-hurricane activities occurring in each region. The Fellow will work directly with TNC staff in each region to connect with existing activities and to develop a localized workplan.

The outcome of the fellow completing this task will be increased knowledge of Digital Coast and TNC resources, familiarity with each region’s unique situational context, and an agreed upon workplan for the duration of the two-year fellowship.

#### **Task 2. Support local government planning for nature-based solutions in both regions (January 2021- December 2021)**

This task will require the Fellow to work in close coordination with TNC staff in each geography to develop a localized planning process to engage communities in identification of nature-based solution opportunities. We anticipate that the processes will entail leadership of two workshops in each geography, designed to engage local partners. In addition, the Fellow will be responsible for regular engagement with the local team via phone, email and webinars. Work within each geography will enable the regional planning process and products to be tailored to the specific needs and goals of that region’s local governments. While specific needs may vary, it is likely that each community will develop plans focused on identification of where nature-based solutions are feasible and appropriate for risk reduction and redevelopment in areas impacted by storms.

The outcome of the fellow leading a partnership-based planning process in each region is increased local capacity for implementing nature-based solutions as well as the development of a replicable process for using existing Digital Coast tools and resources to plan for using nature-based solutions for hazard mitigation and post-hazard event redevelopment.

### **Task 3. Expanding the coverage and use of the CRS web app in each region (January 2021- December 2021)**

Task 3 will require coordination with TNC staff outside of the region that support the development of the CRS app. TNC has several efforts underway to expand the use and geographic coverage of the CRS app and the fellow will help coordinate these efforts in communities that are also participating in the regional resilience process.

The outcome of the fellow contributing to the development and expanded use of the CRS web app is increased local and national participation in the CRS program and increased understanding of the value of nature-based approaches like open space in reducing community flood risk.

### **Task 4. Documenting the process, results and lessons learned (August 2021-July 2022)**

The final task of the fellowship will be to ensure that other communities can benefit from the efforts in the Gulf of Mexico and Carolinas Coastal Plain. The fellow will work with TNC communications staff to develop a variety of learning, outreach, and training resources for both technical and general audiences about the regional resilience efforts. The fellow will also coordinate the development of these materials with NOAA OCM and other Digital Coast partners to create materials that can also be used on the Digital Coast website (e.g. stories, focus areas).

The outcome of the fellow sharing lessons learned and case studies of the process developed for this project is an increased capacity for coastal communities to access and use Digital Coast tools and resources after a major storm event.

#### **4. Fellow Mentoring**

The 2020 Digital Coast fellow will be in a TNC office with Dr. Christine Shepard in the Florida Keys. TNC is a matrixed and geographically dispersed organization and the Fellow will be a part of a team that operates in this manner. The fellow will be mentored by Dr. Christine Shepard, Director of Science for the Gulf of Mexico Program, with support provided Mary Conley, Southeastern US Marine Conservation Director. Christine has 15 years of TNC experience and has co-developed Coastal Resilience since its inception in 2008. Her background in conservation planning, GIS, web-mapping tools, program and project management, and community engagement will be an asset to the fellow. Christine's office space is in the TNC Florida Keys office where additional space is available. Mary Conley has worked for the Conservancy for over 14 years. She serves as the Southeast Director of Marine Conservation where she leads projects related to coastal resilience, ocean protection and sustainable fisheries from NC to FL. She has lead trainings related to Digital Coast tools and coastal resilience in the southeast and worked with local governments on design and implementation of

tools. She is a trained facilitator and planner and will provide the Fellow with guidance on working with communities, workshop design and communication.

Over the course of the fellowship, other TNC colleagues including Laura Flessner (2012 Digital Coast fellow and Global Ocean's Spatial Analyst), Nate Woiwode (Nature-Based Climate Adaptation Project Manager North America), Sarah Murdock, Darryl Boudreau (Florida), Brian Boutin (North Carolina), and Liz Fly (South Carolina will contribute their expertise ranging from planning to on-the-ground implementation across both science and policy realms. In addition, the fellow will be exposed to a suite of domestic and international geographies where Coastal Resilience is being applied.

Christine and Mary will be responsible for facilitating a positive and rewarding experience for the Fellow. A workplan will be jointly developed with the Fellow and TNC staff to identify roles and responsibilities associated with achieving the goals in this proposal. Christine will be responsible for managing the Fellow, providing professional development opportunities within TNC and will be the main TNC point of contact for the Digital Coast Fellowship program.

## 5. Project Partners

The design of this proposal will expose the fellow to a wide array of partners through the activities in each region:

- Digital Coast Partners who participate in the CRS and other Digital Coast Connects subgroups (NOAA OCM, ASFMP). The fellow will join the Connects calls and identify additional opportunities to partner with Digital Coast partners throughout the project. We also anticipate an opportunity to engage NaCo in outreach to local communities.
- Led by TNC, Coastal Resilience is a program developed through a public-private partnership between United Nations University, NOAA, USGS, Natural Capital Project, ASFPM, University of California at Santa Cruz, University of Southern Mississippi, Northeastern University, Esri, Alliance for Development Works, the International Federation of the Red Cross and Red Crescent Societies. The fellow will work with several of these partners to gain Coastal Resilience network technical skills and develop the training module.
- In the Hurricane Michael region, a partnership coalition is currently being developed as part of the recently started science project evaluating natural infrastructure during the storm. TNC has ongoing and newly developing partnerships in the region that include: participation on the Panhandle Estuarine Restoration Team's Steering Committee along with several state (FWC, DEP) and federal (USFWS and ACOE) agencies, participation in the creation of St. Andrews/St. Joe Bay Estuary Program in partnership with Bay and Gulf Counties, Apalachicola NERR Program, multiple GulfCorps crews working on partner projects in Franklin and Bays Counties working on partner projects with the Water Management District, City of Panama City, and Florida State Parks. Specific to the CRS APP development in the region, TNC is expanding the app with NOAA funding in partnership with the Digital Coast Connects CRS group which includes Digital Coast Partners from APA, CSO, ASFPM, NOAA and NSGIC.
- In the Hurricane Florence region, TNC is engaged in several existing partnerships linked to coastal resilience, post disaster recovery and nature-based solutions. This includes the Southeast and Caribbean Disaster Recovery Partnership, Carolinas Integrated Sciences & Assessments, and Coastal Climate Network. We are currently working with communities in North Carolina, South Carolina and Georgia on the creation and use of

coastal resilience tools. Our local partnerships include engagement with state coastal zone management agencies and Sea Grant programs.

Partnership development and integration is a key component for activities described in this proposal and the Fellow will gain valuable experience working with partners from multiple sectors, geographies and levels of government.

#### 6. Cost Share Description

The Nature Conservancy will provide the \$15,000 match required for the Coastal Management Fellowship Program. The non-federal match requirement will come from private foundation funding and general membership support funds and is already being factored into our fiscal year 2021 work planning (July 1, 2020 to June 30, 2021). In addition, TNC will supply the fellow with all workplace support necessary, including desk, phone, computer and required software, printers and office supplies. As identified in the proposal, TNC will also cover additional travel for relevant tasks.

#### 7. Strategic Focus Area

This Fellowship proposal directly addresses the **Healthy Coastal Ecosystems** focus area as the goal of the project is to facilitate the use of nature-based solutions, such as open space protection and habitat restoration, for hazard mitigation and post-storm planning and redevelopment. The Fellow will be working in coordination with TNC scientists, restoration practitioners and planners using cutting edge science to develop and implement nature-based solutions. The Fellow will also gain valuable experience learning from and working with other conservation and restoration partner organizations as well as experience communicating how nature plays a role in coastal hazard issues from local to regional scales.

The Fellowship also addresses the **Resilient Coastal Communities** by working directly with local governments to build capacity to pursue strategies such as hazard mitigation and post-hazard redevelopment planning by providing an integrated suite of data, information, training, technical assistance, cooperative funding, and policy tools to coastal communities. The project will also identify and engage partners in each region to increase public awareness of coastal hazards and nature-based actions that can be taken to reduce the loss of life and property. The Fellow will become familiar with a variety of Digital Coast tools and resources and build capacity for using these tools in both regions.

Finally, the Fellowship will address **Vibrant and Sustainable Coastal Economies** by developing and documenting a transparent process for considering the role of coastal resources, like salt marshes, in hazard mitigation and disaster recovery. The process will highlight the additional benefits provided nature-based solutions such as fisheries and recreational benefits. The Fellow will incorporate estimates of ecosystem services provided by nature-based solutions into the resilience planning process where feasible using TNC, Digital Coast and academic resources. These values allow for a more full consideration of the value of investing in nature-based solutions for risk reduction and redevelopment.