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New program looks to boost climate resilience around bases

03/30/2022 by Jennifer Allen (<https://coastalreview.org/author/jennallen/>)



Chris Baillie is the resilience and climate adaptation coordinator for Eastern North Carolina Sentinel Landscape.

Photo: Contributed

Chris Baillie has been adjusting over the last few weeks to his new role as resilience and climate adaptation coordinator for Eastern North Carolina Sentinel Landscape, a term that describes areas where natural and working lands are suited to protect military installations from incompatible land uses.

Based at North Carolina Coastal Federation's headquarters in Carteret County, Baillie, who has a doctorate in ecology, evolution and marine biology, was selected to lead a three-year pilot program to determine if the Sentinel Landscapes Partnership would benefit from a second coordinator focused solely on resilience and climate adaptation projects.

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The Sentinel Landscapes Partnership, developed in 2013 by the U.S. departments of Agriculture, Defense and the Interior, is made up of federal agencies, state and local governments, and nongovernmental organizations that work with landowners to create and implement sustainable land management practices around military installations and ranges.

Baillie will be working with the coordinator of the Eastern North Carolina Sentinel Landscape, recognized in 2016 and is one of 10 landscapes currently listed on the partnership's website. Eastern North Carolina's landscape includes 11 million acres across a 33-county region in the

coastal plain and sandhills. Military installations Fort Bragg, Dare County Range, Marine Corps Base Camp Lejeune, Marine Corps Air Station Cherry Point, Marine Corps Air Station New River and Seymour Johnson Air Force Base are within this area.

In addition to the eastern North Carolina site, there are Sentinel Landscapes in central Florida, Texas, Minnesota, Arizona, Georgia, Washington, Maryland, northwest Florida and southern Indiana, according to the [website \(https://sentinellandscapes.org/landscapes/avon-park-air-force-range/\)](https://sentinellandscapes.org/landscapes/avon-park-air-force-range/).

The Eastern North Carolina Sentinel Landscape, or ENCSL, was chosen for the pilot program because it faces most of or all of the resilience and climate adaptation challenges affecting the 10 Sentinel Landscape sites, and has a track record of effective initiatives, broad partnerships and significant momentum, according to officials. The Department of Defense's Readiness and Environmental Protection Integration, or REPI, Program, Sentinel Landscapes Federal Coordinating Committee, Department of the Interior and USDA are funding the pilot program.

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Baillie, who grew up in Durham, earned his doctorate from Northeastern University in 2017 and his bachelor's in biology and marine sciences from the University of North Carolina Chapel Hill in 2010. His research has focused on complex food chains, connectivity of marine ecosystems and populations, and how humans impact coastal habitats and ecosystems

services. He also served as a co-lead for the General Assembly-funded North Carolina Shellfish Mariculture Advisory Committee, headed up by the federation, was a postdoctoral researcher at East Carolina University and UNC-IMS and consulted with The Pew Charitable Trust.

Baillie told Coastal Review last week that since starting the position March 15, he feels like he's getting his bearings and has been able to hold meetings with a number of key players in the partnership that he said have been incredibly helpful.

"Admittedly, coming into a well-established partnership to coordinate something as multifaceted as resilience and climate adaptation across a large geographic area was somewhat daunting," he said. "However, that feeling has quickly faded and been replaced exclusively by excitement for all the opportunities to coordinate among partners already heavily engaged in conservation and resilience efforts and to facilitate the planning and implementation of projects that address shared or complementary objectives across natural and working lands, conservation, and resilience plans at local, state, regional, and national levels."

He explained that natural and working lands contribute around \$100 billion to the North Carolina's economy each year, through provisioning of agricultural food and raw materials, supporting commercial fisheries, providing recreational opportunities, and their value to tourism.

"Additionally, these lands sequester vast quantities of carbon, mitigate flooding and recharge stormwater into groundwater aquifers, enhance surface water quality, serve as critical habitats to economically and ecologically important species, are essential training areas for our military, and hold spiritual and cultural significance to diverse stakeholder groups," he said. "The continued provisioning of these services is essential to national security and the physical and mental well-being of our populace. However, our natural and working lands face growing threats from the proliferation of development and the impacts of climate change, including floods, droughts, fires, disease, and invasive species."

Fortunately, he continued, data and insights from scientific studies and traditional knowledge offer opportunities to enhance the resilience of natural and working lands, including natural and nature-based solutions, agricultural and forestry practices that enhance both sustainability and profitability, and community practices that are compatible with and augment environmental quality.

“Through planning that is transparent and inclusive and implementation that gives agency to stakeholders, there is the opportunity to safeguard the ecosystem services provided by our natural and working lands and, indeed, the potential to reclaim services that have been forfeited to incompatible land uses and activities in the past,” he said.

Baillie said that over the next six months to a year, he plans to work with partners to identify, pursue funding for and implement resilience and climate adaptation projects that will further the current Eastern North Carolina Sentinel Landscape Implementation Plan.

Baillie added that in the past two weeks he had only begun to scratch the surface of partners he hopes to work with to develop the resilience and climate adaptation plan, which he has been charged with as part of his role as coordinator. He said he is learning how different stakeholders view the concepts and their priorities.

“The great thing about building resilience and advancing climate adaptation using natural and nature-based solutions is that there are so many opportunities for shared wins,” Baillie said.

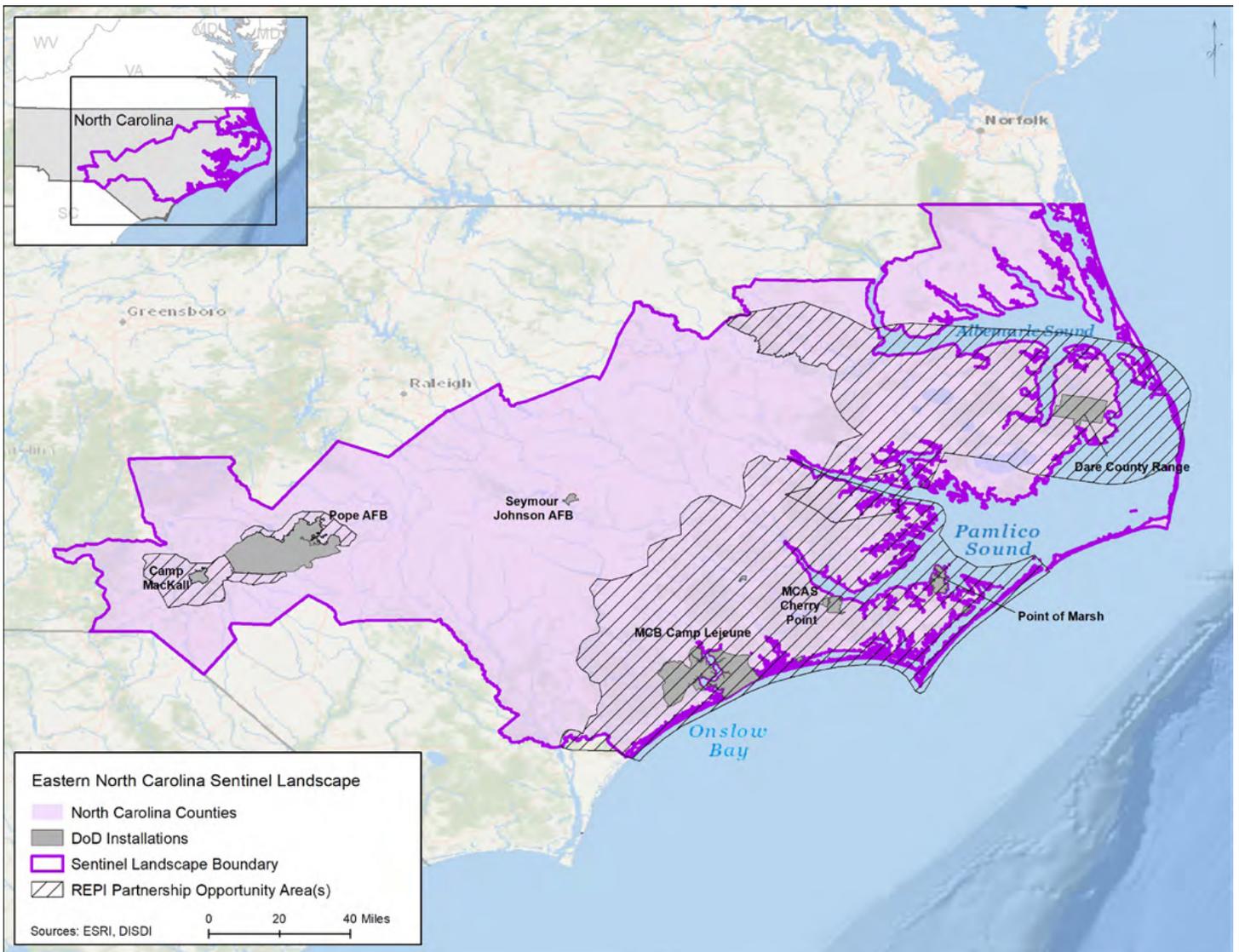
For example, as a function of geography, some stakeholders may find encroachment, forest fires and droughts to be more of a concern, while flooding and water quality may be of greater concern to others. “Here, implementing forestry practices that reduce the likelihood of wildfires, increase the productivity of forested lands, and augment groundwater recharge can also reduce the volume and velocity of stormwater impacting the lower reaches of the watershed,” Baillie said. “There is just so much inherent interconnectivity in the system that projects without shared benefits are likely to be the exception.”

At the end of the project, Baillie is to create a final report detailing monitoring, measures and study results, recommendations, and input on applying lessons learned to the broader Sentinel Landscapes program and to other Sentinel Landscapes.

“Through efforts in land conservation, nature-based solutions, supporting profitable and sustainable agricultural and forestry practices, I hope we can provide further evidence countering the all-too-common misconception that there are inherent tradeoffs between positive conservation and socio-economic outcomes,” he said.

Federation Executive Director Todd Miller told Coastal Review that the nonprofit will build upon the good work already accomplished and underway by the Eastern North Carolina Sentinel Landscape through this initiative.

“This project draws upon the resources and participation by numerous federal, state and local government agencies to engage with landowners and businesses to identify significant land and water conservation projects that will make our communities more resilient to extreme weather events and environmental degradation going forward,” he said. “The Department of Defense supports this project because its operations depend on having access to an enlisted and civilian workforce that reside in stable, safe and healthy communities.”



Eastern North Carolina Sentinel Landscape includes 11 million acres across a 33-county region in the coastal plain and sandhills. Map: Sentinel Landscape Partnership

Kristin Thomasgard, program director for REPI Program, said in an interview that the REPI office and Sentinel Landscapes Federal Coordinating Committee — DoD, USDA’s Natural Resource Conservation Service, U.S. Forest Service, Farm Service Agency, U.S. Fish and Wildlife Service and Bureau of Land Management representatives — decided that a pilot project would have the most impact at a Sentinel Landscape facing multiple resilience and climate adaptation challenges, and had a track record of effectively executing new initiatives and building broad partnerships.

“The Eastern North Carolina Sentinel Landscape is a Sentinel Landscape that satisfies those criteria and in discussions with the North Carolina Coastal Federation it was clear there was a local entity with both strong interest and exceptional experience to host the co-coordinator position,” she said.

The REPI program helps to address encroachment pressures, including climate change impacts, that could impair the department’s capacity to test, train and operate, Thomasgard said.

“Through the REPI program, the military services enter into cost-sharing agreements with state and local governments and private conservation organizations to remove or avoid land-use conflicts near installations and ranges, address regulatory restrictions that inhibit military activities, and maintain or improve military installation resilience to climate change and extreme weather events,” she said.

REPI invests in climate change resilience by supporting the development of off-base natural infrastructure solutions and partnerships. Thomasgard said that these natural infrastructure solutions may include, but are not limited to, conducting prescribed burns and removing hazardous fuels to reduce wildfire risk, building retention berms to reduce impacts of thawing permafrost, and rehabilitating soil to reduce land degradation and desertification.

“Creating, restoring, or enhancing natural systems is one of the most cost-effective, sustainable ways to make military installations more resilient to climate change,” she said.

One example of a successful REPI resilience project within the Eastern North Carolina Sentinel Landscape is at Marine Corps Air Station Cherry Point.

“Through the 2020 REPI Challenge (<https://www.repi.mil/Buffer-Projects/REPI-Challenge/>), the REPI program allocated \$1 million to MCAS Cherry Point and the North Carolina Sentinel Landscape Partnership to construct 2,100 linear feet of living shoreline along the eroding Neuse River,” she said. “This living shoreline will promote ecosystem health, provide water quality benefits to the public, and enhance installation resilience at MCAS Cherry Point.”

She explained that the REPI program represents the Department of Defense in the Sentinel Landscapes Partnership, which “was founded on the notion of shared interests between conservation, working lands, and national defense and how various encroachment outcomes can negatively affect each, things like urban sprawl and competing land use demands.”

The partnership recognizes that challenges related to resilience and climate adaptation also have a significant impact on the partnership’s shared objectives of conservation, working lands preservation and national defense. Extreme weather events, sea level rise, flooding, excessive heat and wildfire all impact these shared goals.

“Finding nature-based solutions to address these climate-based challenges requires a different skill set and experience base, distinct from the more typical land conservation experience of the current Sentinel Landscapes coordinators,” Thomasgard said. “Sentinel Landscapes provide a unique and valuable opportunity to initiate and demonstrate resilience and climate adaptation efforts at a landscape scale. However, the need for planning capacity and project design to address resilience and climate adaptation is critical to successful resilience outcomes within Sentinel Landscapes.”

The initial seven designated Sentinel Landscapes mainly focused on land management practices advancing compatible land use beside and near each Sentinel Landscapes’ anchor installation to address encroachment, and the Sentinel Landscape coordinators at each of these landscapes have largely possessed skills and experience related to land conservation. But, given the current workload of the coordinators, the Federal Coordinating Committee felt it was unreasonable to ask them to perform their current responsibilities as well as deliver adequate planning and coordination support for resilience and climate adaptation efforts.

“The Sentinel Landscapes Federal Coordinating Committee felt it would be useful to explore whether there would be significant advantage in providing certain Sentinel Landscapes with co-coordinators in order to more effectively address challenges requiring a broader set of skills and experience,” she said, adding that the co-coordinators would focus on helping key Sentinel Landscapes dealing with resilience and climate related vulnerabilities in addition to land management challenges.

“Simply put, the goal of the pilot project is to test the principle that certain Sentinel Landscapes would significantly benefit from a second coordinator to focus on projects and partnerships to address resilience and climate adaptation within those landscapes,” she said.

Thomasgard explained that the REPI office and the federal coordinating committee expect that the pilot effort will demonstrate an approach to building landscape scale resilience and climate adaptation capacity that will be transferrable to other Sentinel Landscapes across the country.

Specifically, she continued, the expectation is that the Eastern North Carolina Sentinel Landscape Partnership Team and the new resilience and climate adaptation coordinator will identify specific recommendations and lessons learned, that can support and inform resilience and climate adaptation coordinators at other Sentinel Landscapes.

“Further, it is our hope that this approach helps the REPI office and the Sentinel Landscapes Partnership tackle the challenge of resilience and climate adaptation in a holistic and outcome-based manner that will support national security, conservation, and working lands into the future,” she said.

Climate change is an issue for the Department of Defense because climate change impacts and extreme weather events threaten our nation’s security and have tangible impacts on military readiness.

“For example, in Eastern North Carolina, Hurricane Florence caused nearly \$3.6 billion in damages at Marine Corps Base Camp Lejeune in 2018. This Category 4 Hurricane significantly damaged critical facilities and required the Marine Corps to replace 31 buildings,” she said. These extreme weather events create added costs for Department of Defense and can delay critical testing and training operations.

“To ensure DoD can operate under changing climate conditions, the Department published a Climate Adaptation Plan in September 2021 with key actions DoD will take to enhance resilience to climate change threats,” she said.

The plan includes five efforts the department will implement to preserve operational capabilities, enhance natural systems, and sustain critical missions. The plan identifies REPI Program and Sentinel Landscapes Partnership as two valuable tools the department will use to advance two points in the plan: contributing to the expansion of resilient built and natural infrastructure and enhancing adaptation and resilience through collaboration.

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About Jennifer Allen

Born and raised in Swansboro, Jennifer Allen graduated from Appalachian State University in 2002 and picked up a second degree from UNC-Charlotte the following year. She joined the staff of the Carteret County News-Times in Morehead City in 2005 and completed her master's at UNC-Wilmington in 2008. Jenn spent nine years writing and editing at the News-Times before joining the staff at the Town of Beaufort in 2014, where she served as public information officer and town clerk. On June 1, 2017, Jenn came aboard as assistant editor for Coastal Review Online. She has also written for Our State Magazine and other regional and statewide publications. She lives in Morehead City with her husband James and their pups, Zaphod Beeblebrox, or Z, Octavius, but for short, they call him Gus, and Ivy Harriet.

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Newport, NC
252-393-8185

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