

COLLABORATING TOWARDS COASTAL RESILIENCE IN THE SOUTHEAST AUGUST 27, 2019

Homewood Suites | Savannah, Georgia | Gibraltar Room



MEETING SUMMARY

Meeting Purpose

Natural and working landscapes adjacent to military installations are often highly valuable coastal resources, and are increasingly at risk from multiple threats. As such, it is important to preserve and protect these resources not only to maintain compatibility with the military mission but also to sustain the natural and built infrastructure for the surrounding communities. This meeting is the outcome of a collaboration between the Southeast Regional Partnership for Planning and Sustainability (SERPPAS), a partnership chaired by the U.S. Department of Defense (DoD) and a rotating State Agency covering North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi, and the Georgia Sea Grant Law Program at the University of Georgia. The overall goal is to understand challenges and explore opportunities to collaborate on coastal resilience to benefit military readiness and the surrounding communities. The meeting is also designed to build a critical link among Sea Grant programs, military installations, and the regional natural resources leaders in the Southeast. We will achieve this goal through an agenda that increases our understanding on:

1. SERPPAS goals and needs for military readiness on the coast;
2. State and local laws and policies influencing coastal-decision making;
3. Innovative engineering options that incorporate natural systems

At the end of the meeting, we hope to have identified specific pilot projects to pursue across the Southeast region that enhance resilience for the benefit of military readiness and surrounding communities. We also hope to have identified next steps for further partnership and communication among this group of partners to ensure on-going collaboration.

The project is funded by a grant from the National Sea Grant Law Center with support from SERPPAS.

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Actions

- Each state breakout group will continue to pursue their coastal resilience projects ideas, further fleshing out next steps, funding opportunities, and partners.
- SERPPAS will support proposals for the NFWF Emergency Coastal Resilience Fund that benefit human and natural communities, as well as support military readiness.
- SERPPAS and the Georgia Sea Grant will explore opportunities to host a follow up meeting in 2020.
- The UGA Carl Vinson Institute of Government students will publish a law review article on the connection of military readiness and coastal resilience and the ‘take-aways’ from this meeting.

Summary by Agenda Topic

Welcome

Shana Jones, Director, Georgia Sea Grant Law Program and Public Service Faculty at the Carl Vinson Institute of Government, University of Georgia

- Shana Jones from the Georgia Sea Grant law Program welcomed attendees to the meeting and provided an overview of the day. Ms. Jones began by discussing goals of the meeting - to understand challenges and explore opportunities to collaborate on coastal resilience to benefit military readiness and the surrounding communities.

Resources

- [Lessons from the NOAA Coastal Restoration Atlas](#)
- [Coastal Resilience Funding Glossary Available to SERPPAS States](#)
- [Coastal Resilience Tools, Natural Infrastructure, Planning, and Other Projects](#)
- [Index of Stakeholder Organizations Serving SERPPAS States](#)
- [Roads to Nowhere in Four Jurisdictions: State and Local Governments in the Atlantic Southeast Facing Sea-Level Rise, Columbia Journal of Environmental Law \(2019\) \(Jones et al.\)](#)
- [Shore Protection for a Sure Tomorrow: Evaluating Coastal Management Laws in Seven Southeastern States, National Sea Grant Law Journal 2019 \(forthcoming\)\(Julia Shelburne, Georgia Sea Grant Law Fellow\)](#)

Getting to Know Partners

Addie Thornton, SERPPAS Coordinator

Mark Risse, Director, Georgia Sea Grant

Adam Stein, Senior Coastal Hazards Specialist, NOAA

Jay Jensen, Director, Southern Regional Office, National Fish and Wildlife Foundation

- Ms. Jones introduced the first speakers of the day. The first session was meant to gain an understanding of the different organizations present, how they are or could be involved in coastal resilience, and opportunities they recognize within the gathered group to advance goals.

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- Addie Thornton began by providing a brief history of SERPPAS, a six state partnership started in 2005 due to population growth rates increasing, military missions becoming more complex, increased competition for limited resources (land, water, air), and increasing costs. SERPPAS works to prevent encroachment around military lands, encourage compatible resource-use decisions, and improve coordination among regions, states, communities, and military services by serving as a forum for military and natural resource agencies to work together across state and agency boundaries in a collaborative proactive way.
- Opportunities for SERPPAS to address coastal resilience include learning about the challenges facing coastal installations and local stakeholders regarding resilience, building relationships and connections to enhance coordination between installations and surrounding communities on regional resilience projects, and expanding the SERPPAS partnership to include partners more connected with resilience work and coastal issues.
- Mark Risse gave an overview of the Sea Grant program, a cooperative extension under the National Oceanic and Atmospheric Administration (NOAA). There are 35 programs around the country in every coastal and Great Lakes state. The National Sea Grant Network allows connections to be made between the network, the community, and research institutions. Examples of projects the Georgia Sea Grant assists with include the Tybee Island Sea Level Rise Adaptation plan, the first community-wide plan of its kind, and best management practices for living shorelines. The Georgia Sea Grant is interested in proposals on sea level rise and assessing economic impact on the lack of accessibility.
- Adam Stein presented on the National Oceanic and Atmospheric Administration (NOAA). The NOAA Office for Coastal Management provides the products, services, and funding that coastal managers need to address coastal resilience across fisheries, research, weather, marine aviation, and operations. The Coastal Zone Management Program consists of 34 states and territories that provides funding from Congress to establish a federal-state partnership.
- NOAA seeks to support policy and decision makers at all levels by developing information products, in person training, and providing data, tools, and grants related to natural infrastructure. There is opportunity for overlap between NOAA and the state sea grant programs, state/local governments, base commands, and the private sectors to assist with coastal resilience efforts.
- Jay Jensen of the National Fish and Wildlife Foundation (NFWF) informed attendees of the type of support NFWF can deliver towards conservation projects. NFWF is focused on building public-private partnerships and supplying funding for projects that are ready to implement, i.e. the “boots on the ground/shovel-ready” type projects. It is the largest conservation fund grant maker in the country, outside of the federal government. NFWF funding is not typically allocated for planning purposes, but the DoD Office of Economic Adjustment (OEA) has funding available to assist with planning if the project is tied to installation communities.
- The National Coastal Resilience Fund (NCRF), a partnership with NOAA, was formed after Hurricane Sandy, with the next slate of grants to be announced in November. It hits the sweet spot of helping to protect both human communities and wildlife communities,

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providing communities with protection from impacts of sea-level rise, changing flood patterns, coastal erosion, increased frequency and intensity of storms and protecting and restoring habitat for fish and wildlife.

- The Emergency Coastal Resilience Fund (ECRF) was recently established to assist with the resilience of coastal communities located within federally declared disaster areas impacted by hurricanes Florence and Michael, Typhoon Yutu, and wildfires in 2018, with many eligible areas located within the southeast.
- The recently created Coastal Resilience Evaluation and Siting Tool (CREST) is an online tool meant to identify the intersection between where human community assets and wildlife community assets meet in order to assist with decision making. CREST identifies Resilience Hubs, areas of open space where projects may have the greatest potential to benefit both human community and fish and wildlife resilience. Formalized groups, such as SERPPAS, are encouraged to develop projects and apply for funding.

Resources

- [SERPPAS Overview](#)
- [Georgia Sea Grant Overview](#)
- [NFWF Funding Opportunities](#)
- NFWF CREST: <https://resilientcoasts.org/#Home>
- [NOAA Office of Coastal Management Overview](#)
- NOAA Digital Coast: <https://coast.noaa.gov/digitalcoast/tools/slr.html>

The Military Perspective Part 1: Priorities and Challenges

Moderator: Addie Thornton

Lt. Colonel Chad Gemeinhardt, Water Resources & Resilience, Office of the Assistant Secretary of Defense (Sustainment)

Brock Durig, Navy Region Southeast N40 /Env Operational Support CNRSE

Melanie Kaeser, USFWS Natural Resources Liaison for Tyndall Air Force Base

Gianfranco Basili, USFWS Air Force Partnership Coordinator

- Next, Ms. Thornton introduced the next session focusing on understanding the challenges climate change presents to DoD, the priorities to address these challenges, and current efforts on-going related to resiliency.
- Lt. Colonel Chad Gemeinhardt began by explaining why climate impacts are important to DoD. DoD must be able to adapt to any threat, including those brought on by climate-related or weather-related events. Wildfires, severe flooding, and storms all significantly impact installations. The effects of a changing climate are a national security issue with potential impacts to DoD missions, operational plans, and installations, and DoD is taking a systematic approach to mitigate climate threats and increase installation resiliency. Flooding and wildfires are current area of concern that cause huge impacts to training.
- Flooding mitigation examples include doing a Joint Land Use Study (JLUS) in the Hampton Roads area of Virginia, of the most vulnerable areas to flooding in the United States, working with the U.S. Army Corps of Engineers (USACE) to overhaul the water distribution infrastructure on Fort Irwin after severe flash flooding cause a loss of power and significant

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damage, and moving facilities above the 500 foot floodplain at Offutt Air Force Base after local levees failed. At Air Force and Army training grounds in Colorado and at Vandenberg Air Force Base in California, DoD firefighting crews are working with local and Federal officials to identify at-risk structures to wildfires and worked with local forestry officials to promote training opportunities to develop fire management plans, respectively.

- DoD policies and processes focusing on infrastructure and land management are being put in place to mitigate climate impacts. The overarching DoD directive to all military components is to include climate adaptation. Unified Facilities Criteria (UFC) now reflect more climate considerations, every installation INRMP (Integration Natural Resource Management Plan) has to incorporate climate impacts, and emergency management processes now include weather and climate events. The recently released *Climate Adaptation for DoD Natural Resource Managers* will serve as a guide to develop INRMPs to mitigate climate impacts and help implement the Natural Resources DoDI. A climate vulnerability assessment tool is also being developed with USACE that will tailor existing government climate data into easy-to-use shape files and maps of climate impacts to provide a consistent set of projections for planning purposes. In addition, the January 2019 DoD Climate Report, *Report on Effects of a Changing Climate to the Department of Defense*, details the vulnerabilities to 79 mission assurance priority installations and combatant commander requirements resulting from climate change over the next 20 years.
- Brock Durig gave specific examples of Navy mission impacts, resiliency priorities, and challenges from climate change, including energy, infrastructure, and roads. Navy Southeast is aviation based; it is the primary training location for the east coast housing the majority of Naval Aviation school house training within the Southeastern Air Space. The Navy hopes to reach 300-350 ships, which requires ports, infrastructure, facilities, and ranges, so partnerships with the communities are a priority. The increase of severe weather events over the last few years, such as hurricanes, storm surges, erosion, and extreme tides, pose concerns. Actions being taken to address these concerns include evaluating the resiliency/sustainability of port facilities and incorporating resiliency/sustainability concepts into INRMPs.
- Melanie Kaeser and Gian Basili provided an update on the ongoing recovery actions at Tyndall Air Force Base. Following Hurricane Michael, approximately 60% of the buildings on base were destroyed. The base is now being rebuilt as a “Base of the Future”, a collaborative effort between DoD, private industry, and federal agencies to rebuild in a resilient and sustainable manner. New infrastructure will be rebuilt 14-19 feet above sea level and be able to withstand 150-180 mph wind, with mission critical areas able to sustain 230 mph winds. A JLUS funded through OEA is in the planning stages with the local communities.
- There is a landscape plan in place to emphasize resiliency and recover some of the destroyed habitat. With the destruction of existing slash pine forests, the plan to convert to the more resilient longleaf has been accelerated from a 35 year plan to a 4 year plan. About

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4,000 acres of longleaf will be planted and funding is in place to clear the destroyed slash pine.

- After a 15 foot storm surge on the east end of Tyndall AFB, damage to the barrier islands was varied. LIDAR analysis and vegetation monitoring is ongoing to assess pre- and post-storm impacts and to better plan for the future. The barrier islands will be left untouched, focusing on increasing habitat, enhancing infrastructure protection, and building the stepping stones for climate change. Since the dune system behind the barrier islands has rebounded well, it can serve as a second line of defense, and will be the focus of continued resiliency efforts. Other resiliency opportunities also exist including improving natural systems and wetlands through hydrologic restoration. Additionally, there is currently a state highway that runs through the base on route to Mexico Beach. Before the hurricane, plans were already being made to redirect the road. Creating an alternate route reduces prescribed fire constraints and wildlife road mortality, and alleviates base security issues.

Resources

- [Climate Resilience in the Department of Defense](#)
- [Climate Adaptation for DoD Natural Resource Managers](#)
- [Report on Effects of a Changing Climate to the Department of Defense](#)
- [U.S. Navy Region Southeast Resiliency Priorities & Challenges](#)
- [Tyndall Air Force Base Update](#)

The Military Perspective Part 2: Partnership & Funding Opportunities for Resilience

Moderator: Addie Thornton

Andrew Porth, REPI Program, Office of the Secretary of Defense

Margit Myers, Department of Defense, Office of Economic Adjustment (OEA)

Benjamin McFarlane, Senior Regional Planner, Hampton Roads Planning District Commission

Susan Cohen, Marine Corps Camp Lejeune Defense Coastal Estuarine Research Program (SERDP project)

- The next session continued the discussion from the military's view, discussing partnerships and funding opportunities to pursue resilience with DoD, as well as example projects using these funding streams.
- Andrew Porth spoke on behalf of the DoD Readiness and Environmental Protection Integration (REPI) Program regarding funding, authorities, and the types of resilience projects that REPI pursues. Landscape partnerships, stakeholder engagements, and encroachment management projects make up the components of the REPI Program. Projects that support the military mission are eligible for funding, including purchasing buffer lands and supporting habitat restoration lands. REPI has received authority to expand to resiliency projects using the Sikes Act authority, i.e. a case study conducted at Naval Weapons Station Earle in New Jersey.
- OEA is available to assist states and communities in responding to major defense actions including base closures and realignments, base expansions, DoD personnel reductions, and industry/contractor reductions, as civilian encroachment upon a military installation is likely to impair continued operation utility. Funding opportunities are available for resiliency

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related projects. The Compatible Use Program Funding is available to assist state and local governments with undertaking a Compatible Use Plan (CUP), formerly Joint Land Use Study, in response to encroachment concerns. There are three ways to receive funding: installation nomination for CUP by commander, community proposal under the recent Federal Funding Opportunity, and OEA technical and financial assistance to implement plan recommendations. OEA is encouraging installations that haven't had a JLUS in five years to now do a Compatible Use Plan to ensure installations resilience towards all manmade and natural issues. There is also an upcoming Federal Funding Opportunity for military installation resilience under a new DoD authority. Under this funding opportunity, the project will not need to tie into encroachment. The military operations footprint defines the study area.

- To support coastal resilience, OEA is able to fund planning grants, some implementation grants, but not infrastructure. OEA is often the catalyst for broader state and local plans with grant efforts that can establish the framework for conservation buffering, agricultural preservation, Sentinel Landscapes, and coastal resilience. OEA has funded resilience projects on Marine Corps Air Station (MCAS) Beaufort/Marine Corps Recruit Depot (MCRD) at Parris Island, SC; Joint Base Langley-Eustis, VA; and Naval Weapons Station in Earle, NJ.
- Hampton Roads is one such area that has benefits from OEA funded projects. It is the largest concentration of DoD assets in the country and there is no buffer zone between installations and communities. Hampton Roads sees a CUP as a way to build a more sustainable relationships and understand the priorities between the installation and the community to help avoid problems and build mutual support. Everyone's needs are different and communication between partners through the CUP process helps to address concerns. Additionally, installation command turnover every two years poses difficulties in fostering community, but the CUP provides a framework and consistency between the partners.
- Susan Cohen spoke about the Strategic Environmental Research and Development Program (SERDP) and the overall findings from research and lessons learned of a SERDP funded project. SERDP and the Environmental Security Technology Certification Program (ESTCP) are the DoD's environmental research programs, harnessing the latest science and technology to improve DoD's environmental performance, reduce costs, and enhance and sustain mission capabilities. SERDP focuses on basic and applied research and science, and ESTCP focused on implementation.
- The Defense Coastal/Estuarine Research Program (DCERP) at Marine Corps Base Camp Lejeune from 2007-2017 was a DoD funded study that focused on sustaining the military mission of training and readiness through understanding of the function, resilience, and vulnerability of ecosystems in the context of climate change. DCERP was structured to be a highly integrated monitoring and research effort. Four different ecosystems were studied: aquatic/estuarine, coastal wetlands, coastal barrier, and terrestrial uplands.
- Several lessons learned resulted from the study:
 1. The biggest issue for DoD is expecting natural resource specialists to be climate resilience experts.
 2. It is important to get ahead of burning now; it is a slow change but very beneficial in the long run.

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3. Large programs with large funding are not needed for resilience. Resilience management is probably already taking place, such as managing for longleaf and performing prescribed fire.
 4. Monitoring is difficult to emphasize when results aren't seen for many years, but is often the most critical piece of any project.
- Resilience management is not always a priority at the installation level. Advocates are needed at the installation level to further resilience efforts, including allocating power to installation-level personnel to make resilience decisions.
 - The study also raised the question whether DoD should start looking into their carbon footprint within the next 10-15 years. Additionally, in regards to expertise, there is a gap between the academic community and those end users who can implement the science. Additional tools for the end users can help to bridge that gap.

Resources

- [The REPI Program - Resiliency Partnerships that Support Military Readiness](#)
- [OEA Compatible Use Plan](#)
- [Hampton Roads Norfolk and Virginia Beach JLUS](#)
- [Defense Coastal Estuarine Research Program - Marine Corps Base Camp Lejeune](#)
- Website: [SERDP-ESTCP](#)

The USACE South Atlantic Coastal Study

Eric Bush, Chief, Planning and Policy Director, Deep Draft Navigation Planning Center of Expertise U.S. Army Corps of Engineers South Atlantic Division

- Eric Bush presented on the status of the USACE South Atlantic Coastal Study (SACS) and discussed other immediate resilience opportunities through the USACE feasibility studies including incorporating resilience into already existing projects. The SACS is modeled after a similar study conducted along the North Atlantic coast after Hurricane Sandy. It will identify the risks and vulnerabilities of the coastline of the six SERPPAS states (North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi), Puerto Rico and the U.S. Virgin Islands to increased hurricane and storm damage as a result of sea level rise. SACS Tier 1 Risk Assessment calculates risk in terms of consequence and hazard. It shows a big picture look but doesn't identify exposure vulnerability or show military bases. The Tier 2 Risk Assessment will add vulnerability into the equation and presents an opportunity for local stakeholders, including military installations, to engage in this process at specific locations across the region. Currently, the four year study is in its first year and is an opportunity to leverage and build upon existing resources, data, and tools.
- With 20-25 coastal installations, it is important for legislators to see a threat to the installations on a study. USACE is brainstorming ways to include more DoD data in the SACS and more discussion is still needed. Mr. Bush displayed a map of military installations in the study area and asked attendees whether the map and study line is correct.
- There is a need for more communication between what the SACS is developing related to coastal resilience tools and what DOD uses for their decision-making so that we have a more comprehensive look at resilience efforts along the coast. A series of stakeholder

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engagements across the study region began in September. The goals of these meetings are to provide an update on the progression of SACS and to identify relevant state/territory-specific information for use in the study. SERPPAS will distribute the meeting dates via email when they become available. The Sea Grant programs are also available to help advertise about upcoming meetings.

Resources

- [South Atlantic Coastal Study Update](#)

The State and Local Perspective: Coastal Resilience Work and the Military Connection

Moderator: Scott Pippin, Carl Vinson Institute of Government, University of Georgia
Jennifer Kline, Coastal Hazards and Resiliency, Georgia Coastal Resources Division, Coastal Zone Management Program

Barbara Neale, Senior Program Analyst, South Carolina DHEC OCRM

Michelle Lovejoy, NC Foundation for Soil & Water Conservation/ NC Sentinel Landscape Partnership

Rhonda Price, Mississippi Department of Marine Resources/GOMA

- Scott Pippin moderated the next session that provided a better understanding of the state and local experiences dealing with resilience, such as coastal resilience priorities and challenges, examples of working with the military, lessons learned, and further opportunities to partner with the military on resilience. The panel discussed coastal resilience priorities and challenges facing their states and/or communities, focusing on projects with a military installation connection.
- In Georgia, the Georgia Coastal Resources Division's Coastal Zone Management Program oversees 11 coastal counties and acts as a liaison between federal/state agencies and local government. In 2010, there was no long term coastal planning. The FEMA Natural Disaster Recovery Framework came into effect in 2011. Georgia is mitigating flooding through green infrastructure, focusing on Tybee Island. The work on Tybee Island is demonstrating how a coastal community can become more resilient using green/natural infrastructure. The GA Coastal Resources Division funded land acquisition, conservation, and LIDAR imagery. The first climate conference was held in 2018 with the next conference in November 2020. A challenge when working with other agencies or DoD is that more coastal resiliency grant funding is going towards construction and not as much to planning, though they are hearing of more federal funding applied to long term planning.
- Coastal resilience work began in South Carolina due to legislation in the early 1970s, the Coastal Zone Management Act, which made the state coastal programs voluntary. The word "resilience" has not necessarily been used in the work being done to manage the coastal areas, such as maintain waterfronts, but the coastal division has been implementing resilience actions since its inception. One example of work done by the South Carolina Department of Health and Environmental Control's Office of Ocean and Coastal Resource Management is creating an oyster shell shoreline with Marine Corps Air Station Beaufort.

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Challenges faced when working with other agencies or DoD include making sure the scale of tools is applicable to local governments.

- In North Carolina, the Eastern North Carolina Sentinel Landscape Partnership (ENCSL) is involved in coastal resilience since many installations within its borders lie along the North Carolina coast. Within the 30+ member partnership, all partners have an equitable seat at the table, small and large, local and state. Private landowner engagement is crucial and the partnership welcomes input to design programs. The ENCSL has engaged private landowners in numerous projects including the EnvisionEAST-2050 Exercise where participants envisioned future population, jobs, green space, and transportation infrastructure throughout the state; the FloodWise Pilot which looks at conservation through the lens of resilience by bringing in the agricultural community to design watershed-level approaches that would lessen floods; and the Hurricane Florence Agricultural Disaster Program of 2018 that supplied farms with immediate relief using state funds. Agriculture/farming is a leading economic driver in North Carolina and farms are not strong unless the community is strong. Agriculture is important to resiliency; the soil underneath the crops is a living ecosystem and can store carbon. Military installations and the surrounding community do not live in isolation, so ENCSL partners heavily with the military. The change in leadership at bases every 2-3 years and having to reeducate base leadership causes communication gaps between federal and local, the federal having more flexibility in authorization than they realize.
- The Mississippi Department of Marine Resources and the Office of Coastal Restoration and Resilience is relatively new, only formed in the 1990s. Monitoring and collecting baseline data to measure resilience is a major focus, as well as long term strategy planning and the permitting process. The Gulf of Mexico Alliance (GOMA) is very involved in the coastal resilience efforts in Mississippi, using six priority issue teams, including a resilience team, to enhance the environmental and economic health of the Gulf of Mexico. The current campaign, Embrace the Gulf, is a year-long campaign to become more resilient to freshwater inflow.

Resources

- [Eastern North Carolina Sentinel Landscape Outreach](#)
- Website: [Gulf of Mexico Alliance](#)

Legal Baselines

Dave Blalock, Regional Environmental Coordinator Counsel, Department of Defense

Shana Jones, Georgia Sea Grant

Thomas Ruppert, Florida Sea Grant

- Ms. Jones introduced the next speakers, Dave Blalock and Thomas Ruppert, to provide some explanation of the legal frameworks influencing coastal decision-making and high level challenges seen across the region.
- Ms. Blalock, counsel for DoD Regional Environmental Coordinators (REC), serves as an interface between state policy and DoD for the region. There is a designated REC in each EPA region that functions as a liaison for the region on environmental issues, able to speak

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to installations and provide a more direct line to military headquarters. DoD recognizes climate change as a threat to national defense, and installations must be prepared to address impacts, including how that relates to aspects outside installation borders. REPI, OEA Statute, and the Sikes Act were all modified with the National Defense Authorization Act 2019 to include ‘military installation resilience.

- Mr. Ruppert with the Florida Sea Grant spoke about some of the legal and policy drivers surrounding resilience. Infrastructure is extremely important to public works and city managers. Nuisance claims have arisen due to the insufficient maintenance of infrastructure not being able to control flooding. Local communities must plan for legal proceedings; if one lawsuit is lost, then finances are not available any other city projects or improvements. Mr. Ruppert discussed a “legal issues” list compiled with Shana Jones, which included the following:
 - **Policy Drivers—Already Happening**
 - Expense of modifying/maintaining/creating infrastructure services (drainage, seawalls, roads, sewer/water treatment, potable, electric, etc.)
 - Rising flood insurance rates
 - Rising homeowners’ insurance
 - Bond ratings (i.e.—Moody’s and other ratings companies downgrading local governments not actively preparing)
 - Equity/social justice/gentrification/displacement
 - **Potential Policy Drivers**
 - Decreasing property values
 - Increasing limitations on long-term bank mortgages in some areas
 - Reduced local gov’t income as local gov’t expenses rise (and property taxes fall)
 - **Property Rights Claims (“Takings”)**
 - Fifth Amendment of U.S. Constitution (no “taking” of private property without compensation)
 - **State laws protecting property**
 - “Taking” through regulation of use of property (When regulation goes “too far”).
 - “Taking” through perceived insufficient maintenance of infrastructure (i.e.—roads flooded or washed out; excessive flooding due to no-longer-adequate drainage)
 - **Duty to Act/Maintain**
 - Mandamus actions brought to compel government to act to control flooding
 - Nuisance claims brought for failure to control flooding
 - Negligence claims brought for failure to control flooding
 - **Regulatory Violations**
 - Violation of Clean Water Act NPDES permit for increased sewage overflows from treatment plants
 - Violation of Clean Water Act NPDES MS4 Stormwater Permits

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Resources

- [DoD Regional Environmental Coordinators - Legal Baselines](#)
- [Florida Sea Grant Legal Overview](#)

Resilience and Engineering: Pulling Together the Threads

Dr. Todd Bridges, Senior Research Scientist for Environmental Science, USACE Engineering With Nature (EWN) Initiative

Brian Bledsoe, University of Georgia's Institute for Resilient Infrastructure Systems (IRIS) at the College of Engineering.

Dr. Jeff King, Deputy National Lead, USACE Engineering with Nature Initiative

- The next group of speakers provided an overview of nature-based engineering, its importance to resilience, and examples of practice and the characteristics of a “good project”.
- Dr. Todd Bridges represented USACE Engineering With Nature (EWN), an initiative intentionally aligning natural engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaborative processes, or a “Triple Win Outcome”. Land is the largest category of infrastructure on military installations, with DoD owning 19 million acres. Current science is supporting the need for innovation in addressing resilience and sustainability, especially in the wake of natural disasters like the recent hurricanes and Offutt AFB flooding. Natural and nature-based features (NNBF), landscape features developed to provide engineering functions, prove to be a sustainable approach to overcoming infrastructure resilience challenges.
- Dr. Bridges provided an example project, Horseshoe Bend Island in Louisiana, of a river producing a natural island due to people depositing sediment in the right places, creating new wildlife habitat. The value of NNBF is evident in the economic benefits of coastal wetlands following Hurricane Sandy. Using risk-industry based tools, it was estimated that existing wetlands saved more than \$625 million in flood damages in the northeast Atlantic region following the storm. Dr. Bridges also provided numerous examples of EWN techniques and practices being incorporated into USACE infrastructures. An international technical guideline publication is being developed for 2020 distribution on the use of NNBF for sustainable coastal and fluvial systems to provide engineering functions relevant to flood risk management while producing additional economic, environmental and social benefits. Additionally, the public facing *Natural Infrastructure Opportunities Tool* is an online resource where groups can share data in spatial context to identify opportunities for beneficial use. EWN is focused on forecasting future need as opposed to restoring past conditions, with major emphasis place on multi-organization collaboration, such as SERPPAS.
- Dr. Brian Bledsoe, also representing Dr. Jeff King, presented on the idea that resilience is best fostered by nested-scales and intentional alignment at a regional and local level, as well as expanded on the “Triple Win Outcome” concept.

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Resources

- [Engineering With Nature for Resilience Overview](#)
- [Engineering With Nature Strategic Plan 2018-2023: Expanding Implementation](#)
- Website: [Natural Infrastructure Opportunities Tool](#)
- [IRIS - Navigating Four C's of Coastal Resilience](#)

Breakout Discussion: Brainstorming Towards Partnerships and Projects

- The attendees participated in a brainstorming exercise to generate project ideas based on using nature-based systems, achieving a “Triple Win Outcome”, and bringing the local installation and community together in a mutually beneficial project. The attendees were broken up into groups by state and asked to come up with a title of the project, goals to address, partners involved, funding opportunities, potential barriers, and next steps. Each state group then reported on their identified project to the larger group where connections and opportunities for collaboration were further discussed.
- In conclusion, Ms. Thornton and Ms. Jones thanked all the attendees for coming and participating and engaging so enthusiastically. They expressed their desire to continue the learning and connecting between the partners in attendance and encouraged the state groups to pursue their projects through the funding opportunities presented at the meeting. SERPPAS and the Georgia Sea Grant intend to continue their partnership and hope to bring these partners together to continue the great momentum at the meeting with another gathering in 2020.

Resources

- [State-by-State Project Descriptions](#)
- [Additional State Projects from Brainstorming Exercise](#)

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State Breakout Group Project Ideas

ALABAMA/MISSISSIPPI

Project Description

- Update base management plans for Keesler and Naval Construction Battalion in collaboration with local communities (Biloxi & Gulfport), emphasizing nature-based resources.

Collaborators

- Base leadership, municipalities, USFS, USACE, Sea Grant Programs, Mississippi Department of Transportation, FEMA, Gulf Regional Planning Commission, NGOs

Funding Sources

- OEA, NFWF

Challenges

- Convincing mayors, base leaders, community, etc.
- Education (see above)
- ESA/NEPA
- Operations and maintenance

Next Steps

- N/A

FLORIDA (Project #1)

Project Description

- Tyndall/Mexico Beach natural and nature-based features (NNBF) network to address resiliency.
 - As Tyndall rebuilds, determine NNBF
 - As Mexico Beach expands, utilize green infrastructure
 - How to tie together
 - Increase habitat and allow places for eco-community to adjust to SLR

Collaborators

- Community planners, DoD/Air Force, Florida DEP, Florida DoT, Florida FWC, USACE, USDA, EPA, EDA, FEMA, DEO, Extension service, NFWF

Funding Sources

- NFWF, DoD, USACE, Florida DEP, FEMA, HUD/DEO, NOAA

Challenges

- Fast, coordination, NEPA, funding, Framing issue
- A lot of options, multiple planning process and systems

Next Steps

- Series of meetings regarding Mexico Beach
- Where/when does Tyndall come in charrette?

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FLORIDA (Project #2)

Project Description

- Resilience for Key West Naval Air Station
 - How to combine NNBF for energy dissipation and resilience without impacting flight lines or increasing birds
 - It is also a public recreation areas and part of the land is owned by the city

Collaborators

- County, DoD/Navy, USACE, NOAA, Florida DEP, Florida FWC, USFWS, Sea Grant Program, fishermen

Funding Sources

- NOAA, Sea Grant Program, NFWF, TNC, DoD, County, South Florida Water Management District Florida DEP

Challenges

- High energy area, NEPA, permitting

Next Steps

- Initiate planning process
- Discuss with others at INRMP meeting
- USACE-EWN team

GEORGIA

Project Description

- Fort Stewart and Hunter Joint Land Use Planning
- Kings Bay beneficial use of dredge material (NIOT)

Collaborators

- DoD, local government, Georgia DNR, MPS, USFWS, TNC, Land Trust, NGOs, McIntosh SEED, EPA, USACE

Funding Sources

- DoD, NFWF, OEA, private foundations, EPA, NOAA, local match

Challenges

- Not at the table, too many stakeholders, lots of permitting, time intensive
- NEPA, ESA, turtles

Next Steps

- Talk to local governments
- Talk to OEA
- Talk to military installations
- Listen

COLLABORATING TOWARDS COASTAL RESILIENCE IN THE SOUTHEAST

NORTH CAROLINA

Project Description

- Coastal Habitat Protection Plan (CHPP) revision
 - Include military lands
 - Include thin layer sedimentation to rebuild marshes
 - Include living shorelines, often constructed out of oysters
 - Use Lejeune study as starting point
 - Pilot project on Neuse River from Seymour Johnson AFB to Piney Island Range

Collaborators

- Three state commissions, Military Services, SERPPAS, NC Sentinel Landscape, fisheries groups, riparian owners, Sea Grant Program, Coastal federation

Funding Sources

- OEA, NC Farm Bureau, NFWF, CCA, World Habitat Fund

Challenges

- Permitting/Statutes/Regulations
- Staffing/resources
- Gathering public support

Next Steps

- Public meetings on CHPP

SOUTH CAROLINA

Project Description

- Coordinate planning between Beaufort military and community to identify common flood issues and nature based mitigation options
 - Develop first NBS project on military property

Collaborators

- City of Beaufort, Beaufort County, Low Country COG, Military Services, ACE Basin Taskforce, Sea Grant Program, NERRS, State (OCRM and DNR), CISA, NOAA, ACOE, NGOs (NCS, Pew)

Funding Sources

- Savannah River Restoration, EPA, DoD (Compatibility Use Plan), REPI, OEA, HUD, DHS, DOT/Highways (Tina Hodges), SC Flood Commission

Challenges

- Engaging bases
- Funding for planning vs. projects
- Speed post-disaster

Next Steps

- Description (2 pages)
- Project team
- Survey available plans from bases

COLLABORATING TOWARDS
COASTAL RESILIENCE
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List of Participants

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COLLABORATING TOWARDS
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COLLABORATING TOWARDS
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